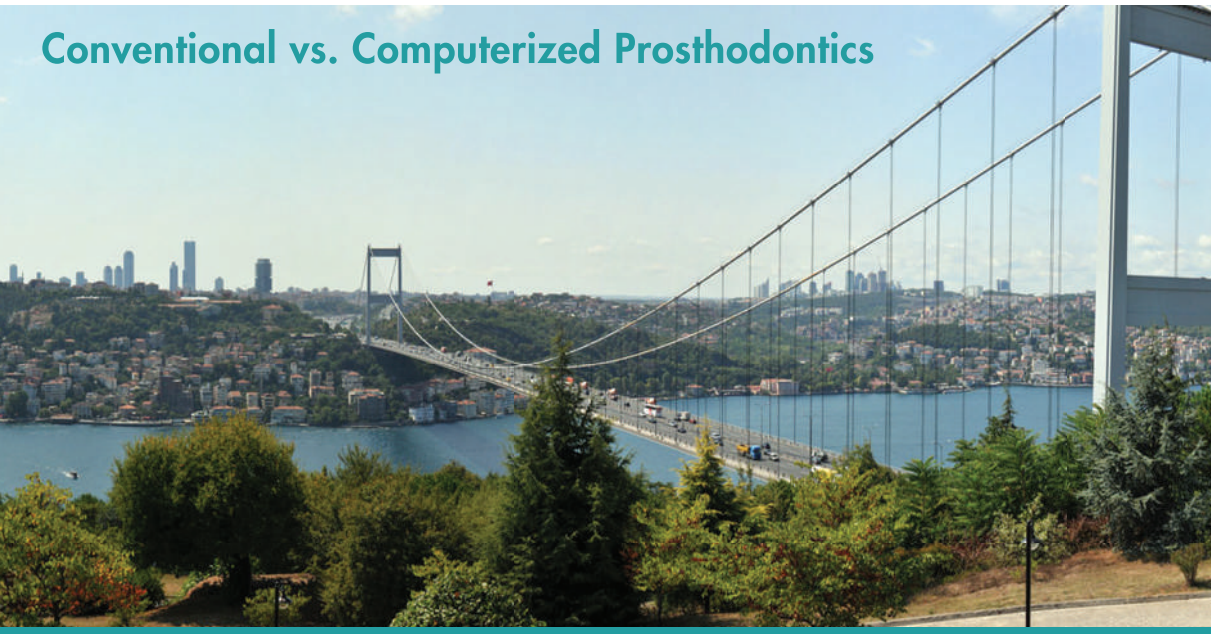
EPA 2014
ISTANBUL
TURKEY
SEPTEMBER
25-27
WYNDHAM ISTANBUL
KALAMIS MARINA HOTEL

EUROPEAN PROSTHODONTIC ASSOCIATION
FOUNDED IN 1977

tpid 1976 Turkish Prosthodontic and Implantology Association

Conventional vs. Computerized Prosthodontics



38th ANNUAL CONFERENCE OF THE EUROPEAN PROSTHODONTIC ASSOCIATION & 21st Scientific Congress of the Turkish Prosthodontic and Implantology Association

www.epa2014.org

PROGRAM & ABSTRACTS

38th Annual Conference of the European Prosthodontic Association

&

21st Scientific Congress of the Turkish Prosthodontic and Implantology Association

September 25-27, 2014
ISTANBUL - TURKEY

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This conference is credited with 12 points by TDA-CDE Council.

PRESIDENT'S MESSAGE

Dear Participants,

Welcome to EPA 2014, Istanbul. This is the third time the European Prosthodontic Association and the Turkish Prosthodontic and Implantology Association are organizing a joint international conference. In their 38 years past, both associations had strong contributions in education, specialization programs and research in the field of prosthodontics. I had the great honour and pleasure of being among the organization team in the past joint meetings of these two associations, being the first in 1994, second in 2004 and the current one in 2014.

The Organization Committee has made every effort to plan a conference that is scientifically satisfactory and socially interesting. Instructional lectures being delivered by the distinguished keynote speakers from all over the world will encourage the interaction between participants. EPA 2014 has also set a record of 364 submitted abstracts; with 120 oral and 244 poster presentations from more than 20 different countries. Workshop presentations will also add further to the scientific contribution. Technical exhibits will also form an important segment of the congress as a whole.

EPA 2014 Istanbul Congress attracted participants not only from Europe but also from USA, Canada, Japan, South America and Middle East countries. You will meet with an exceptional program covering differing topics, from basic research areas to areas within daily practice of conventional and contemporary prosthodontics. I believe that the participants will also have great social programs in the magical atmosphere of Istanbul.

Without you we couldn't make it this much, so thank you all for your valuable contribution and support.

Sincerely yours,

Prof. Dr. Çetin SEVÜK
President of the European Prosthodontic Association 2014

Organizing Committee

Prof. Dr. Çetin SEVÜK, President
Prof. Dr. Erdal POYRAZOĞLU
Prof. Dr. Betül TUNCELLİ
Prof. Dr. Begüm Akkayan KESMEZACAR
Dr. Pınar GÜLTEKİN
Dr. Burçin KARATAŞLI

CONFERENCE INFORMATION

Registration/Information Desk

The registration/information desk will be ready to assist you at the Conference Venue during the meeting.

On-site registration is possible at the registration desk. If you need any other information about city tours, shopping and transportation, please do not hesitate to ask the staff of registration/information desk.

The desk will be open during the following hours;

Thursday, September 25, 2014	08.00 – 18.00
Friday, September 26, 2014	08.00 – 18.00
Saturday, September 27, 2014	08.00 – 14.30

Language

The official language of the Conference is English. All oral and poster presentations must be presented in English.

Keynote Lectures (General Sessions)

Oxford lecturer and the Invited Keynote Speakers will deliver plenary presentations in the mornings at the Main Conference Hall. No other oral presentations will be presented in the mornings.

Oral Presentations (Parallel Sessions)

Oral presentations will be held in five parallel sessions in the afternoons at the Main Conference Hall, Hall A, Hall B, Hall C and Hall D.

12 minutes will be allowed for each oral presentation, followed by 3 minutes discussion time.

There is a technical presentation center where you can check your presentation. Please provide your oral presentation, with your name and the title of your presentation marked, to the technical staff in the morning (until 11.00 a.m.) of your presentation session.

Poster Presentations

Poster presentations will be presented at C1 Floor.

Personal poster presentation number identifies your poster in the Program Book, online program and will be used to locate your poster board in the Poster Presentation Area. The presenter author must be present next to the poster at the assigned poster presentation times to explain or clarify as required.

CONFERENCE INFORMATION

Poster presentations have been assigned into 2 main groups (Group 1 and Group 2). Poster presentations will be set up daily. The same time schedule will be used for Thursday and Friday. Please find below the details for the presenting dates and times.

Thursday, 25 September, 2014
Group 1 - Poster presentation numbers P001 – P123
Friday, 26 September, 2014
Group 2 - Poster presentation numbers P124 – P245

08.00 – 09.00	Poster set-up
10.30 – 11.00 / 15.45 – 16.15	Poster presentation times
09.00 – 18.00	Poster viewing time
18.00 – 18.30	Poster tear-down

Workshops
There will be 4 workshops. Only 20 applicants will be accepted for each workshop.

Abstracts
Abstracts for oral and poster presentations have been reviewed and divided into subject groups according to the main themes. All accepted abstracts are printed in the 'Programme and Abstract Book'.

Awards
Intensiv Diamond Prize will be awarded for the best oral and poster presented at the Conference. Both awards will be given on the recommendation of a panel of qualified assessors selected by EPA Scientific Committee.

Trade Exhibition
There will be a dental trade exhibition throughout the Conference; all registrants are encouraged to visit the exhibition.

The opening time of the exhibition halls are as follows:

Thursday, September 25, 2014	08.30 – 18.00
Friday, September 26, 2014	08.30 – 18.00
Saturday, September 27, 2014	08.30 – 14.00

GENERAL INFORMATION

Conference Venue
Wyndham Istanbul Kalamis Marina Hotel
Address : Kalamis Fener Cad. No: 38 Kalamis 34726 Istanbul – TURKEY
Phone : +90 216 400 00 00
Web : www.wyndhamkalamis.com

Full participants are entitled to
participate in the scientific sessions, morning and afternoon tea and coffee breaks, lunch and attend Welcome Cocktail. Specially purchased entrance tickets are required for the Gala Dinner.

Registered accompanying persons are only entitled to
attend Welcome Cocktail.

Welcome Cocktail
Welcome Cocktail will be served at Moda Deniz Kulübü on Thursday, September 25, 2014 between 19.00- 22.00. Transportation will be available to the Cocktail Venue.
(Departure time is 18:30)

Badges and Tickets
All participants will receive a personal Conference Badge. Please wear your Conference Badge at all times for admission to all scientific sessions and all other events during the Conference. Tickets for lunch and coffee breaks will also be present in your personal badges.

Lunch Service
Lunch will be served at the hotel's restaurant with lunch tickets between 12.30-13.30. Lunch tickets will be collected at the entrance of the restaurant.

Gala Dinner
Gala Dinner will be served on a private Bosphorus Cruise on Friday, September 26, 2014 between 19.00-23.00.
The price is 125 Euro per person. We would kindly remind you that early reservation is required and attendance will be limited. Please bring your Gala Dinner cards for the Gala Dinner.

GENERAL INFORMATION

Disclaimer

Neither the European Prosthodontic Association nor the Turkish Prosthodontic and Implantology Association accept liability for damages and/or losses of any kind, which may be incurred by conference participants or by any persons accompanying them, both during the official activities and the excursions. Participants are advised to take out insurance against loss, accidents or damage, which could be incurred during the Conference.

Hotel Accommodation

Hotel rooms generally become available for occupancy at 14.00 and must be vacated at 12.00 on the day of departure to avoid extra payment.

Conference and Administration Office

Semtur Seminar Congress Organization
Barbaros Mah. Karayolları Site Sok. Soyak Gökyüzü Konutları, C Blok D2 34662 Altunizade, ISTANBUL / TURKEY
Mr. Sinan Bayhan
Phone : +90 533 938 32 29
Mail : sinanb@semtur.com.tr

GENERAL PROGRAMME

Thursday, September 25, 2014

08:00 - 18:00	Registration
09:15 - 09:30	Opening Ceremony
09:30 - 10:30	Oxford Lecture / Dr. Werner H **MÖRMANN**, *Switzerland*
10:30 - 11:00	Coffee Break & Exhibition
11:00 - 11:45	Keynote Speaker / Dr. Hakan **ÖGE**, *Turkey*
11:45 - 12:30	Keynote Speaker / Dr. Ingrid **GRUNERT**, *Austria*
12:30 - 13:30	Lunch & Exhibition
13:30 - 14:00	**EPA Specialist Recognition**
14:00 - 15:45	Oral Presentations (Parallel Sessions)
15:45 - 16:15	Coffee Break & Exhibition
16:15 - 17:45	Oral Presentations (Parallel Sessions)
19:00 - 22:00	Welcome Cocktail

Friday, September 26, 2014

09:00 - 09:45	Keynote Speaker / Dr. Ralf Joachim **KOHAL**, *Germany*
09:45 - 10:30	Keynote Speaker / Dr. Chikahiro **OHKUBO**, *Japan*
10:30 - 11:00	Coffee Break & Exhibition
11:00 - 11:45	Keynote Speaker / Dr. Guillermo J Pradies **RAMIRO**, *Spain*
11:45 - 12:30	Keynote Speaker / Dr. Gerlig **WIDMANN**, *Austria*
12:30 - 13:30	Lunch & Exhibition
13:30 - 14:30	**EPA General Assembly**
14:30 - 15:45	Oral Presentations (Parallel Sessions)
15:45 - 16:15	Coffee Break & Exhibition
16:15 - 17:45	Oral Presentations (Parallel Sessions)
19:00 - 23:00	Gala Dinner

Saturday, September 27, 2014

09:00 - 09:45	Keynote Speaker / Dr. Warner **KALK**, *The Netherlands*
09:45 - 10:30	Keynote Speaker / Dr. Nadim **BABA**, *USA*
10:30 - 11:00	Coffee Break & Exhibition
11:00 - 11:45	Keynote Speaker / Dr. Betül **TUNCELLİ**, *Turkey*
11:45 - 12:30	Keynote Speaker / Dr. Koray **ORAL**, *Turkey*
12:30 - 13:15	Keynote Speaker / Dr. Scott D **GANZ**, *USA*
13:15 - 13:30	Closing & the Award Ceremony
13:30 - 14:30	Lunch

WORKSHOP PROGRAMME

Thursday, September 25, 2014

Workshop 1

13:30 - 16:00 Dental photography
Dr. Ömer **ENGİN**, *Turkey*

Workshop 2

13:30 - 16:00 Virtual articulator and CAD/CAM
Dr. Ulrich **WEGMANN**, *Germany*

Friday, September 26, 2014

Workshop 3

13:30 - 16:00 Computer guided implantology
Dr. Roberto **MARRA**, *Italy* & Dr. Selim **PAMUK**, *Turkey*

Workshop 4

13:30 - 16:00 Immediate solutions for prosthetic rehabilitation
Dr. Burçin **KARATAŞLI**, *Turkey*

*Participation is limited to 20 for workshops.

SCIENTIFIC PROGRAMME

General and Parallel Sessions

Thursday, September 25, 2014 MAIN HALL

General Session – I
Chaired by: Dr. Ç Sevük & Dr. M Özcan

09:15 – 09:30 Opening Ceremony

09:30 – 10:30 Oxford Lecture
A perspective on the development of CAD/CAM restorations *K-01*
Dr. Werner H **MÖRMANN**, *Switzerland*

10:30 – 11:00 Coffee Break & Exhibition

General Session – II
Chaired by: Dr. A User & Dr. H Hubalkova

11:00 – 11:45 **Around the world on the steps of Magellan *K-02***
Dr. Hakan **ÖGE**, *Turkey*

11:45 – 12:30 **New developments in the treatment of the edentulous patient *K-03***
Dr. Ingrid **GRUNERT**, *Austria*

12:30 – 13:30 Lunch & Exhibition

13:30 – 14:00 **EPA Specialist Recognition**

Parallel Session – I
Chaired by: Dr. W Kalk & Dr. R Welfare

14:00 – 14:15 **Analysis of biomechanical factors affecting complete mandible denture stability,** M Hiroaki, *Japan* ***O-001***

14:15 – 14:30 **Telescopic dentures: Survival rates of dentures and support teeth,**
E Van Den Wijngaarden, *The Netherlands* ***O-002***

14:30 – 14:45 **Quality of life improvement with mandibulary implant overdentures on locators,** C Matthys, *Belgium* ***O-003***

14:45 – 15:00 **Effect of radiation positioning stent in radiation dosage reduction and maintaining mouth opening,** S Nayar*, UK* ***O-004***

15:00 – 15:15 **Pretreatment modalities in prosthodontic rehabilitation,**
E Piehslinger, *Austria* ***O-005***

15:15 – 15:30 **Syndromes with serious maxillofacial disorders and complete dental care,** H Hubalkova, *Czech Republic* ***O-006***

15:30 – 15:45 **Classical and modern approaches in the oral rehabilitation of edentation,** F Ramona, *Romania* ***O-007***

15:45 – 16:15 Coffee Break & Exhibition

Parallel Session – VI
Chaired by: Dr. P Wright & Dr. J Katsoulis

16:15 – 16:30 **Full mouth restoration,** P Vyslonzil, *Austria* ***O-008***

16:30 – 16:45 **The significance of condylography in the diagnostic Viennese concept,** A Skolka, *Austria* ***O-009***

16:45 – 17:00 **The treatment of complex cases using CAD/CAM technique,** A Knaus*, Austria* ***O-010***

17:00 – 17:15 **Interdisciplinary full mouth rehabilitation supported by CAD/CAM technique - a case report,** P Kotlarenko, *Austria* ***O-011***

17:15 – 17:30 **CAD/CAM technique: Determination of tooth color using spectrophotometers,** B Gsellmann, *Austria* ***O-012***

17:30 – 17:45 **The periodontal pretreatment for a successful prosthetic rehabilitation,** O Jandrasits, *Austria* ***O-013***

Friday, September 26, 2014 MAIN HALL

General Session – III
Chaired by: Dr. E Poyrazoğlu & Dr. I Grünert

09:00 – 09:45 **Zirconia ceramic implants – What is evident? *K-04***
Dr. Ralf Joachim **KOHAL**, *Germany*

09:45 – 10:30 **Functional bite impression (FBI) technique for placement of a prosthetic appliance without corrections *K-05***
Dr. Chikahiro **OHKUBO**, *Japan*

10:30 – 11:00 Coffee Break & Exhibition

General Session – IV
Chaired by: Dr. B Tuncelli & Dr. J Setz

11:00 – 11:45 **Conventional vs. digital implant impressions state of the art *K-06***
Dr. Guillermo J Pradies **RAMIRO**, *Spain*

11:45 – 12:30 **MSCT and CBCT imaging in the field of computerized implantology *K-07***
Dr. Gerlig **WIDMANN**, *Austria*

12:30 – 13:30 Lunch & Exhibition

13:30 - 14:30 **EPA General Assembly**

Parallel Session – XI
Chaired by: Dr. S Nayar & Dr. N ElSheikh

14:30 - 14:45 **Latest Trends in Digital Dentistry Presentation of a real total upper rehabilitation, with Toronto Bridge – through digital technologies application,** E Cennerilli, *Italy* ***O-066***

14:45 - 15:00 **Treatment options for anterior teeth with doubtful prognosis: To maintain or to extract? A series of case reports,**
T Diamantatou, *Greece* ***O-067***

15:00 - 15:15 **Full-mouth rehabilitation of a severely worn dentition,**
A Barfeie, *The United Kingdom* ***O-068***

15:15 - 15:30 **Esthetic rehabilitation with zirconia crowns and IPS e.max veneers,**
S Günsoy, *Turkish Republic of Northern Cyprus* ***O-069***

15:30 – 15:50 **The art of handmade restorations,** G Dazhaev, *Russia* ***O-070***

15:50 – 16:15 Coffee Break & Exhibition

Parallel Session - XVI
Chaired by: Dr. E Yüzbaşıoğlu & Dr. C Ohkubo

16:15 – 16:30 **Adverse reactions to dental materials. Diagnose- treat- document,** P Papanagiotou, *Greece* ***O-071***

16:30 – 16:45 **Accuracy of different impression techniques for internal-connection angulated implants,** G Tsagkalidis, *Greece* ***O-072***

16:45 – 17:00 **Platform switching and soft tissues response: A 5-years follow up,** L Lago González, *Spain* ***O-073***

17:00 – 17:15 **Robot system and present day implantology,** N Forna, *Romania* ***O-074***

17:15 – 17:30 **Dental implants in patients with Sjögren's syndrome,** A Korfage, *The Netherlands* ***O-075***

17:30 – 17:45 **To graft or not to graft: Pink ceramics gingival perspective,** J Markose, *United Arab Emirates* ***O-076***

Saturday, September 27, 2014 MAIN HALL

General Session – V
Chaired by: Dr. M Ulusoy & Dr. K Hian Phoa

09:00 – 09:45 **3D-Planning and treatment options with oral implants in compromised (Pre) edentulous patients *K-08***
Warner **KALK**, *The Netherlands*

09:45 – 10:30 **The application of CAD/CAM technology to removable prosthodontics *K-09***
Nadim **BABA**, *USA*

10:30 – 11:00 Coffee Break & Exhibition

General Session – VI
Chaired by: Dr. P İmirzalıoğlu & Dr. E Kazazoğlu

11:00 – 11:45 **Current status of dental zirconia *K-10***
Betül **TUNCELLİ**, *Turkey*

11:45 – 12:30 **Bruxsizm and phantom bite syndrome *K-11***
Koray **ORAL**, *Turkey*

12:30 – 13:15 **State-of-the-art concepts to assess implant receptor sites for delayed and immediate load protocols using the Triangle of Bone® concept *K-12***
Scott D **GANZ**, *USA*

PARALLEL SESSIONS – HALL A

Thursday, September 25, 2014	HALL A

Parallel Session – II
Chaired by: Dr. C Aydın & Dr. C de Baat

14:00 – 14:15 **Diagnostic procedure of temporomandibular disorders,** R Pérez García, *Spain* ***O-014***

14:15 – 14:30 **Psychopathology of TMD patients with different pain location: Preliminary study,** A Tournavitis, *Greece* ***O-015***

14:30 – 14:45 **The effects of intraarticular polyacrylamide and hyaluronic acid injections on pain and masticatory functional status in dejenerative temporomandibular joint patients,** Ö Ocak Çimendür, *Turkey* ***O-016***

14:45 – 15:00 **The evaluation of low level laser therapy efficiency on tinnitus,** N Demirkol, *Turkey* **O-017**

15:00 – 15:15 **Diagnostic procedure for total prosthetic rehabilitation,** IL Darriba, *Spain* ***O-018***

15:15 – 15:30 **Oral modifications in GERD patients from different European countries,** A Picos, *Romania* ***O-019***

15:30 – 15:45 **Denture hygiene quality within primary and secondary care: A comparison,** P Mylonas, *The United Kingdom* ***O-020***

15:45 – 16:15 Coffee Break & Exhibition

Parallel Session – VII
Chaired by: Dr. G Işık & Dr. G Eskitaşçıoğlu

16:15 – 16:30 **Color stability of current esthetic CAD/CAM restorative materials,** B Becerikli, *Turkey* ***O-021***

16:30 – 16:45 **Luting cements affect the final color of zirconium oxide cores,** N Çapa, *Turkey* ***O-022***

16:45 – 17:00 **Effect of thickness on biaxial flexural strength of zirconia core,** Z Tutal, *Turkey* ***O-023***

17:00 – 17:15 **The effect of electrical discharge machining on zirconia-resin bonding,** N Rona, *Turkey* ***O-024***

17:15 – 17:30 **Microshear bond strength of orthodontic resin to differently conditioned monolithic zirconia surface,**
N Canıgür Bavbek, *Turkey* ***O-025***

17:30 – 17:45 **The effect of surface cleaning procedures on contaminated zirconia surface,** T Sarı, *Turkey* ***O-026***

Parallel Session – XII
Chaired by: Dr. ŞB Türker & Dr. A Güleryüz Gürbulak

14:30 – 14:45 **Acidic agents and ion leaching of dental porcelains,** T Çelakıl, *Turkey* ***O-077***

14:45 – 15:00 **Surface changes of restorative materials upon immersion in different agents,** I Karaokutan, *Turkey* ***O-078***

15:00 – 15:15 **Color stability of different temporary prosthodontic materials after staining solutions,** G Yerlioğlu, *Turkey* ***O-079***

15:15 – 15:30 **Color stability of provisional prosthetic materials after short-term immersion in sports and energy drinks,** B Yılmaz, *Turkey* ***O-080***

15:30 – 15:45 **Surface hardness of provisional prosthetic materials after short-term immersion in sports and energy drinks,** SE Özkır, *Turkey* ***O-081***

15:45 – 16:15 Coffee Break & Exhibition

Parallel Session – XVII
Chaired by: Dr. S Nemli Karakoca & Dr. E Eroğlu

16:15 – 16:30 **The effect of sealant agents on the surface roughness and colour stability of artificial teeth materials,** O Şahin, *Turkey* ***O-082***

16:30 – 16:45 **Activation of endogenous proteases of dentin by self-etching adhesives,** BS Oğuz Ahmet, *Turkey* ***O-083***

16:45 – 17:00 **In situ biofilm inhibition by a self adhesive resin cement containing silver nanoparticles,** H Bilir, *Turkey* ***O-084.***

17:00 – 17:15 **Adherence of streptococcus mutans to porcelain treated with polishing sequences,** TB Özçelik, *Turkey* ***O-085***

17:15 – 17:30 **Nanocomposites for protection against harmful dental X-rays,** S Ayyıldız, *Turkey* ***O-086***

17:30 – 17:45 **Mechanical reinforcement of conventional acrylic resin by copolymerization,** Y Hayran, *Turkey* ***O-087***

PARALLEL SESSIONS – HALL B

Thursday, September 25, 2014	HALL B

Parallel Session - III
Chaired by: Dr. D Şen & Dr. R Altman

14:00 – 14:15 **Thermal and mechanical properties of metal powder filled acrylic resin,** G Işık Özkol, *Turkey* ***O-027***

14:15 – 14:30 **Effect of accelerated aging on the hardness and surface roughness of different dental laminate veneer materials,** S Kanar, *Turkey* ***O-028***

14:30 – 14:45 **New alternatives for intraoral ceramic veneer repair,** AK Çulhaoğlu, *Turkey* ***O-029***

14:45 – 15:00 **Hardness and color stability of maxillofacial elastomer after microwave disinfection of as function of irradiation level and exposure regimen,** P İnan, *Turkey* ***O-030***

15:00 – 15:15 **Effect of surface treatments on flexural strength of bilayered ceramics,** M Bankoğlu Güngör, *Turkey* ***O-031***

15:15 – 15:30 **Gingival phenotype effects the radiopacity of dental luting cements used for implant prostheses,** E Yüzbaşıoğlu, *Turkey* ***O-032***

15:30 – 15:45 **Effects of surface treatments on resin cementation of zirconia,** M Çakırbay, *Turkey* ***O-033***

15:45 – 16:15 Coffee Break & Exhibition

Parallel Session – VIII
Chaired by: Dr. N Yanıkoğlu & Dr. Y Burgaz

16:15 – 16:30 **A combined surgical approach for atrophic ridge augmentation, case report,** N Mitwally, *United Arab Emirates* ***O-034***

16:30 – 16:45 **Intercanthal distance for selection of maxillary anterior teeth size,** N Elsheikh, *Sudan* ***O-035***

16:45 – 17:00 **Perceived need for replacing teeth at the time of extraction,** PD Palipana, *Sri Lanka* ***O-036***

17:00 – 17:15 **Assessment of tooth preparation for full veneer cast restoration,** NAR El Mubarak, *Sudan* ***O-037***

17:15 – 17:30 **Evaluation of the fit of CNC-milling, laser sintering, casting metal-ceramic crowns,** E Tamac, *Turkey* ***O-038***

17:30 – 17:45 **Three dimensional finite elements analysis of stress distribution of two retainer and single retainer all ceramic resin-bonded fixed partial dentures,** B Kıran, *Turkey* ***O-039***

Friday, September 26, 2014 HALL B

Parallel Session – XIII
Chaired by: Dr. Ö İnan & Dr. P Kursoğlu

14:30 – 14:45 **Color matching ability of a resin nano-ceramic material as a function of material thickness and implant abutment materials,** R Turunç, *Turkey* ***O-088***

14:45 – 15:00 **Accuracy of impression techniques and materials in angulated implants,** S Kurtulmuş Yılmaz, *Turkey* ***O-089***

15:00 – 15:15 **Effects of different surface treatments on bond strength of feldspathic porcelain to zirconia,** P Çevik, *Turkey* ***O-090***

15:15 – 15:30 **The effect of luting cements shade on the color of various ceramic materials,** DÖ Dede, *Turkey* ***O-091***

15:30 – 15:45 **Evaluation of surface changes of a lithium disilicate ceramic,** HB Kara, *Turkey* ***O-092***

15:45 – 16:15 Coffee Break & Exhibition

Parallel Session – XVIII
Chaired by: Dr. Ö Kümbüloğlu & Dr. E Piehslinger

16:15 – 16:30 **Radiopacity of implant luting cements: A comparative study,** S Ünal, *Turkey* ***O-093***

16:30 – 16:45 **Novel approaches in treatment of edentulous patients with immediate loaded implants,** YU Aslan, *Turkey* ***O-094***

16:45 – 17:00 **An alternate impression technique for implant retained overdentures,** E Tokar, *Turkey* ***O-095***

17:00 – 17:15 **Prosthodontic treatment of an ectodermal dysplasia: A case report,** F Dumrul, *Turkey* ***O-096***

17:15 – 17:30 **Multidisciplinary treatment of oromandibular dystonia: A clinical report,** Z Yılmazcan, *Turkey* ***O-097***

17:30 – 17:45 **Immediately-loaded single-tooth implant restored with custom-made abutment,** G Meriç, *Turkish Republic of Northern Cyprus* ***O-098***

PARALLEL SESSIONS – HALL C

Thursday, September 25, 2014	HALL C

Parallel Session – IV
Chaired by: Dr. O Şakar & Dr. P Kamposiora

14:00 – 14:15 **Microtensile bond strength of different veneering techniques,** T Yılmaz, *Turkey* ***O-040***

14:15 – 14:30 **Bond strength between aged composites and zirconia ceramics,** AR Tunçdemir, *Turkey* ***O-041***

14:30 – 14:45 **Does enamel and dentin age affect glass-ceramics bonding?** AG Türk, *Turkey* ***O-042***

14:45 – 15:00 **Effective method for zirconia-resin cement bond strength in chairside,** E Yeğin, *Turkey* ***O-043***

15:00 – 15:15 **Clinical evaluation of inlay and onlay restorations luted with pre-heated resin cements,** B Evren, *Turkey* ***O-044***

15:15 – 15:30 **Scanning electron microscopic evaluation of onlay restorations cemented with pre-heated resin cements,** Ş Aygün Emiroğlu, *Turkey* ***O-045***

15:30 – 15:45 **Retrospective study of all-ceramic onlay restorations,** FK Yıldız, *Turkey* ***O-046***

15:45 – 16:15 Coffee Break & Exhibition

Parallel Session – IX
Chaired by: Dr. S Ayyıldız & Dr. O Ozan

16:15 – 16:30 **Case report: A case of severe tooth wear reconstruction,** S Buduru, *Romania* ***O-047***

16:30 – 16:45 **A temporary solution for fractured abutment screws by magnetic attachment at one session: Case report,** I Leblebicioğlu Kurtuluş, *Turkey* ***O-048***

16:45 – 17:00 **Evaluation of mandibular incisive canal for implant operation by CBCT,** N Palta, *Turkey* ***O-049***

17:00 – 17:15 **Assessment of lingual foramen characteristics regarding dental implant using CBCT,** FZ Dolgun, *Turkey* ***O-050***

17:15 – 17:30 **Creating a laboratory follow-up system by using RFID card technology,** H Akbaba, *Turkey* ***O-051***

17:30 – 17:45 **Evaluation of the marginal fit of fixed partial denture frameworks,** R Üzgür, *Turkey,* ***O-052***

Friday, September 26, 2014 HALL C

Parallel Session – XIV
Chaired by: Dr. A Üşümez & Dr. AR Tunçdemir

14:30 – 14:45 **Effect of different lasers on the bond strength of zirconia,** Ö Kara, *Turkey* ***O-099***

14:45 – 15:00 **Durability of resin bonding to zirconia ceramic using new laser type,** MG Subaşı, *Turkey,* ***O-100***

15:00 – 15:15 **Effects of femtosecond-laser and different surface treatment on zirconia-porcelain bonding,** T Yavuz, *Turkey* ***O-101***

15:15 – 15:30 **Femtosecond laser's effect on bond strength of porcelain to titanium,** YZ Akpınar, *Turkey* ***O-102***

15:30 – 15:45 **Effect of Er: YAG laser on bond strength of flowable resin,** I Keçik Büyükhatipoğlu, Turkey **O-103**

15:45 – 16:15 Coffee Break & Exhibition

Parallel Session – XIX
Chaired by: Dr. SH Altıntaş & Dr. N Çapa

16:15 – 16:30 **Laser usage in implant surface preparation,** H Çelebi, *Turkey* ***O-104***

16:30 – 16:45 **Avant-garde applications in dental medicine through 3D and laser simulations,** D Forna, *Romania* ***O-105***

16:45 – 17:00 **Current demands on ergonomics in contemporary dental medicine,** CM Iordache, *Romania* ***O-106***

17:00 – 17:15 **Efficacy of novel computerised aid in designing removable partial denture,** R Chidambaram Sivamani, *Oman* ***O-107***

17:15 – 17:30 **5 Year outcomes of ball and locator attachments for implant-supported overdentures,** Z Şanıvar, *Turkey* ***O-108***

17:30 – 17:45 **10 years clinical and radiographic evaluation of implants,** B Vanlıoğlu, *Turkey* ***O-109***

PARALLEL SESSIONS – HALL D

Thursday, September 25, 2014	HALL D

Parallel Session – V
Chaired by: Dr. E Ersoy & Dr. J Wilson

14:00 – 14:15 **Precise time saving implant impression technique,** K Al Himdani, *United Arab Emirates* ***O-053***

14:15 – 14:30 **Bond strength and microleakage of glass-fiber posts cemented with different adhesive systems on laser etched root canal walls,** Ö Parlar Öz, *Turkey* ***O-054***

14:30 – 14:45 **Influence of desensitizing procedures on adhesion of resin to dentin** A Atay, *Turkey* ***O-055***

14:45 – 15:00 **Effect of surface coating with different techniques on titanium-porcelain bonding,** Ç Ural, *Turkey* ***O-056***

15:00 – 15:15 **Effect of cantilever length to stress distribution in implant-supported prosthesis,** H Akça, *Turkey* ***O-057***

15:15 – 15:30 **Comparison of stress transmission on implant supported overdentures and removable partial dentures of edentulous mandible,** G Sayın, *Turkey* ***O-058***

15:30 – 15:45 **Stress evaluation of four implant supported overdentures,** I Turp, *Turkey* ***O-059***

15:45 – 16:15 Coffee Break & Exhibition

Parallel Session – X
Chaired by: Dr. B Bağış & Dr. B Vanlıoğlu

16:15 – 16:30 **Metal-ceramic bonding strength of Co-Cr fabricated with different methods,** P Gültekin, *Turkey* ***O-060***

16:30 – 16:45 **Influence of novel zirconia primer on ceramic-resin cement microtensile bond strength,** V Turp, *Turkey* ***O-061***

16:45 – 17:00 **Resin cementation of zirconia with different bonding agents** C Akay, *Turkey* ***O-062***

17:00 – 17:15 **Evaluation of vinyl polysiloxane impression materials using the one-step technique,** A Köroğlu, *Turkey* ***O-063***

17:15 – 17:30 **Evaluation of different surface treatments between resin cement and titanium** E Şeker, *Turkey* ***O-064***

17:30 – 17:45 **Evaluation of aging and surface treatments on bonding-strength to Y-TZP,** AT Öğreten, *Turkey* ***O-065***

Friday, September 26, 2014 HALL D

Parallel Session – XV
Chaired by: Dr. F Bayındır & Dr. NC Forna

14:30 – 14:45 **Evaluation of the surface roughness of different cleaning agents on removable partial dentures,** B Bal Küçük, *Turkey* ***O-110***

14:45 – 15:00 **Denture cleansers' effect on surface characteristic of denture lining materials,** ŞT Deniz, *Turkey* ***O-111***

15:00 – 15:15 **Effect of a disinfectant on the properties of denture material,** A Kurt, *Turkey* ***O-112***

15:15 – 15:30 **Infected facial tissue fillers: Emerging problem in Kuwait case series,** TS Ali, *Kuwait* ***O-113***

15:30 – 15:45 **Cleaning of implant screw holes with a modified oral irrigator,** M Zortuk, *Turkey* ***O-114***

15:45 – 16:15 Coffee Break & Exhibition

Parallel Session – XX
Chaired by: Dr. G Ceylan & Dr. A Knaus

16:15 – 16:30 **Evaluation of the dimensional accuracy of different implant impression techniques,** I Özcan, *Turkey* ***O-115***

16:30 – 16:45 **Altering occlusal vertical dimensions in different cases,** E Özdere, *Turkey* ***O-116***

16:45 – 17:00 **Patient satisfaction with implant supported removable prostheses,** S Keban, *Turkey* ***O-117***

17:00 – 17:15 **Laser gingivectomy in drug induced gingival overgrowth among partial edentulous patients,** EM Awooda, *Sudan* ***O-118***

17:15 – 17:30 **Dental implant planning in the edentulous mandible – OPG or CBCT?** B Springe, *Latvia* ***O-119***

17:30 – 17:45 **Prosthodontic treatments as alternative for establishing anterior esthetics,** SM Sazvar, *Iran* ***O-120***

KEYNOTE LECTURES

(Abstracts)

K 01
Oxford Lecture
Dr. Werner H **MÖRMANN**, *Switzerland*

A perspective on the development of CAD/CAM restorations
The pioneering development **of chairside CAD/CAM ceramic inlays** (CEREC = CERamic REConstruction) was based on the idea of replacing metal such as amalgam and gold by tooth-colored materials. Starting experiments in 1980, feldspathic ceramic proved to be the first choice as the alternative material for **adhesive inlays**. To make ceramics readily usable, new ways of high-tech processing had to be found. The idea formed of a fast computer-aided chairside method to generate ceramic inlays while the patient is seated allowing the dentist to complete treatment in one appointment. A 3D-scanning opto-electronical mouthcamera and computer-aided design (CAD) system was developed between 1980 and 1985 comprising computer-aided machining (CAM) of individually fitting inlays (CEREC 1). This system was clinically used with good success until 1994.
Partial and full crown chairside CAD/CAM including **veneers** became practical by expanded systems in 1994 and 2000 (CEREC 2 & 3, Siemens, Sirona) with clinical success and special lab units (inLab, inEOS) made the system accessible for dental technicians. In 2003 the advent of the 3D software replaced the previous 2D design marking a breakthrough in the ease of use. This was topped in 2006 by the data based **biogeneric occlusal morphology** system (Mehl), which automatically generates individual natural occlusal morphology. Expanded milling capacity (MCXL 2007), high precision scanning (Bluecam 2009) full-arch **color optical 3D-scanning** (Omnicam 2012) and and expanded software (COS 4.x 2011/13) including virtual **articulation** and **smile design** allow multi-unit anterior and posterior design including three- and 4-unit **fixed partial dentures** (Multilayer- / CAD on bridges). The matching of optically scanned surface data (e.g. Omnicam) with digital volume tomography (DVT) data allows simultaneous prosthetic and surgical **planning of implants.** A variety of time-tested and of newly developed **aesthetic CAD/CAM materials** enriches the restorative options. The pace of the further development of chairside and labside CAD/CAM methods is high and usage in private practices and at dental schools is rapidly expanding. The future of prosthodontics is digital.

WM 30. January 2013

K 02
Dr. Hakan **ÖGE**, *Turkey*

Around the world on the steps of Magellan
Dentist Hakan Öge sailed around the planet for 3 years on a small sailboat. He did not choose the usual road through the Panama canal, instead followed the wind and the great discoverers like Magellan. Today he will tell his 3 year story in about 45 minutes.

K 03
Dr. Ingrid **GRUNERT**, *Austria*

New developments in the treatment of the edentulous patient
Since many years treatment with conventional dentures seems not to be any more in the main focus of prosthodontics. But due to different reasons it is not possible to treat all edentulous patients with implant supported restorations. So full dentures are still reality in an aging population and it is expected that the number of edentulous people will increase in future.
In the lecture the difficulties in the treatment of the old edentulous patient will be discussed and new concepts and developments like new materials and occlusal design of denture teeth will be presented.

K 04
Dr. Ralf Joachim **KOHAL**, *Germany*

Zirconia ceramic implants – What is evident?
Metal-free reconstructions are widely used in restorative dentistry. Besides silicate-based ceramics also oxide ceramics are applied for dental reconstructions. Zirconia serves hereby as framework material for crowns and bridges but also as a material for the fabrication of oral implants. These zirconia implants are already distributed by many manufacturers. Preclinical and clinical investigations evaluated and evaluate whether this implant material is biologically and clinically successful. Cellular and animal tests could show that (yttria-stabilized) zirconia is as biocompatible as titanium. Recent animal investigations presented similar results regarding osseointegration for zirconia or titanium implants. Investigations in the chewing simulator showed that one-piece zirconia implants withstand loads for a long time period without negative consequences. However, there are no scientific data regarding the in-vitro behavior of commercially available two-piece zirconia implants.
Meanwhile, also short-term clinical investigations are present in the literature for zirconia implants.
The aim of the lecture is to present preclinical and clinical data for zirconia oral implants. Where are we in comparison to titanium implants? For which indications can they be recommended? And for what price?
Zirconia ceramic implants is surely an exciting topic for the future.

K 05
Dr. Chikahiro **OHKUBO**, *Japan*

Functional bite impression (FBI) technique for placement of a prosthetic appliance without corrections
A new prosthetic appliance needs adjustments to correct many physical and technical errors occurred during their constructions. For minimum or no corrections, Functional Bite Impression (FBI) technique has been used in our prosthodontics treatment.
The FBI technique is applied as following procedures: 1) The FBI individual tray is prepared with minimum size placing a functional generated path (FGP) table, 2) FGP is recorded using an autopolimerized acrylic resin for the lateral and protrusive movement of the

mandible. 3) A definitive impression is made with silicone impression material under maximum occlusal force. 4) The anatomical antagonist teeth forms are recorded using silicone maxillomandibular registration material on the occlusal surface. 5) Both maxillary and mandibular casts are transferred to a plane line articulator with a micrometer. 6) Using the FGP record, the occlusal surface on the antagonist cast is modified to make a functional surface. 7) Prosthetic appliance is fabricated so that the occlusal form matched to the functional antagonistic occlusal surface.
Accuracy of the impression and maxillomandibular registration is necessary for minimum or no corrections at the time of initial placement and thereafter. Using the FBI technique, a precise prosthesis can be produced by completing simultaneously the maxillomandibular registration, impression and FGP.

K 06
Dr. Guillermo J Pradies **RAMIRO**, *Spain*

Conventional vs. digital implant impressions state of the art
Obtaining “passive fit” between implants and prosthetic frameworks continues to be a challenge, especially in large screw curved frameworks connected to multiple implants.
Different studies have shown that passive fit could be important in order to achieve long-term success of osseointegration and, in any case, to prevent mechanical complications, like loss of retention, fracture of porcelain, screw loosening, framework fracture, etc.
There are two main factors related to obtaining correct passive fit: impression-making and framework elaboration.
Milling machines that use C.A.M technology are solving part of the problem, but obtaining good multiple-implant impressions is, on more that one occasion, difficult for the dentist, and even uncomfortable for the patient.
The transfer, pick up and snap on techniques are the most frequent conventional methods used to make accurate conventional implant impressions. Nevertheless, during the last five years, multiple intraoral scanners have been released to the market and they seem to be a serious competitor, destined to substitute conventional techniques.
During this presentation we will review the state of the art of making accurate implant impressions from single- to multiple-implants, both with classical and digital techniques, including intraoral scanners and photogrammetry systems.

K 07
Dr. Gerlig **WIDMANN**, *Austria*

MSCT and CBCT imaging in the field of computerized implantology
Multi slice computed tomography (MSCT) and cone beam computed tomography (CBCT) are increasingly used for two and three-dimensional evaluation of alveolar bone morphology; computerized image and prosthetic driven implant planning, planning of additional surgical augmentations, and computer-guided implant surgery. The possibilities and limitations of imaging technologies have to be well understood, as image modality, scanner type,

protocols, and post-processing may have a significant influence on image quality, geometric accuracy and radiation dose.

K 08

Dr. Warner **KALK**, *The Netherlands*

3D-planning and treatment options with oral implants in compromised (PRE) edentulous patients

Until now many articles are published about the prosthodontic principles for constructing removable dentures. Most of these principles are not 'evidence based' but more or less 'eminence based'**.**

A large number of 'classic' articles, although empiric in nature, have served as the basis of successful prosthodontic practices for many years (Beck et al. 1993; Lechner et al. 1995). As a result we must often rely on the treatment regimes recommended over many years (Ivanhoe et al. 2002).

These prosthodontic treatment principles are nowadays also succesfully applied for implant-supported removable prostheses. A wide range of implant treatment options are well-accepted with high survival and success rates. Nevertheless we should realise that most complete denture wearers are satisfied with their dentures and are not asking for implant treatment (Osterberg, Carlsson, 2007).

Therefore we should raise the question which edentulous patients can benefit most from a succesfull implant treatment and which treatment options are appropiate.

During the lecture factors to consider in treatment planning will be elucidated.

Moreover the benefits of 3D-planning especially in the edentulous maxilla with implant-supported protheses will be discussed.

K 09

Dr. Nadim **BABA**, *USA*

The application of CAD/CAM technology to removable prosthodontics

The use of computer-aided design and computer-aided manufacturing (CAD/CAM) has become more widely used with single crowns, fixed partial dentures, and implant prostheses. Recently, it has become commercially available for complete and partial dentures through several recently developed systems. These systems allow users to record all the required clinical data at one appointment so removable dentures can be fabricated using CAD/CAM technology for placement at a second appointment. This presentation will cover key aspects related to optimally accurate records that can then be used by the CAD/CAM companies to produce the prostheses. Items to be discussed include edentulous anatomy, impression procedures, occlusal vertical dimension recording, interocclusal records, and the fabrication process.

K 10

Dr. Betül **TUNCELLİ**, *Turkey*

Current status of dental zirconia

The polycrystalline zirconium dioxide (zirconia) has been one of the most important ceramic materials due to its excellent mechanical properties and improved natural appearance compared to metal ceramics.

Zirconia is described chemically oxide and technologically a ceramic material. It is known that zirconia is not soluble in water, not cytotoxic and bacterial adhesion is lower than titanium, it is radiopaque and has a low corrosion potential.

To date, there are three types of zirconia-containing ceramics which are used in dentistry.

- Glass-infiltrated zirconia-toughened alumina ceramics,
- Magnesium doped partially stabilized zirconia and
- 3 mol% yttria containing tetragonal zirconia polycrystalline (Y-TZP),

with the latter being the most utilised form in dentistry because of its higher flexural strength reported to range from 900 to 1200 MPa.

Especially with the development of computer aided design (CAD) and computer aided manufacturing (CAM) systems, high strength zirconia frameworks can be viable for the fabrication of full and partial coverage crowns, fixed partial dentures, veneers, posts and cores, primary double crowns, implant abutments and implants. In addition different zirconia based dental auxillary components such as cutting burs, surgical drills, extracoronal attachments and orthodontic brackets can also be technologically feasible.

Besides the ultimate characteristics of zirconia and technological improvements, the clinical success of zirconia based restorations mainly focusing on the fracture of frameworks and chipping of the veneering porcelain. This presentation will summarize the studies conducted to determine the extent of complications and the survival rate of zirconia based restorations to define the current status of dental zirconia.

K 11

Dr. Koray **ORAL**, *Turkey*

Bruxsizm and phantom bite syndrome

Clinical dentists may encounter patients who ask for occlusal adjustments to treat symptoms that they believe are caused by previous dental treatment or bruxsizm. These patients can be grouped into two categories: patients whose occlusal concerns are consistent with clinically evident discrepancies and patients whose reported occlusal problems have no compelling anatomical or physiological explanation. Patients in the latter category typically unsuccessfully undergo multiple attempts to correct the reported malocclusions. The terms “phantom bite syndrome,” “occlusal hyperawareness” and “occlusal dysesthesia” have been used to describe these complex cases.

When minor or clinically nonverifiable occlusal discrepancies are the patient’s primary concern clinicians should be aware of the possible overlay of the potential psychological conditions. Bruxomania and their prosthodontic treatment planing and phantom bite syndrome will be discussed.

K 12
Dr. Scott D **GANZ**, *USA*

State-of-the-art concepts to assess implant receptor sites for delayed and immediate load protocols using the triangle of bone® concept

Replacing missing teeth with an implant supported restoration represents both a surgical and restorative challenge. Often there can be lack of space between the roots for standard diameter implants or issues with root convergence, bony defects/concavities, soft tissue concerns, emergence profile, and sufficient bone volume and/or density to stabilize an implant. The use of two dimensional periapical or panoramic imaging fails to provide clinicians with an adequate appraisal of the existing bone anatomy. Cone Beam CT (CBCT) allows for an unprecedented visualization of the bone, adjacent roots, and nearby vital structures which empowers the clinician with new state-of-the-art tools to diagnose and treatment plan. Proper pre-surgical prosthetic planning involves understanding the patient's bony anatomy, adjacent teeth, vital structures, occlusion and desired esthetics. Utilizing advanced three-dimensional imaging modalities combined with interactive treatment planning software helps clinicians provide an accurate assessment of implant receptor sites. Once the implant position is determined, the link between the implant and the desired tooth position is the abutment. Ideally, it is important to determine the restorative plan based on implant position and prosthetic connection prior to implant placement – and these options should include both screw-retained and cement-retained treatment options.

The "Triangle of Bone®" concept provides clinicians with a decision tree protocol to evaluate implant receptor sites. Pre-surgical prosthetic planning should in many cases allow for the fabrication of diagnostic wax-ups, or virtual occlusion with new software tools and the application of desktop and intra-oral scanning devices. The merging of these technologies provides clinicians with unparalleled ability to properly inspect potential implant receptor sites, to insure proper restorative outcomes. The purpose of this presentation will be to aid clinicians in understanding how to achieve successful diagnosis and management of deficient sites, matching implant types with receptor sites within the framework of restoratively driven protocols and long term success.

WORKSHOP LECTURES

(Abstracts)

W 01
Dr. Ömer **ENGİN**, *Turkey*

Dental photography, dos and don'ts
As in the other medical areas today's dentistry uses technology in advanced levels for reaching highest treatment qualities. Communication is one of the most important elements, where high quality photograph is an inseparable part of it.
Making photos is a very easy task today. Camera producing companies claim in their advertisements: "You just push the button, we deal with the rest." Retouching the mistakes on photos is simple with the magical touch of Photoshop. We have tens of photos for our important cases and can show a patient immediately, what can be done.
But in practice several questions arise: "Can we really do it?" Does an important paper come back with editor's comment: "These photos are not suitable for printing." Are picture's color tones right? Can these case photos help me, if I face with a legal problem? Why aren't my photos as sharp and as beautiful?
Do you find yourself asking these questions? All of the answers lie within a photo that is taken according to some rules.
What are the rules for a particularly high quality photo? What are the dos and don'ts?

W 02
Dr. Ulrich **WEGMANN**, *Germany*

Perfect function of fixed prosthetics by combination of electronic movement recording, virtual articulator and CAD/CAM
Perfect functional design of dental prosthetics can be achieved by the combination of electronic movement recording and transferring these data into the virtual articulator of a CAD/CAM system. This helps us to integrate the individual function of our patient into the design of the artificial occlusal surface. By programming the virtual articulator not only with values for the inclination of condylar guidance and Bennett angle but with the actual recorded movement data itself this enables us to simulate the patients movements in a more precise way than any mechanical articulator can do.

W 03
Dr. Roberto **MARRA**, *Italy* & Selim **PAMUK**, *Turkey*

Computer guided implantology workshop
The outcome of immediate/early loading when implants are connected has already shown promising results in several studies, and the advantages of such protocols are obvious, in that aesthetic and function can be achieved shortly after surgery.
The advantage becomes more evident if, in the totally edentulous cases, the patient is conventionally forced to avoid the wearing of the denture for the initial phase of healing and then will spend some additional months with the removable prosthesis. Together with an anticipated loading of the implants, there is another trend in actual implantology that reduces the discomforts immediately after placements, and is the flapless insertion of the fixtures.

Usually the flap is elevated to visualize important and dangerous structures such as mental foramina, the alveolar nerve, the concavity or the alveolar bone, in order to avoid fenestration or invasion of such anatomical structures where a less amount of bone is available. The advantage of using a flapless procedure is undeniable, in reducing the edema, the discomfort for the patient, pain, redness, swelling, sometimes it avoid even any suturing.
The newly introduced possibility of a computer assisted treatment planning and template guided implant insertion is one of the most promising pathway in the future of implantology. The modern technology allows the operator to program the implant insertion in the residual bone, choosing the best sites, according to quality and quantity of bone, safety of the site, to distribution of the implants in the entire arch, so that a prefabricated temporary prosthesis can be inserted at the time of implant insertion.
The computer aided implantology system is a procedure that includes the software capable of converting a computer tomography into a 3D image that can be used to plan the insertion of the implants (diameter, length , axe, depth in the alveolar bone) and to obtain from the virtual planning a precise, individually customized surgical template so that the implants can be placed in the pre-planned position. The employment of such a software and treatment modality, resume in itself all the request of the actual patient: immediate function, immediate aesthetic, shorter treatment time, less pain and swelling, avoidance of more complicated bone augmentation procedures. Accuracy of CAD implantology has been already studied in several reports, both regardless to precision of insertion and prosthetic realization and to safety for anatomical structures. In this lecture the aim is to show how predictable and accurate is the computer aided implantology from a clinical point of view, with the presentation of several cases.

W 04

Dr. Burçin **KARATAŞLI**, *Turkey*

Immediate solutions for prosthetic rehabilitation

Computer-aided design (CAD) and computer-aided manufacturing (CAM) have become an increasingly popular part of dentistry over the past years.
The technology, which is used in both the dental laboratory and the dental office, can be applied to inlays, onlays, veneers, crowns, fixed partial dentures, implant abutments, and even full-mouth reconstruction. The use of CAD/CAM technology for dental restorations has numerous advantages including speed, ease of use, and quality. A chairside CAD/CAM system enables the dentist to create a finished restoration in as little as an hour in some cases. This hands-on course covers the basic operation of the software, preparation design, powdering and taking optical impressions. Part of this CEREC clinical training includes a demo on a demo model in order to allow the participant to learn his secrets for success.

ORAL PRESENTATIONS

(Abstracts)

O-001

Analysis of biomechanical factors affecting complete mandible denture stability

M Hiroaki, M Yoshinobu
Osaka University Graduate School of Dentistry Department of Prosthodontics, Gerodontolgy and Oral Rehabilitation, Japan

Purpose: Normal lines on the occlusal surfaces can estimate the load direction. This study was designed to test the hypothesis that the angle between occlusal surface and residual ridge normal lines was a biomechanical factor that affects complete mandibular denture stability during mastication. The purpose was to develop a quantitative method for computing the angle.
Materials and Methods: Computed tomographic images of a plaster model of complete mandibular denture with proper fit, outline, and occlusion were obtained using a 3D micro CT machine, and then reconstructed to create a three-dimensional representation.
We analyzed posterior artificial teeth because occlusal forces exert a large amount of mechanical stress on these areas during mastication.
The denture coordinate data were used to develop a quantitative method for computing the angle using MATLAB. Each series of measurements was computed five times.
The intra-class correlation coefficient (ICC) determined the inter-rater reliability in this analysis ($p<.01$).
Results: The average angle showed 164.8±2.5° for the first premolar, 167.3±3.1° for the second premolar, 158.1±1.7° for the first molar tooth, 146.3±0.9° for the second molar, and 162.9±1.9° for all posterior teeth. The ICC value for this method was 0.988.
Conclusion: The present results demonstrated the value of this method for calculating the angle between occlusal surface and residual ridge normal lines in complete mandibular dentures. Statistical analysis showed that this method had excellent intra-rater reliability, suggesting its utility for subsequent analysis.

O-002

Telescopic dentures: Survival rates of dentures and support teeth

E Van Den Wijngaarden, AWJ Van Pelt
Department of Fixed and Removable Prothodontics, University Medical Centre Groningen, University of Groningen, Groningen, The Netherlands

Purpose: The aim of this research was to investigate the longterm survival of telescopic dentures which were made before 2003.
Methodology: 140 patients where investigated in a general dental center in Marpingen, Germany. A total of 240 telescopic dentures were selected and a difference was made between the upper and lower jaw.

Results: The mean survival of telescopic dentures in the upper jaw was 22.0 (SD=2.6) years and the lower jaw the mean survival was 20.8 (SD=1.8) years. With a log-rank (Mantel-Cox) test (α=0.99), no significant difference between the upper and lower jaw was found.
Furthermore is analyzed whether there are differences between time till extraction of teeth and the main reasons for extraction. There were four reasons of extraction: 1. Fracture. 2. Dental caries. 3. Periodontal. 4. Unknown.
A Total of 886 teeth were investigated of which 127 (14.3%) were lost prior to losing the telescopic denture. The average age of extraction was 11.7 years. A significant difference of time till extraction was found between the group "fracture" and the other three groups. Within the other three groups no significant difference was found.
Conclusion: Based on this research, one could conclude that telescopic dentures are a durable and sustainable solution. Losing remaining teeth in a telescopic denture is relatively uncommon and has a limited influence on the survival of telescopic dentures.

O-003

Quality of life improvement with mandibulary implant overdentures on locators

C Matthys, S Vervaeke, H De Bruyn
Department of Periodontogy & Removable Prosthodontics, Dental School University of Ghent, Belgium

Purpose: The aim of this retrospective study was to assess the clinical outcome of overdentures on two Osseospeed Dental Implants (Dentsply Implants Sweden) with locator abutments in terms of implant survival, bone loss, patient satisfaction and clinical chairside cost.
Materials and method: Twenty patients received new dentures serving as reference for insertion of implants in the mandible. After one-stage surgery, the prosthesis was adjusted on the locator abutments with resilient denture liner (GC America). The retention was activated after three months. At intake, after the new denture, one month post-surgery and finally one month after loading the Oral Health Related Quality of Life (OHRQoL) was assessed using the OHIP 14 questionnaire. Hereby answers were ranked using a Likert scale from 4 (very negative) to 0 (very positive) and the OHIP-total score was calculated (maximum negative appreciation=56). Additional parameters like the cost and practitioner's time were recorded.
Results: OHRQoL improved by new dentures with decreasing OHIP-total from 15.7 to 9.7. This remained statistically unchanged during provisional retention (OHIP= 10.6). The locator activation further improved the OHRQoL to OHIP-total of 2.9 after 4 months. The laboratory cost was constant but the practitioner's time to adapt the prosthesis was strongly patient dependent ranging from 145 to 280 minutes.
Conclusion: Implant supported overdentures on locator abutments in the mandible improve OHRQoL but chair-side time is strongly patient dependent.

O-004

Effect of radiation positioning stent in radiation dosage reduction and maintaining mouth opening

S Nayar[1], J Marsden[2], N Clayton[2], R Brett[3]
[1] University of Alberta, Institute for Reconstructive Sciences in Medicine, Canada
[2] Hull & East Yorkshire Hospitals NHS Trust, Radiation Physics, The United Kingdom
[3] Pudsey Dental Practice, The United Kingdom

Purpose: To assess the effect of radiation positioning stent (RPS) in reduction of radiation dosage to the opposing jaw and in maintenance of mouth opening after radiation therapy.
Materials and Methods: Fifty five patients (RPS – 24; non-RPS – 31) with Head and Neck cancer who had undergone radiotherapy were reviewed retrospectively. The jaw near the tumour was recorded as 'same jaw' and the other jaw recorded as "opposing jaw". Radiation dosages at similar points in the same/opposing jaws were measured in the two cohorts of patients using the radiotherapy planning system software. The mouth opening of these two cohorts of patients was also measured before and after radiotherapy to assess if the use of an RPS had an effect.
Results: It was found that there was a significant reduction in the radiation dosage in the opposing jaw in patient given the RPS, when compared to opposing jaw of patients without the RPS ($p<0.05$). There was no significant difference in the mouth opening in the RPS group pre and post radiation therapy; however, a significant difference was noted in the non-RPS group ($p < 0.05$).
Conclusion: Head and Neck cancer patients undergoing radiotherapy who used a radiation positioning stent had a significant reduction in radiation dosage to the opposing jaw and also showed no significant difference in mouth opening post radiation therapy. Radiation dosage reduction and adequate mouth opening significantly improves long-term dental maintenance and also oral and dental rehabilitation prognosis for these patients.

O-005

Pretreatment modalities in prosthodontic rehabilitation

E Piehslinger, M Schmid Schwap, M Bristela, A Skolka
Univ. Clinic of Dentistry Vienna, Prosthodontics, Austria

Pretreatment Modalities encompass Dentistry, Physical Medicine, Physiotherapy, ENT and Phoniatry, as well as Psychiatry. During the medical and dental anamnesis interdisciplinary problems are addressed. Clinical and instrumental analysis reveal musculär and articular problems, the analysis of mounted casts enables the dentist to evaluate occlusal problems. Articular pathologies can be diagnosed using MRI. Splint therapy is one of the most important pretreatment modalities. Splints can help to relax chewing muscles, the patient can achieve an equal support in the molar area, prematurities and pathologic guidances can be eliminated. With splints joint distraction and compression can be treated as well as clicking phenomena. Splints are fabricated in the articulator and have to be equilibrated on a regular basis. Before prosthodontic treatment can be started, the mandible has to be in a stable position and reference position has to be reproducible. Interdisciplinary treatment encompasses also postural problems and problems in other joints. Chewing muscles are

closely connected to head and neck muscles and problems in the vertebral spine. In these cases splint therapy has to be combined with physiotherapy. The physiotherapist helps the patient to correct body posture, to relax hyperactive muscles and to strengthen weak muscles. Articulation is another very important function of the masticatory organ. Problems of articulation are often connected with orthodontic problems. Interdisciplinary management of patients with articulation disorders encompasses logopedic and myofunctional therapy as well as orthodontic treatment. The masticatory organ is very important for somatisation processes. Causal therapy can only be accomplished by the psychiatrist. In a psychiatry-liaison-setting medication, pseuchotherapeutic intervention, Jacobson relaxation therapy and autogenous training are offered.

O-006

Syndromes with serious maxillofacial disorders and complete dental care

H Hubalkova, J Charvat, M Bartonova
Charles University in Prague, Institute of Clinical and Experimental Stomatology, Czech Republic

Purpose: Many syndromes (e.g. Hajdu-Cheney, Ehlers-Danlos, Axenfeld-Rieger) are joint together with different affection on dentition, interjaw relations, cleft disorders, early loss of teeth, hypoplastic jaws, alveolar bone loss with consequent influence on the whole masticatory functions. Dentists may become the first diagnosticians, who express primary suspicion on born abnormality based on disorders of masticatory system.
Materials and Methods: Presented case studies demonstrate prosthetic treatment of patients with different syndromes. Authors illustrate early loss of teeth and bone disorders, which effect the whole masticatory system. These cases must be individually evaluated and a large range of fixed, removable and implant-born dentures is applied.
Results: These case studies describe prosthetic treatment of impacts of congenital oral defects in patients with rarely affected intellect. Effective cooperation of the dentist and dental technician can resolve the chewing functions, aesthetics and phonation.
Conclusion: Skull deformities, facial skeleton anomalies, early loss of teeth and osteoporosis in patients with mentioned syndromes are hard handicap for the whole life. Optimal prosthetic solutions can contribute to higher quality of life of these patients. This study was supported by the Grant PRVOUK – P28/LF1/6.

O-007

Classical and modern approaches in the oral rehabilitation of edentation

V Roxana Ionela, F Ramona, B Dana, B Dan, A Magda, F Doriana
Gr.T.Popa University of Dental Medicine Prosthodontic, Romania

The application of the classical, respectively the modern approaches in the oral rehabilitation of edentation depend on the clinical case, as well as the application possibilities and the “acceptance” of these treatment variants.
Purpose: No matter of the applied final treatment, the clinical edentation cases, with or without complications, first require a provisional treatment that focused on the rehabilitation of all the elements of the stomatognathic system.
Materials and Methods: A number of 124 patients were treated with classical methods and 90 patients were treated with modern methods of oral rehabilitation.
Results: The final dentures that use cast clasps or attachments can be recommended depending on the existent condition of the prosthetic field, as well as the impairment or

depreciation degree of the components. The selected solution (classical or modern) can be modified by establishing a permanent periodical evaluation of the case that showed the condition of the elements of the system, offering safety for the preservation of the selected solution.
Conclusion: The comparative studies related to the components of the classical dentures, respectively the attachments, focus on their biological and biomechanical behavior in time with regard to the subadjacent tissues on which they are applied.

O-008

Full mouth restoration

P Vyslonzil, A Skolka, A Knaus, E Piehslinger
Univ. Clinic of Dentistry Vienna, Prosthodontics, Austria

To create a specific occlusal concept, such as the sequential guidance with canine dominance, especially in full mouth restorations, the wax-up has to be transferred into the restorative material. Only by the means of CAD/CAM technique it is possible to guarantee a 100% identic implementation from the wax-up into the definite restoration. The first computer aided milling machine was the Cerec system. It offers with the subroutine „Correlation“ an easy way to copy the waxed-up teeth and to transform them into full ceramic restorations.

O-009

The significance of condylography in the diagnostic Viennese concept

A Skolka, A Knaus, M Bristela, E Piehslinger
University Clinic of Dentistry Vienna, Prosthodontics, Austria

The condylography, its significance in diagnostics, its findings in TMD-cases and its use in full-mouth-restoration-cases will be discussed in this presentation.
The approach to a challenging prosthetic case provides a standardised sequence of diagnostic steps – this procedure is in accordance with the Viennese concept. One of these steps is the condylography. As supplementary examination to the clinical investigations and the imaging techniques the condylography can confirm or disprove in case of TMD a presumption diagnosis. Reciprocal clicking, locked joints, arthritic alterations and loose ligaments – all these symptoms correlate to characteristic condylographic tracings. But also in “full-mouth-restoration-cases” the condylography can be a useful tool in the preparation of an individual treatment plan. The Viennese concept even recommends this examination in case of entire rebuilding of occlusal surfaces, for example because of verticalisation. The determination of the patient-individual values for the articulator-settings as well as the implementation of occlusion concepts represent the advantages of the condylography. The procedural method of the condylography and the further processing of the findings in the elaboration of a diagnostic wax-up, documented by means of exemplary cases, are the topics of this lecture.

O-010

The treatment of complex cases using CAD/CAM technique

A Knaus, A Skolka, P Vyslonzil, E Piehslinger
Univ. Clinic of Dentistry Vienna, Prosthodontics, Austria

Extended diagnostics and pretreatment introduced in part I and II could avoid some unpredictable problems during therapy. A diagnostic wax-up is necessary to implement the occlusal concept depending of the individual parameters like intermaxillary relationship, vertical dimension and functional dividing plane. It is also helpful to answer the question concerning the compatibility of the patient´s expectation with the dentist´s requirements in the prosthetic rehabilitation. The discrepancy between these two opinions will be presented in a case report in which a compromised, alternative treatment plan was established. In this concrete complex patient case we used CAD/CAM technique. The accurate transfer of the occlusal design of the diagnostic wax-up, which is determined in the correct intercuspitation and vertical dimension, to fabricate the temporaries and also the final prosthetic restoration, is one of the essential advantages of the CAD/CAM technique.

O-011

Interdisciplinary full mouth rehabilitation supported by CAD/CAM technique - a case report

P Kotlarenko
Department of Prosthodontics, University Clinic of Dentistry, Medical University Vienna, Vienna, Austria

The present case report represents an interdisciplinary treatment concept for diagnostics, prosthetically-driven treatment planning and guided implant surgery.
The patient showed complex diagnostic findings such as periodontally compromised remaining teeth, increased overjet (due to skeletal discrepancy between upper and lower jaws), functional decompensation, aesthetic insufficiency, an insufficient alveolar ridge bone volume in the mandible and an allergy to some dental materials.
Prosthetically-driven treatment planning should ensure a predictable treatment outcome, and with the support of a temporary maintenance, the success of the future prosthetic reconstruction. The temporary maintenance as a pre-rehabilitation should enhance the clinical appearance and stabilize the patient functionally. Furthermore it may serve as a basis for virtually planned, stereolithographically produced surgical templates defining all implant positions according to anatomical and prosthetic needs. The precision of the implant bridge is achieved by a CAD/CAM produced milled titanium framework.
An interdisciplinary approach facilitates the realization and optimization of the patient's functional and aesthetic results. The treatment outcome remains unchanged 3 years after rehabilitation as demonstrated by stable clinical and radiologic conditions.

O-012

CAD/CAM technique: Determination of tooth color using sepctrophotometers

B Gsellmann
Univ. Clinic of Dentistry Vienna, Prosthodontics, Austria

Most patients set store on white teeth and the success of retorative treatment depends partly on the esthetic outcome. Determination of tooth color is influenced by multiple factors such as light, surroundings and also experience of the dentist. The devices to determine tooth color most commonly used are dental shade guides. But the recently developed oral spectrophotometers are gaining ground. The aim of our studies was to investigate the differences in the determination of tooth colors, when spectrophotometers are used by various investigators (dental students, experienced dentists and by patients), prior to full ceramic dental restorations. Secondly the color of the upper canine was investigated in aspect of age, sex, eating, smoking and drinking habits and gender correlated factors.

O-013

The periodontal pretreatment for a successful prosthetic rehabilitation

E Piehslinger, M Cubranic, O Jandrasits
Univ. Clinic of Dentistry Vienna, Prosthodontics, Austria

Periodontal disease is the main cause of tooth loss and loosing occlusion. Bacteria destroy the gum and consecutively the bone of the jaw. Full mouth rehabilitation always claims careful attention and meticulous treatment planning. The oral rehabilitation with fixed prosthetic crowns and bridge, plays an important role in restoring oral and systemic health, especially if the patient is young. In my case report I will demonstrate the long way from the first contact of the patient, above periodontal treatment, caries and endodontic treatment, orthodontic treatment, implant treatment, diagnostic electronic condylography and evaluation of teleradiograph, temporary prosthetic treatment and final prosthetic restoration.

O-014

Diagnostic procedure of temporomandibular disorders

R Pérez García, IL Darriba, L Lago González, T González Veiga, E Hernández Pérez, JL Dasilva Domínguez, V Alonso De La Peña, B Rilo Pousa, N Fernández Formoso, U Santana Mora, MJ Mora Bermúdez, U Santana Penín
Department of Stomatology, Faculty of Medicine and Odontology, University of Santiago de Compostela. Santiago de Compostela, Spain

Temporomandibular disorders (TMD) represent a set of clinical problems that include the masticatory muscles and/or temporomandibular joint. TMD are still debated. It is known that the occlusion affect on the growth and development of the craniofacial complex during growth period. The ATM is remodeled throughout life in relation to the functional demands. Record the value of this slope will allow us to improve the performance of our restorations being vital in the event that pretend to restore or change the inclination of the occlusal plane. The main purpose of this communication is described the procedure for diagnosis of TMD in daily clinical practice.
The technique described comprises a serie of steps that the clinic can do. In this case we will describe a protocol that consists in clinical history, intra and extra-oral examination, photographs, axiography, gum test (Christensen y Radue, 1985), study casts and facial bow, Helkimo index, RCD/TMD and SCL-90.
This series of procedures allow us determine the patient´s chewing side, assess the posibility of developing TMD and achieve an occlusal and functional equilibrium in the prosthetic rehabilitations.

According of this diagnostic approach we can establish causal or contributing factors in order to treat the patient to correct these factors.

O-015

Psychopathology of TMD patients with different pain location: Preliminary study

A Tournavitis[1], D Tortopidis[1], K Fountoulakis[2], G Menexes[1], P Koidis[1]
[1]Dept. of Fixed Prosthesis and Implant Prosthodontics, School of Dentistry, Aristotle University of Thessaloniki, Thessaloniki, Greece
[2]Dept. of Psychiatry, AHEPA University Hospital, Aristotle University of Thessaloniki, Thessaloniki, Greece

Purpose: The purpose of this study was to examine whether patients' psychological status influence the location of pain of TMD patients with myofascial or temporomandibular joint pain.
Materials and Methods: Twenty eight TMD patients (10 males and 18 females) participated in this study. Participants were divided into two groups according to the Research Diagnostic Criteria for TMD (Axis I): a group of 16 patients presenting myofascial pain (RDC/TMD Axis I group I with muscle disorders) and a group of 12 patients with temporomandibular joint pain (RDC/TMD Axis I group IIIa with arthralgia, IIIb with osteoarthritis). Patients' state and trait anxiety was assessed using State-Trait Anxiety Inventory (STAI-S), depression was measured with Center for Epidemiological Studies- Depression Scale (CES-D) and the psychosocial functioning was assessed using the Global Disability Scale (GLODIS).
The two groups of patients were compared with the Mann-Whitney test. In all statistical hypotheses testing procedures the observed significance level (p-value) was computed with the Monte-Carlo simulation method. All statistical analyses were performed with the SPSS v15.0 statistical software.
Results: No significant differences in all the psychometric scales were detected between the two diagnostic groups (STAI: p=0.093; CES-D: p=0.827; GLODIS: p=0.619) even if a trend for higher psychometric scores for the patients with myofascial pain was revealed.
Conclusion: The findings of this preliminary study suggest that in TMD patients the location of pain is independent of a psychopathology-pain link.

O-016

The effects of intraarticular polyacrylamide and hyaluronic acid injections on pain and masticatory functional status in dejenerative temporomandibular joint patients

Ö Ocak Çimendür[1], M Özdemir Karataş[2], EB Tuncer[3], A Üşümez[1]
[1]Department of Prosthodontics, Bezmialem Vakif University Faculty of Dentistry, Turkey
[2]Department of Prosthodontics, İstanbul University Faculty of Dentistry, Turkey
[3]Department of Prosthodontics, Aydın University Faculty of Dentistry, Turkey

Temporomandibular joint osteoarthritis is one of the most common forms of temporamandibular disorders. Osteoarthritis shows variety of clinical symptoms, such as pain, crepitation, irregular jaw movement and joint tenderness. Intraarticular injections are generally preferred in the treatment of tempromandibular joint osteoarthritis. The aim of our study was to investigate the effect of intraarticular injection materials. Forty-five patients diagnosed with tempromandibular joint osteoarthritis were randomly divided 3 groups. The first group were injected with hyaluronic acid, the second group were injected with

physiologic saline, the third group were injected with polyacrylamide. Depression and somatization scores, maximum mouth unassisted opening, VAS, palpation measures of muscles and tempromandibular joint were evaluated. Hyaluronic acid group and polyacrylamide group with many of the parameters were obtained similiar results. Increase in palpation scores and of patients were significiantly greater in Hyaluronic acid group than the other groups. The long term results of hyaluronic acid group were the most succesful data. Polyacrylamide injection was applied the first time in treatment tempromandibular osteoarthritis so more researchs are needed for long term effects.

O-017

The evaluation of low level laser therapy efficiency on tinnitus

N Demirkol[1], F Sarı[1], C Akçaboy[2], A Üşümez[3]
[1]Gaziantep University Faculty of Dentistry Prosthodontic Department, Turkey
[2]Gazi University Faculty of Dentistry Prosthodontic Department, Turkey
[3]Bezmialem Vakif University Faculty of Dentistry Prothodontic Department, Turkey

The aim of this study was to evaluate the treatment efficiency of tinnitus associated with Temporomandibular joint disorders (TMDs) using actual TMD treatment methods.
Materials and Methods: 90 patients who diagnosed with subjective idiopatic tinnitus in otolaryngology clinic and prosthodontic department were selected for research. There were 15 patients in each group. The groups respectively are that: Low-level laser therapy (LLLT) with Nd:YAG laser, LLLT with 810 nm diode laser, occlusal splint (OS) therapy, LLLT with Nd:YAG laser and OS combine treatment, LLLT with 810 nm diode laser and OS combine treatment and placebo treatment. LLLT settings were applied 0.25W output power and 8 J/cm2 energy density. The LLLT was applied precisely and continuously into the meatus acusticus externus. The patients were exposed to the laser application for a total of ten days per a day. The patients were instructed to wear the occlusal splints 12h/day for 3 weeks. In combine treatmet groups, LLLT was applied to patients first ten days of 3 weeks. LLLT and placebo treatments had the same procedure but laser device was no activated in placebo group. Visual analogue scala (VAS) was used in the study. The VAS values were between 0 and 10. VAS values were assessed just before, just after, and 1 month after the treatment. As a result of this research there was no statistically significant healing in placebo group ($p=0.066$) and a statistically significant healing was seen in all groups between before and after treatment tinnitus values ($p=0.001$, $p=0.005$, $p=0.001$, $p=0.001$, $p=0.004$).
Conclusion: Nd:YAG laser, 810 nm diode laser and OS appliances were effective therapies for tinnitus associated with TMDs.

O-018

Diagnostic procedure for total prosthetic rehabilitation

IL Darriba, R Pérez García, T González Veiga, E Hernández Pérez, L Lago González, JL Da Silva Domínguez, V Alonso De La Peña, B Rilo Pousa, N Fernández Formoso, U Santana Mora, MJ Mora Bermúdez, U Santana Penín
Department of Stomatology, Faculty of Medicine and Odontology, University of Santiago de Compostela. Santiago de Compostela, Spain

In cases where a complete rehabilitation is necessary it is essential a correct and meticulous diagnostic to achieve an adequate rehabilitation from the point of view of the function and

aesthetics. This allows us to customize the treatment to patients' clinical conditions. The diagnostic protocol includes a set of procedures: clinical history, intra and extra-oral exploration, photographs (occlusal, profile, front, resting and smiling), video of jaw dynamics, radiological explorations (panoramic radiography, CBCT), face-bow, to mounting the cast in the articulator, axiography and Gysi intraoral recording. These two last tests are graphical recordings of dynamical peripheral factors that allow to individualize the jaw motion of the articulated cast. This allows us to decide what is the best option of treatment for the patient according to their clinical features.
This communication shows iconography of these complex procedures.

O-019

Oral modifications in GERD patients from different European countries

A Picos[1], A Chisnoiu[1], A Berar[1], A Chira[5], E D'incau[2], SB De Varanne[3], S Vesa[4], A Picos[1]
[1]Department of Prosthodontics, Faculty of Dental Medicine University of Medicine and Pharmacy ClujNapoca Romania
[2]Department of Prosthodontics, Faculty of Dental Medicine University of Medicine and Pharmacy Bordeaux France
[3]Institute of Digestive Diseases Nantes France
[4]Department of Pharmacology Toxicology and Clinical Pharmacology Faculty of Medicine University of Medicine and Pharmacy Cluj- Napoca Romania
[5]2nd Medical Department Faculty of Medicine University of Medicine and Pharmacy Cluj-Napoca Romania

Introduction: Dental erosion frequency ranges from 5 to 53, 41% as reported in current literature.
Objective: To establish the prevalence of dental erosion and its relationship to GERD and alimentary habits in University Hospitals in European countries involved in an AUF Project.
Materials and Methods: An observational, comparative study was conducted on 152 patients (mean age 40 years) recruited from France (100) and Romania (52). 66 patients diagnosed with GERD and 86 patients free of GERD symptoms were included in the study. All patients filled out a questionnaire regarding symptoms, medications, environment and dietary habits. Dental erosion index and salivary parameters (pH and buffering capacity) were assessed and analyzed.
Results: Most of the patients (53.3 %) presented citric fruit consumption as extrinsic risk factor for dental erosion and fewer carbonated drinks (32.9%). 83 patients had a high risk for dental erosion (BEWE index > 5) and also a higher mean age (46 years, OR, 1.043; CI95% 1.021-1.066; p<0.001) than the low risk group. The probability for dental erosion development is higher in GERD patients than healthy subjects (OR 2.7; CI95% 1.38-5.29; p=0.005).
Conclusion: Dental erosion has a high frequency in patients with GERD and therefore should be considered as an extra esophageal manifestation of GERD. Extrinsic factors as citric fruits and carbonated drinks should also be taken into consideration.

O-020

Denture hygiene quality within primary and secondary care: A comparison

P Mylonas, DC Attrill, AD Walmsley

The School of Dentistry, College of Medical and Dental Sciences, University of Birmingham, St Chad's Queensway, Birmingham, B4 6NN, The United Kingdom

Purpose: To assess whether there is a difference in the quality of denture hygiene of patients seen in primary and secondary care settings.
The aims were to evaluate quality of clinical record keeping and denture hygiene for 2 cohorts of patients, and develop new guidelines for use within both primary and secondary care.
Materials and Methods: A retrospective analysis of denture hygiene instruction (DHI) record keeping and denture-hygiene was undertaken (n=90). Two cohorts were evaluated, one from general dental practice and one from a regional prosthetics department. The Denture Cleanliness Index (DCI) was developed and used to semi-quantitatively grade denture hygiene, grading 0-4: 0 (best score) indicating optimal denture-hygiene and 4 (worst score) indicating calculus presence. Analyses of both record keeping and patients' denture hygiene was repeated at 1-month recall.
Results: In primary care at baseline, 20% (n=6) of patients had evidence of DHI within their notes and 16% (n=5) of patients had DCI scores of <=2 improving to 90% (n=27) after 1-month. Whilst in secondary care 63% (n=38) of patient clinical records had evidence of DHI, 11.7% (n=7) had DCI scores <=2 compared with 93.8% (n=45) at 1-month review.
Conclusion: The results of from both audits suggest the development and use of the DCI scoring system is helpful in providing patient education, evaluating denture hygiene, improving denture hygiene and clinical record keeping.
New clinical guidelines have been developed and implemented.
Future research is required to evaluate denture-hygiene compliance in a medium to long term basis, within a larger cohort size.

O-021

Color stability of current esthetic CAD/CAM restorative materials

B Becerikli[1], E Çal[1], G Aksoy[1], G Eskitaşçıoğlu[2]
[1]Ege University, School of Dentistry, Department of Prosthodontics, Izmir, Turkey
[2]Yüzüncüyıl University, School of Dentistry, Department of Prosthodontics, Van, Turkey

Purpose: To assess the color stability of three aesthetic CAD/CAM restorative materials.
Materials and Methods: Ninety 15 mm x 1 mm disc shaped samples (ISO international standard #7491:2000) divided into three groups, were made using CAD/CAM materials as glass ceramics (Sirona Cerec Blocks, Bensheim, Germany- G1), monolithic zirconia (Sirona TZI Blocks, Bensheim, Germany- G2) and resin nano ceramics (Lava Ultimate, 3M ESPE, Seefeld, Germany- G3). The samples were immersed in staining solutions of coffee, coke and distilled water as the control group for 30 days and stored under controlled temperature of 37°C ± 1°C. The discoloration was measured using a spectrophotometer (CM-5, Konica Minolta Sensing Americas Inc.) after 1, 7, 15 and 30 days of storage. The data was statistically analyzed by two-way ANOVA ($p<0.005$) and post hoc Tukey tests.
Results: Mean values of ΔE for G1-coke: 9.925±3.314 ($p<0.001$), G1-coffee: 2.862±1.942 ($p>0.05$), G1-water: 1.666±0.776 ($p>0.05$), G2-coke: 4.261±1.942 ($p<0.001$), G2-coffee: 3.613±1.666 ($p>0.05$), G2-water: 1.693±0.564 P>0.05), G3-coke: 4.945±1.679 ($p<0.001$), G3-coffee: 6.655±1.631 ($p<0.001$), G3-water: 2.368±0.319 ($p>0.05$).
All the restorative CAD/CAM materials tested in this study, discolored over time when stored in different staining solutions. Glass-ceramics showed significantly higher ΔE values in coke compared to the other groups. Coke solution produced significiant discolorations in all the restorative materials tested.

Conclusion: Among the tested materials in different solutions, resin nano ceramic was the material prone to discoloration most, while monolithic zirconia showed the least color changes.

O-022

Luting cements affect the final color of zirconium oxide cores

N Çapa[1], A Üşümez[2], I Tuncel[2]
[1]Department of Prosthodontics, Faculty of Dentistry, Yeditepe University, Istanbul, Turkey
[2]Department of Prosthodontics, Faculty of Dentistry, Bezmialem Vakıf University, Istanbul, Turkey

Purpose: The purpose of this study was to evaluate the effect of different types of luting cements on final color of zirconium oxide cores in implant supported fixed partial dentures.
Materials and Methods: One-hundred and twenty zirconium oxide core plates (Zr-Zahn) (10 mm in width, 5mm in length and 0.5mm in height) were prepared in different shades (n=20) (opaque, A2, A3, B1, C2 and D2). The specimens were subdivided into 2 subgroups for the 2 different types of luting cements (n=10). The initial color measurements were made on zirconium oxide core plates using a spectrometer. In order to create the cement thickness, stretch strips with holes in the middle (5 mm in diameter and 70 micron in height) were used. Second measurement was done on the zirconium oxide core plates after application of the resin cement (U-200) or polycarboxylate cement. The final measurement was done after placing the titanium discs (5 mm in diameter and 3 mm in height) in the bottom. The data were analyzed with two way analysis of variance and Tukey's honestly significant differences tests (α=.05).
Results: The ΔE^*ab value was higher in resin cement applied group than polycarboxylate cement applied group ($p<0.001$). The highest ΔE^*ab value was recorded for zirconium oxide core-resin cement-titanium base and the lowest for poycarboxylate cement- zirconium oxide core ($p<0.001$).
Conclusion: The luting cement and the underlying supporting tissue are important factors that determine the final shade of zirconia cores.

O-023

Effect of thickness on biaxial flexural strength of zirconia core

Z Tutal[1], E Tatar Sıdal[2], E Kazazoğlu[2]
[1]İstanbul Aydın University, Faculty of Dentistry, Küçükçekmece/ İstanbul, Turkey
[2]Yeditepe University, Faculty of Dentistry, Göztepe/Kadıköy/İstanbul, Turkey

Purpose: Zirconium oxide based material has been considered to be a suitable core material for restorations, since it has a excellent mechanical properties, chemical and dimensional stability. The thickness of core is essential since the translucency and strength of restoration have been affected. The aim of this research was to assess the minimum core thickness that can provide clinically adequate strength.
Materials and Methods: Three commercially different zirconia core materials (Zirkonzahn, Steger, Ahrntal, Italy; Ceramill, Amann Girrbach, Koblach, Austria; Noritake, Kuraray, Aichi, Japan) for biaxial flexural strength (piston on three ball) according to ISO 6872: 1995 were measured. Every groups were included 70 zirconia discs that were divided into 7 groups

(n=10). The thickness of zirconia discs were ranged from 0.2mm to 0.7mm. Statistical analysis was performed with one-way ANOVA and post hoc Scheffe´ test (SPSS, $p < 0.05$). Results: No statistically significant difference ($p > 0.05$) was found between the groups of Zirkonzahn and Ceramill in terms of 0.4-0.7 thickness. The biaxial flexural strength of the two groups varied from 37 MPa to 35 MPa. However, the mean biaxial flexural strength value of the Noritake groups were statistically lower than two other groups ($p > 0.05$). The samples that were 0.2 and 0.3 mm in thickness for three groups were resulted in dramatically lower biaxial flexural strength.
Conclusion: Within the limitations of this in vitro study, the minimum core thickness for zirconium oxide based materials should be 0.4 mm.

O-024

The effect of electrical discharge machining on zirconia-resin bonding

N Rona[1], M Yenisey[2], C Çoğun[3], G Küçüktürk[4], H Gürün[5], Ş Külünk[2]
[1]Prosthodontics, Bafra Dental Hospital, Samsun, Turkey
[2]Prosthodontics; Faculty of Dentistry, Ondokuz Mayıs University, Samsun, Turkey
[3]Mechatronics Engineering, Faculty of Engineering, Çankaya University, Ankara, Turkey
[4]Mechanical Engineering, Faculty of Engineering, Gazi University, Ankara, Turkey
[5]Manufacturing, Technology Faculty, Gazi University, Ankara, Turkey

Purpose: Electrical Discharge Machining (EDM) is a method which uses series of sparks to erode the workpiece under controlled conditions. The aim of this study is to evaluate the effect of EDM on zirconia-resin bonding and mechanical effects of the method on zirconium oxide ceramics.
Materials and Methods: For shear bond strength test; 60 pieces zirconia specimens were prepared. Then the specimens were divided into four groups: GK (Control): Airborne particle abrasion+silane, GR: Tribochemical silica coating+silane, GL: Er:YAG laser +silane, GEE: EDM+silane. Each conditioned ceramic specimen was bonded to a composite block using a dual-cure resin cement. Then 6000 times thermal cycled prior to bond tests. The shear bond strength tests were performed in a universal testing machine. The mean bond strengths of the specimens of each block were statistically analyzed using ANOVA and Tukey's test. For 3-point bending test; 60 zirconia specimens were prepared. Then the specimens were assigned to four groups: Airborne particle abrasion, Tribochemical silica coating, Laser treatment, EDM. After surface treatments 3-point bending test were performed in a universal testing machine. Mean flexural strength values were statistically analyzed using ANOVA and Tukey's test.
Results: Analysis showed that the bond strength was significantly higher in Group EE, than in Groups L,K ($p<0.05$). After the 3-point bending test, statistically no significant difference were observed between the groups ($p>0.05$).
Conclusion: As a surface treatment EDM increased the zirconia-resin bonding and did not effect the zirconia negatively about mechanical properties.

O-025

Microshear bond strength of orthodontic resin to differently conditioned monolithic zirconia surface

N Canıgür Bavbek[1], JF Roulet[2], M Özcan[3]
[1]Department of Orthodontics, Faculty of Dentistry, Gazi University, Ankara, Turkey
[2]Department of Restorative Dental Sciences, College of Dentistry, University of Florida,

Gainesville, USA
[3]University of Zurich, Dental Materials Unit, Center for Dental and Oral Medicine, Clinic for Fixed and Removable Prosthodontics and Dental Materials Science, Zurich, Switzerland

Purpose: This study evaluated the microshear bond strength (μSBS) of orthodontic resin cement to monolithic zirconia ceramic (MZ) after different surface conditioning methods. Materials and Methods: Two types of MZ (BruxZir Solid Zirconia, n=60; Prettau-Zirkon, n=60) with two types of surface finish (Glazed, n=30 per group; Polished, n=30 per group) were tested after two surface conditioning methods: 1:Air-abrasion with 30 μm silica-coated aluminum oxide (Al_2O_3) particles (CoJet), or 2:Air-abrasion with 50 μm Al_2O_3 particles. Non-conditioned group acted as the control. A universal primer (Monobond-Plus) and an orthodontic primer (Transbond-XT Primer) were applied to all specimen surfaces. Orthodontic resin composite (Transbond-XT) was photo-polymerized. The bonded specimens were subjected to μSBS testing (0.5 mm/min). Data were analyzed by three-way ANOVA and Sidac adjustment post-hoc test (α=0.05). Failure modes were analyzed by a stereomicroscope (x30).
Results: Mean μSBS values (MPa) did not show significant difference between two brands of MZ ($p > 0.05$). On both glazed (44±6.4) and polished (45.9±4.8) groups, CoJet application showed the highest μSBS values ($p < 0.001$). Control group (34.4±6) presented significantly better results compared to that of Al_2O_3 (30±3.8) ($p < 0.05$) on glazed surfaces, but it was the opposite in the polished groups (Control: 20.3±4.7; Al_2O_3: 33.8±4.7; $p < 0.001$). Adhesive failure type was dominant in all groups. Conditioning MZs with Al_2O_3 and CoJet increased the percentage of mixed failure type.
Conclusion: Air-abrasion with CoJet followed by the application of universal primer improved μSBS of orthodontic resin to both polished and glazed monolithic zirconium oxide materials tested.

O-026

The effect of surface cleaning procedures on contaminated zirconia surface

T Sarı, M Benli, A Kurt, A Üşümez
Bezmialem Vakıf University Faculty of Dentistry Department of Prosthodontics, Turkey

The blood-saliva contamination of ceramic surfaces during the try-in stages is a matter of concern about the bond strength of adhesive resins to ceramic surface. The aim of this study is to evaluate the effect of different surface cleaning procedures on the bond strength of adhesive resin cement to contaminated zirconia surface.
Sixty zirconia samples were fixed on acrylic blocks and the surfaces of all samples were sandblasted using 50 μm alumina particles. Then the samples were assigned to 6 groups and contaminated with diluted blood-saliva mixture for 3 hours except the control group. After contamination, following cleaning procedures were performed; only air-water spray and air-water spray with orthophosphoric acid, hydrofluoric acid, ethyl-alcohol or commercial surface cleaning solution (Ivoclean, Ivoclar-Vivadent). Later, resin cement samples were bonded to the surfaces and the samples were subjected to thermal cycling for 5000 cycles. Finally, shear-bond strength test was performed using a universal testing machine. The results were statistically evaluated with one-way ANOVA and Tukey's HSD tests. The highest shear-bond strength values were recorded for non-contaminated (control) group followed by commercial surface cleaning solution group (Ivoclean) which was statistically comparable to the control group. Following hydrofluoric acid group was comparable to the air-water spray group and significantly higher than ethyl-alcohol and orthophosporic acid groups.

It was concluded that, the contamination of zirconia surfaces and different surface cleaning procedures for the removal of the remnants, significantly changes the bond strength of adhesive resin cements.

O-027

Thermal and mechanical properties of metal powder filled acrylic resin

Y Türk, G Işık Özkol
Istanbul University Dental Faculty, Turkey

Purpose: The purpose of this study was to evaluate the thermal conductivity and the mechanical properties of acrylic denture base resin when varying amounts of powdered metals were added to acrylic resin.
Materials and Methods: The specimens were prepared from acrylic resin filled with silver, aluminum, copper, magnesium and titanium powders. Metal powders were added to the acrylic resin powder to achieve loadings of 5%, 10%, 15%, 20%, and 25% by volume. Control group specimens were prepared from unmodified acrylic resin. The thermal conductivity were determined using the heat flow meter technique. The flexural strengths were determined using a 3-point bending testing device in a universal testing machine and the hardness were determined using a shore test. Statistical analysis was performed with NCSS 2007&PASS 2008 Statistical Software and the data were analyzed using Kruskal Wallis Test and Mann Whitney U Test.
Results: The thermal conductivity value of the control group was significantly lower than the thermal conductivity values of all other groups ($p<0.05$). Flexural strength of control group was not significantly different than the flexural strength values of 5% and 10% silver, magnesium, titanium, and aluminum groups and 5%, 10%, and 15% of copper groups. There was not any significant difference in hardness between the control group and all the experimental groups.
Conclusion: It can be concluded that incorporating metal fillers into conventional acrylic resin results in an increase in thermal conductivity and acrylic denture base with metal filler combines the advantages of metal and acrylic resins.

O-028

Effect of accelerated aging on the hardness and surface roughness of different dental laminate veneer materials

G Çelik, S Kanar, A Üşümez
Department of Prosthodontics, Bezmialem Vakif University, Istanbul, Turkey

Purpose: As well as porcelain laminate veneers, prefabricated composite or hand layered composite veneers are used in several clinical applications. The purpose of this study was to evaluate and compare surface roughness and hardness of different laminate veneer materials after accelerated aging.
Materials and Methods: Specimens of porcelain laminate veneer (IPS e.max Press), prefabricated composite laminate veneer (Componeer) and hand layered composite laminate veneer (Tetric N-Ceram) were prepared as discs (n: 10), 10 mm in diameter and 1 mm in thickness. Hand layered composite laminates were sequentially polished by aluminum oxide abrasive discs. Componeer samples were not polished due to its prefabricated structure, which is prepolished. Porcelain samples were glazed according to

manufacturer's recommendations. After baseline roughness and hardness measurement, all specimens were subjected to an accelerated aging system (CI4000 Weather-Ometer, Atlas Electric Devices, Chicago, IL, USA) and aged for 113 h. Roughness and hardness measurements were performed again after the aging test.
Results: Data were analyzed by two-way ANOVA and Tukey HSD multiple comparison tests. A statistically significant difference was observed among composite (prefabricated and hand layered) and porcelain groups by means of surface roughness and hardness. However, there was no significant difference between the composite groups. No effect of aging was observed on the surface roughness and hardness values for all groups. Conclusion: Artificial aging had no effect on the hardness and surface hardness of the three groups.

O-029

New alternatives for intraoral ceramic veneer repair

AK Çulhaoğlu[1], Y Bayraktar[2], E Ercan[3], K Ünsal [4], H Çolak [5]
1 Kırıkkale University Dentistry School, Prosthodontic Treatmenet, Turkey
2 Kırıkkale University Dentistry School, Restorative Dentistry, Turkey
3 Kırıkkale University Dentistry School, Restorative Treatment, Turkey
4 Ankara University Dentistry Faculty Prosthetic Dental Treatment, Turkey
5 Ishık University Dentistry Faculty Restorative Dentistry, Iraque

Despite their clinical sucsess, higher fracture strength and excellent esthetic, fractures of ceramic veneers still occurs. Replacement of a failed restoration is not necessarily practical solution because of the substantial costs and the complex nature of the restoration. Intra-oral repair options provide repairing the veneer in the patient's mouth, preventing replacement of the restoration also prevent time consuming and expensive remakes of restoration.
Using conventional restorative composites for repairing has time consuming and low cost advantages but lower wear resistance and color stability of composites. It can effect the long term success of procedure. Luting indirect composites to fractured side can be a new alternative for intra-oral repair. Indirect composite resins are advanced materials with high filler substance proportion. Also surface conditioning of indirect composite surface with photo ionization for 15 and 30 minutes can be effective way for increasing the success of procedure.
The purpose of this study was to evaluate shear bond strength of repair composite resin (Clearfil Majesty Esthetic, Kuraray) and indirect composite resin (Estenia C&B, Kuraray) to ceramic with different conditioning methods. A total of 40 square shaped feldspathic porcelain disks of dimensions 10×10×3 mm were produced and embedded in cylindrical resin blocks. As pretreatment alternatives 15 and 30 minutes photo ionization were tested, conventional restorative resin composite and indirect composite resins compared.

O-030

Hardness and color stability of maxillofacial elastomer after microwave disinfection of as function of irradiation level and exposure regimen

E Yüzbaşıoğlu[1], P İnan[1], M Özcan[2]
[1]Department of Prosthodontics, School of Dentistry, Istanbul Medipol University, Turkey
[2]Dental Materials Unit, Center for Dental and Oral Medicine, University of Zurich, Zurich, Switzerland

Purpose: The purpose of this study was to evaluate the effect of microwave disinfection with different exposure regimen and irradiation level on hardness and color stability of a maxillofacial elastomer.
Materials and Methods: Seventy disc shaped specimens (8 mm in diameter and 2 mm in height) were prepared from a maxillofacial elastomer. The specimens were randomly divided into seven groups (n=10). The specimens were immersed in 200 ml water and microwaved at 180W, 450W, and 750W for 3 minutes daily or 3 times in a week for a period which simulates 1 year of clinical service. The color and hardness of specimens were evaluated using spectrophotometer and Shore A durometer before and after 1 week, 1, 3, 6, 9 and 12 months, respectively. Shore A hardness (ΔH) and color differences (ΔE) were determined and all data were analyzed by ANOVA and Tukey's post hoc tests at a level of α=0.05.
Results: The specimens presented significant alterations in color and hardness after the different disinfection treatments. The hardness of the specimens were increased after different microwave exposure regimens and irradiation levels. The color differences were at detectable level in most of the microwave exposure regimens and irradiation levels.
Conclusion: The microwave disinfection procedures caused alterations in color and hardness of the maxillofacial elastomer materials.

O-031

Effect of surface treatments on flexural strength of bilayered ceramics

M Bankoğlu Güngör, H Yılmaz, S Karakoca Nemli, B Turhan Bal, C Aydın
Gazi University, Faculty Of Dentistry Department Of Prosthodontics, Turkey

Purpose: The purpose of this investigation was to investigate the effect of surface treatments on biaxial flexural strength, phase transformation, and average surface roughness of different bilayered porcelain/zirconia ceramics.
Materials and Methods: Fourty disc shaped specimens were provided from each material (Kavo and Noritake) and divided into four (n=10) groups (control, sandblasted, ground, and ground and sandblasted). Sandblasting and grinding were performed with 110 μm sized Al_2O_3 particles for 15 s and at 4 bars of pressure and a diamond bur with 100 μm grain size, respectively. The monoclinic phase transformation and average surface roughness of the specimens were measured. Then, the specimens were veneered and subjected to biaxial flexural strength test to calculate the stresses at the core and veneer layers, top and bottom surfaces, and interfaces of the core and veneer layers.
Results: Kavo sandblasted group showed significant higher values than all experimental groups in core and veneer layers ($p>0.001$). According to phase analysis, significantly higher values were found in ground and sandblasted groups for both materials ($p<0.05$). Within both materials, except sandblasted groups the results of monoclinic phases were not significantly different ($p>0.05$). Ground specimens had the higher significant Ra values for both materials ($p<0.01$).
Conclusion: Surface treatments showed different effects on the phase transformation, surface roughness and biaxial flexural strength of Kavo and Noritake. Surface treatments increased the relative monolinic phase content and average surface roughness.

O-032

Gingival phenotype effects the radiopacity of dental luting cements used for implant prostheses

E Yüzbaşıoğlu[1], H Bilir[1], K Cesur Aydın[2], M Özcan[3]
[1]Department of Prosthodontics, School of Dentistry, Istanbul Medipol University, Turkey
[2]Department of Oral & Maxillofacial Radiology, School of Dentistry, Istanbul Medipol University, Turkey
[3]Dental Materials Unit, Center for Dental and Oral Medicine, University of Zurich, Zurich, Switzerland

Purpose: The purpose of this study was to investigate the effect of gingival phenotype on radiopacity of dental luting cements used for implant prostheses.
Materials and Methods: Eight specimens, (6 mm diameter, 1 mm high) were prepared for each material (glass carbomer cement, glass ionomer cement, resin-modified glass ionomer cement, zinc polycarboxylate cement, self-adhesive resin cement, dual-cured resin cement) with different chemical constituents were evaluated in this study. The radiographs of luting cements and a graduated aluminum step-wedge reference were made using digital radiography system with three different irradiation and exposure levels. Clinical situation (gingival phenotype) was simulated by covering the specimens with 0.5 mm and 2.5 mm chicken skin. The radiopacity of the cements was compared with the aluminum step-wedge using the ImageJ software. Data were analyzed by ANOVA and Tukey's test (α=0.05).
Results: The type of cement, gingival phenotype and irradiation levels effected the radiopacity thresholds cement excess. There are significant differences between tested luting cements ($P<0.05$) and between gingival phenotype ($P<0.05$).
Conclusion: Surrounding tissues such as gingival tissues effect the excess cement detection in implant prostheses. Some types of cement commonly used for the cementation of implant-supported prostheses have poor radiodensity and may not be detectable following radiographic examination regarding gingival phenotype.

O-033

Effects of surface treatments on resin cementation of zirconia

M Çakırbay
Gazi University, Prosthodontics, Turkey

Purpose: The purpose of this study is to evaluate effects of different surface treatments on shear bond strength of zirconia-resin cement.
Materials Methods: In this study 120 zirconia specimens were treated as follows: Group I: sandblasting, Group II: sandblasting+tribochemical silica coating+silane, Group III: sandblasting+Nd:YAG laser. One specimen from each experimental group was evaluated under SEM. Specimens in each group were bonded either with conventional composite resin Variolink II or with a MDP containing resin Panavia F2.0. Subgroups of bonded specimens were stored in distiled water (37 ºC) 24 hours or 2 weeks. Then shear bond strength test was performed.
Results: According to the statistical analysis tribochemical silica coating showed higher bond strength than sandblasting and Nd:YAG laser treatment. When tribochemical silica coating is used as surface treatment there is no significant difference between MDP containing Panavia F2.0 resin cement and conventional resin cement Variolink II. When sandblasting is used as surface treatment MDP containing Panavia F2.0 resin cement showed higher shear

bond strength. It was observed that Nd:YAG laser treatment caused microcracks on zirconia surface. No significant difference was found between shear bond strengths of specimens stored in 37 ºC distilled water 24 hour and 2 weeks.
Conclusion: Tribochemical silica coating is a more effective method than sandblasting and Nd:YAG laser treatment methods to provide zirconia resin bonding. MDP monomer increases bond strength of sandblasted zirconia and resin cement.

O-034

A combined surgical approach for atrophic ridge augmentation, case report

N Mitwally
Alexandria Oral Implantology Association, United Arab Emirates

Narrow alveolar ridges remain a clinical challenge for the successful endosseous implant placement. Among alveolar ridge augmentation techniques, the ridge-split procedure demonstrates many benefits, that make it a proper treatment option compared to others. Lateral bone augmentation through the ridge-split works best in a localized lateral bony defect intended for placing 1 or 2 implants and where the ridge is vertically intact. A combined surgical approach utilizing one posterior vertical cut splitting; using rotary burs; and chisel, for the augmentation with allograft bone material; together with implant site expansion to accommodate a 4mm dental implant; was attempted for mandiblar atrophic ridge. An increase of 4 times of the original size of the bone has been achieved using this technique.

O-035

Intercanthal distance for selection of maxillary anterior teeth size

N Elsheikh[1], L Mendilawi[2], N Khalifa[3]
[1]The National Ribat University, Prosthodontics, Sudan
[2]Khatoum University, Prosthodontics, United States
[3]Khatoum University, Prosthodontics, Sudan

Purpose: The choice of the size of artificial teeth takes an important place in the removable prosthodontic treatment. However, the standards or proportions commonly used as a guide have been developed mainly on Caucasian populations.
The aim of this study was to investigate the relationship between intercanthal distance and the anterior maxillary teeth size in Sudanese population.
Metarials and Methods: This is a descriptive cross sectional study conducted in 114 subjects, (45 males – 69 females), from Khartoum and Juba Universities. The age range was from 18-46 years. The intercanthal distance (I.C.D) was the measurement taken between the median angles of the palpabral fissure. Maxillary intercanine distance was obtained by measuring a line from the tip of the canine on one side, to the canine on the other side. An electronic digital caliper (Narex –Czechoslovakia) was used for all measurements. Data were analyzed using Person chi–square test.
Results: A significant correlation was found between intercanthal distance and maxillary intercanine distance in all subjects (P-value 0.015), and in females who had a (P-value of 0.006). Maxillary intercanine distance may be estimated by dividing I.C.D by factor 0.9.
Conclusion: These results could be used as a helpful guide for selection of anterior teeth width in the Sudanese population.

O-036

Perceived need for replacing teeth at the time of extraction

PD Palipana[1], SM Navaratne[2], RL Jayatillaka[3], N Abeyratne[4], AM Senavirathne[5]
[1]Institute of Oral Health, Maharagama, Sri Lanka
[2]Divisional Hospital C, Wanathawilluwa
[3]District Hospital, Kalthota
[4]Base Hospital, Dehiattakandiya
[5]Divisional Hospital C, Rajanganaya

Purpose: To determine the perceived need for replacing a tooth/teeth at the time of extraction.
Materials and Methods: Study was done in 5 government hospitals in Sri Lanka, representing urban and rural populations. 2450 patients were involved through answering a questionnaire at the time they presented for extraction. Number and position of the tooth to be extracted was recorded. Information regarding socio-economic status was acquired. Ethical clearance was obtained for the study.
Results: Around 1/4 of the participants declared the need for replacement of teeth. Around 90% of subjects who needed replacement were undergoing extraction of anterior teeth. Whereas as the remaining 10% were needing to replace posterior teeth. Most patients who wanted to replace posterior teeth, were having more than 1 tooth missing. When an anterior tooth is to be extracted more than 75% needed replacement. Higher percentage of urban population was aware of importance in replacement. Contrastingly more than 3/4 of the rural population was not aware of the importance. Educated and socioeconomically sound populations had more positive attitude towards replacement than the rural populations. Only about 15% of participants believe that it is needed to replace even if a single tooth is missing.
Conclusion: Patients appreciate the functional need less than the aesthetic need in replacing teeth. Socioeconomic impacts play a major role. Health education and awareness programs are needed on this regard.

O-037

Assessment of tooth preparation for full veneer cast restoration

NAR El Mubarak[1], NH Abu Bakr[2], YE İbrahim[2], OE Omer[3]
[1]Alribat national university, Restorative department, Khartoum, Sudan
[2]University of Khartoum, Department of Oral Rehabilitation, Khartoum, Sudan
[3]Dublin Dental School and Hospital, Department of Restorative Dentistry and Periodontology, Dublin, Ireland

Purpose: To evaluate tooth preparation for full veneer cast restorations performed by final year dental students in Sudan.
Materials and Methods: 117 stone dies from two different dental institutions were collected and evaluated. Two impression replicas were produced by polyvinyl siloxane; one replica was sectioned faciolingually and the other mesiodistally. Occlusal clearance and axial clearance were measured from replicas by a digital caliper. Taper was measured from impression silhouettes that produced by projector. Working casts were examined to verify finishing lines, smoothness of the preparations, and additional retentive features.
Results: The average taper of the preparations was 39.98°, with 44.1° faciolingually, and 35.8° mesiodistally. Occlusal clearance for metal-ceramic restoration was acceptable,

whereas for full metal was overcut. Axial clearance for metal-ceramic was acceptable, while for full metal was over prepared with the exception of the lingual wall which was ideal. Sub and supra gingival finishing lines were present in equal percentage, however (38.5%) of the preparations have mixed finishing lines i.e. sub and supra gingival lines in the same preparation. Most of the students (77.8%) were able to maintain continuity of the finishing line all around the preparation; however (19.7%) were unable to maintain continuity. All preparations were smooth with no sharp angles. Small number of preparations (1.7%) had additional retentive features.
Conclusion: Although students have fresh knowledge about tooth preparation for fixed prosthodontics; the quality of preparations in this study did not always follow the ideal criteria.

O-038

Evaluation of the fit of CNC-milling, laser sintering, casting metal-ceramic crowns

E Tamaç, S Toksavul, M Toman
Department of Prosthetic Dentistry, Faculty of Dentistry, Ege University, Izmir, Turkey

Purpose: To compare in vitro marginal and internal adaptation of metal ceramic crowns fabricated with 3 different techniques: CAD/CAM milling (CCM), direct metal laser sintering (DMLS), and traditional casting (TC).
Materials and Methods: Sixty stone die duplicates of a human maxillary first molar were divided into 3 groups (n=20). The specimens were restored with CCM, DMLS and TC metal-ceramic crowns. Silicone replicas were obtained to measure marginal gap and internal adaptation that was evaluated at 3 regions: axial wall, axio-occlusal angle, and occlusal surface. Measurements were made with a stereomicroscope at 20× magnification and analyzed with one-way ANOVA and the Dunnett T3 test (α= 0.05).
Results: Mean marginal gaps for groups CCM, DMLS, TC (microm) were 119.07, 91.48, 93.08, respectively. Mean measurements at region (b) (microm) were 67.74, 99.57, 78.82, at region (c) 170.23, 193.31, 119.49 and at region (d) 230.60, 343.60, 174.12 for groups CCM, DMLS, TC, respectively. There were statistically differences for measurements at all regions according to one-way ANOVA ($p<0.05$). Mean marginal gap values of group CCM were significantly higher than those of other groups. At region (b), mean values of group CCM showed the lowest internal gap values. At region (c) and (d) mean values of TC showed the lowest internal gap values.
Conclusion: In this study, DMLS and TC crowns exhibited similar marginal adaptation. TC crowns exhibited lowest luting space at occlusal region and axio-occlusal angle.

O-039

Three dimensional finite elements analysis of stress distribution of two retainer and single retainer all ceramic resin-bonded fixed partial dentures

B Kıran[1], M Toman[1], S Toksavul[1], M Sarıkanat[2], S Sabancı[2], S Dikici[3], H Oflaz[3]
[1]Ege University, Dentistry Faculty, Department of Prosthodontics, Izmir, Turkey
[2]Ege University, Engineering Faculty, Department of Mechanics, Izmir, Turkey
[3]Katip Çelebi University, Engineering and Architecture Faculty, Department of Biomedical Engineering, Izmir, Turkey

Purpose: The aim of this study was to evaluate the stress distribution of two retainer and single retainer RBFPD by using three dimensional finite elements analysis (3D FEA).
Materials and Methods: Two different three-dimensional finite element models were created. Each model contained cortical bone, cancellous bone, periodontal ligament and enamel. Additionally one of the models contained two-retainer zirconium dioxide RBFPD while another one contained single-retainer zirconium dioxide RBFPD. A 100 N force was applied at 45 degrees 2 mm below the incisal edge of the palatinal surface of the pontic. In each model, Von mises stress distribution was evaluated.
Results: Von mises stress values in RBFPD with single retainer and two reatiner were 1.13 MPa and 1.23 MPa, respectively. Von mises stress was concentrated at the interface between pontic and retainer for two retainer RBFPD.
Conclusion: Single-retainer zirconium dioxide RBFPD exhibited less stress concentration between pontic and wing than two-retainer glass zirconium dioxide RBFPD.

O-040

Microtensile bond strength of different veneering techniques

F Aykent, T Yılmaz
Department of Prosthodontics, Faculty of Dentistry, Selcuk University, Konya, Turkey

Purpose: The aim of this study was to compare the microtensile bond strengths (MTBS) of zirconia frameworks veneered with three different techniques.
Metarials and Methods: Fifteen Y-TZP zirconia plates (IPS e.max ZirCAD, Ivoclar Vivadent) were fabricated (12.5x11.5x3mm). Specimens were divided into three groups (n=5): Group(1) Layering; Group(2) Heat-pressing; Group(3) CAD/CAM-veneering (IPS e.max CAD-On). Group(1) and (2) specimens were coated with ZirLiner (Ivoclar Vivadent). Group(1) were veneered with nano-fluorapatite glass-ceramic (IPS e.max Ceram) and Group(2) were veneered with fluorapatit glass-ceramic (IPS e.max ZirPress). Group(3) specimens were milled from lithium-disilicate blocks (IPS e.max CAD) and fused with zirconia framework by using a thixotropic glass ceramic and then furnaced for crystallization/fusion. After veneering, the specimens were sectioned into microbars (6x1x1mm). Twenty sound microbars in each group were stressed to failure in a microtensile test machine at 1 mm/min. Mean MTBS (MPa) were analyzed with One-Way ANOVA and Tukey tests ($P<0.05$). The failed specimens were examined under a stereomicroscope at 40x to classify the mode of failure as cohesive, mixed or adhesive.
Results: The mean MTBS were 21.71±3.40 MPa; 20.74±6.36 MPa and 30.41±8.64 MPa in Group(1), Group(2) and Group(3) respectively. CAD/CAM-veneering group showed significantly higher MTBS in all test groups ($P=0.00$). There is no significant difference between layering and heat-pressing groups ($P=0.884$). The cohesive failures within veneer-ceramic was observed mostly in all groups.
Conclusion: The CAD/CAM-veneering technique showed the highest bond to zirconia framework. This technique can be preferred for veneering the zirconia based restorations (This study was supported by TUBITAK, No: 112S161).

O-041

Bond strength between aged composites and zirconia ceramics

S Polat[1], F Cebe[2], AR Tunçdemir[3], C Öztürk[4], A Üşümez[5]
[1]Gazi University, Dentistry Faculty, Department of Prosthetic, Turkey
[2]Abant Izzet Baysal University, Dentistry Faculty, Department of Conservative, Turkey
[3]Necmettin Erbakan University, Dentistry Faculty, Department of Prosthetic, Turkey
[4]Ankara University, Dentistry Faculty, Department of Prosthetic, Turkey
[5]Bezmialem University Dentistry Faculty, Department of Prosthetic, Turkey

Purpose: Evaluation of the bond strength between aged composite materials and zirconia ceramics.
Materials and Methods: The 75 composite specimens were divided into 5 groups (n=15). Four groups were subjected to thermocycling then, different surface treatments were applied (Group 2: air polishing, Group 3: laser irradiation, and Group 4: acid etching). Luting cement (Panavia F 2.0) was bonded to the specimens, and they were fixed to the shear test was applied.
Results: The bond strength data was statistically compared by the Kruskal Wallis method complemented by the Bonferroni correction Mann Whitney U test. Statistical analysis revealed significant differences in the bond strength values of the groups ($p<0.05$). The mean baseline bond strength values ranged between 7.07 and 26.05 N. The highest bond strength of 26.05 ± 6.53 N (mean ± SD) was obtained with Group 3. Group 5 (7.0786 ± 2.11 N) showed the lowest value of bond strength. There were no statistically significant differences in failure modes among the groups ($p>0.05$).
Conclusion: For the optimal bond strength, aged composite should be replaced before crown restoration.

O-042

Does enamel and dentin age affect glass-ceramics bonding?

AG Türk[1], E Çal[1], S Ünal[1], M Ulusoy[1], M Özden[2], P Güneri[3]
[1]Department of Prosthodontics, School of Dentistry, Ege University, Izmir, Turkey
[2]Department of Oral and Maxillofacial Surgery, School of Dentistry, Ege University, Izmir, Turkey
[3]Department of Oral and Maxillofacial Radiology, School of Dentistry, Ege University, Izmir, Turkey

Purpose: To assess the shear-bond-strength of lithium-disilicate glass-ceramics in young and old tooth structures using different adhesive systems.
Materials and Methods: One-hundred and twenty disc shaped glass ceramics (IPS e.max Press, Ivoclar-Vivadent) were prepared (3mmx2mm) according to ISO/TS 11405. Thirty extracted molars from 18-25 years of age (Y) and 30 molars from 65-80 years of age (O) patients, were cut buccolingually to prepare enamel (E) and dentin (D) surfaces. Both surfaces were randomly assigned to 3 groups according to the adhesive systems: Variolink II, Ivoclar-Vivadent (V); Superbond, Sun Medical (S); Clearfil Esthetic Cement, Kuraray (C) (n=10). Total of 12 groups were composed according to age, tooth structure and adhesive system. Specimens were bonded under a load of 50 N, and were subjected to thermocycling. Shear-bond-strength (SBS) test was performed using a universal testing machine (0.5 mm/min). The data were statistically analyzed with Kolmogorov Smirnov, Levene, ANOVA and Bonferroni comparisons tests ($p=0.05$).

Results: The mean SBS (MPa±SD) for YEV: 36.71±6.47, YES: 26.42±8.22, YEC: 19.77±8.1, YDV: 23.2±13.17, YDS: 14.98±3.41, YDC: 9.04±2.1, OEV: 32.08±16.21, OES: 28.61±8.44, OEC: 27.47±5.88, ODV: 25.54±8.64, ODS: 22.25±7.07, and ODC: 12.11±4.29. There were no significant differences between young and old surfaces (p=0.058), whereas significant differences were observed between bonded surfaces (E-D) (p=0.00) and adhesive systems (p<0.05).
Conclusion: Enamel surfaces showed higher SBS values than dentin. Regardless of age, SBS of adhesive systems were V>S>C.

O-043

Effective method for zirconia-resin cement bond strength in chairside

E Yeğin, YZ Akpınar, T Yavuz, MA Aslan
Abant Izzet Baysal University, Faculty of Dentistry, Department of Prosthodontics, Bolu, Turkey

Purpose: The purpose of this study was to investigate the effect of different surface treatment in the clinical practice on the bond strength of resin cement to zirconia (Y-ZTP).
Materials and Methods: Thirty square (10×10×2 mm) zirconia samples were prepared by a copy-milling machine. Zirconia surface were ground finished with 800 grit abrasive papers. All the samples were divided into three groups (n=10): Group SB; 110 µm Al_2O_3 sandblasted, Group B; Green labeled FG diamond burs, Group C; Control; no treatment. An extra sample from each group was selected for examining scanning electron microscope (SEM). Cylindrical Teflon molds with a hole that has an inner diameter of 4 mm and a height of 3 mm were fabricated. PVC ring was seated in the center of the hole and resin cement was applied in the hole and polymerized by LED curing light. The shear bond strength (SBS) of zirconia-resin cement were performed with a universal testing machine at a crosshead speed of 1 mm/min until bonding failure occurred. The SBS values were analyzed with ANOVA/Tukey HSD test (p <.05).
Results: The significant differences were observed among the groups (p <.001). The highest bond strength values were achieved with Group SB (9.99 ± 0.78) followed by Group B (9.30 ± 0.67) and Group C (6.47 ± 1.33).
Conclusion: The diamond burs treatment can be used as an alternative method to the sandblasting.

O-044

Clinical evaluation of inlay and onlay restorations luted with pre-heated resin cements

B Evren, Ş Aygün Emiroğlu, Y Kulak Özkan
Marmara University Faculty of Dentistry Department of Prosthodontics, Istanbul, Turkey

Over the years, dentists were often asked to refrigerate their resin cements until just immediately prior to use. According to the latest research findings on the pre-heating procedure, preheating to 55-60 ^oC had the effects of reducing viscosity, improving flowability, and decreasing film thickness of restorative resin composites.
Purpose: The aim of this study was to evaluate the clinical performance of inlays and onlays luted with two different pre-heated resin cements in different temperatures (25 ^oC, 37 ^oC, 54 ^oC).
Materials and Methods: One hundred IPS e.max restorations (82 onlays, 18 inlays/84

molars, 16 premolars) were placed in 50 patients (28 females/22 males, mean age=33 years). Three cementation temperatures (25 ºC, 37 ºC, 54 ºC) were tested with two resin cements; G-Cem Automix (GC; Tokyo, Japan) and Variolink N, high viscosity (Ivoclar; Schaan, Liechtenstein). All restorations were evaluated after 1 week, 6 months and 1 year by two independent examiners using modified USPHS criteria.
Results: After 1 year observation time, total survival rate of Variolink N high viscosity group and G-Cem Automix group was %100 and %94 respectively due to three debondings which were cemented on 25 ºC, 37 ºC, 54 ºC temperature. Secondary caries and endodontic complications did not occur. Increased clinical service time resulted in decrease of marginal adaptation for all G-Cem Automix groups.
Conclusion: Cementation with Variolink N high viscosity with all temperatures exhibited a reliable treatment option to restore posterior defects with indirect ceramic restorations.

O-045

Scanning electron microscopic evaluation of onlay restorations cemented with pre-heated resin cements

Ş Aygün Emiroğlu[1], B Evren[2], Y Kulak Özkan[3]
[1]Şeyda Aygün Emiroğlu, Prosthodontics, Marmara University, İstanbul, Turkey
[2]Buket Evren, Prosthodontics, Marmara University, İstanbul, Turkey
[3]Yasemin Kulak Özkan, Prosthodontics, Marmara University, İstanbul, Turkey

Purpose: To evaluate the effect of pre-heated self adhesive resin cement and pre-heated etch-and-rinse multistep resin cements on the restoration-tooth junctional area. Materials and Methods: 30 molars of 17 patients (13 female, 4 male, mean age of 30) were restored with IPS e.max extensive onlay restorations which have margins on the vestibular area located above the CEJ in enamel. Variolink N, high viscosity (Ivoclar; Schaan, Liechtenstein) and G-Cem Automix (GC; Tokyo, Japan) were used to evaluate 6 study groups: 1) Variolink N, room temperature; 2) Variolink N, 37 ºC; 3) Variolink N, 54 ºC; 4) G-Cem, room temperature; 5) G-Cem, 37 ºC; 6) G-Cem, 54 ºC. Impressions were taken with polyvinyl siloxane impression material 1 week and 12 months after cementation. Epoxy resin replicas were evaluated under SEM (X200). Marginal gap width was measured and marginal adaptation was quantitatively evaluated in terms of percentage of gap formation. A non-parametric Kruskal-Wallis test was used to determine whether significant differences in gap formations existed among the study groups.
Results: Cementation with pre-heated resin cement increased continuous margin in both enamel-cement and cement-ceramic interfaces. Variolink N cement groups showed better marginal adapatation than G-Cem Automix cement groups.
Conclusion: Pre-heating of luting cement is an effective method to have a better marginal adapatation with indirect ceramic onlay restorations.

O-046

Retrospective study of all-ceramic onlay restorations

FK Yıldız, ŞC Akmansoy, C Yıldız, Y Kulak Özkan
Department of Prosthodontics, Faculty of Dentistry, University of Marmara, Istanbul, Turkey

Objectives: The purpose of this study was to evaluate the survival rate, failure number and clinical quality of all ceramic onlays retrospectively.

Metarials and Methods: Restorations placed during the period September 2002- April 2013 at Marmara University Faculty of Dentistry, Department of Prosthodontics were included. Patients with parafunctional habits were excluded from the study. In 62 patients, 115 onlays were examined. Number of restoration failures and reasons for failure were recorded. The remaining onlays were evaluated by CDA criteria (color match, anatomical form, marginal discoloration, marginal integrity and surface texture) by two clinicans after 1–12 years. Patients also evaluated their restorations in five categories (color, surface, fonation, hygiene and bite efficiency) on a scale of 1–10.
Results: A survival rate of 87.9% was recorded. Fourteen (12.1%) of the 115 restorations had to be replaced. The main reasons for failure were 7 ceramic fracture (6.0%), 6 decementation (5.2%), four endodontic treatment need (4.3%) and 2 extensive restoration need (1.7%), 1 tooth fracture (0.8%). On the other hand patient satisfaction score was founded mostly over 8 and none of the patients rated under 3.
Conclusion: All ceramic onlay is an acceptable and predictable treatment alternative in general dental practice. In addition, the location of teeth in dental arch and marginal integrities of teeth influenced restoration failures directly.

O-047

Case report: A case of severe tooth wear reconstruction

S Buduru[1], R Buduru[2], D Condor[3], BS Sallame[3], O Baru[4]
[1]Prosthodontic Department, University of Medicine and Farmacy “Iuliu Hatieganu”, Cluj-Napoca, Romania
[2]Private Dental Clinic Stomestet, Cluj-Napoca, Romania
[3]Periodontal Department, University of Medicine and Farmacy “Iuliu Hatieganu”, Cluj-Napoca, Romania
[4]DU de Réhabilitation Orale et Implantologie, Bordeaux 2, France

Purpose: The aim of the present study is to demonstrate a step-by-step approach to a case of severe tooth wear.
Materials and Methods: The clinical, additional imagistic examination and model analysis were used in order to determine the following: whether VDO should be altered or not, whether mandibular repositioning is necessary, and whether pre-prosthetic periodontal surgery and endodontic treatment are required. The preceding clinical agenda must be in agreement with the patient’s esthetic demands.
Results: The patient benefits from all-ceramic restorations, minimally invasive adhesive restorations: table tops, veneers and prosthetic implant crowns through VDO recalibration, occlusal curve reconstruction, correct occlusal contact points distribution and dental and facial esthetic remodeling.
Conclusion: Complete restorations of the dental arches cannot be performed randomly; a strict treatment protocol must be followed before initiating any procedure.

O-048

A temporary solution for fractured abutment screws by magnetic attachment at one session: Case report

İ Leblebicioğlu Kurtuluş, B Kesim
Erciyes University Dentistry Faculty Department of Prosthodontics, Kayseri, Turkey

The aim of this study is finding a temporary solution for the broken abutment screws that couldn't be removed from the implant; in order to provide an accepted retention for the patient until the new implant's placement.
The broken abutment screw was determined in the clinical examination of the patient who consulted to the Prosthodontology Department of Erciyes University Dentistry Faculty with the complaint of her broken Locator abutment. The broken screw was tried to be removed with the aid kit of her implant system, however it couldn't been removed completely. Because of the systemic condition of the patient, the surgery couldn't take place immediately, therefore the patient wanted to use her existing dentures temporarily until the new implant's placement. Her existing mandibular denture was turned into implant supported magnet retentive denture by conventional methods.
A two-years follow-up was carried on. It is observed that the patient was satisfied with the retention of her mandibular overdenture until the new implant's placement.
This is a method that can be used temporarily for the patients, who has broken abutment screws that couldn't be removed from the implant; in order to provide an accepted retention for the patient until the new implant's placement. In addition to this, one of the advantages of this method is also being an easy approach for the practitioner.

O-049

Evaluation of mandibular incisive canal for implant operation by CBCT

ME Çiftçi[1], F Sarı[2], AM Aktan[1], I Büyükhatipoğlu[2], N Palta[2]
[1]Gaziantep University, Faculty of Dentistry, Department of Oral Diagnosis and Radiology, Turkey
[2]Gaziantep University, Faculty of Dentistry, Department of Prosthodontics, Turkey

Purpose: Mandibular anterior region between two mental foramen is believed as a safety region for the implant operation. The first aim of the present study was to evaluate the mandibular incisive canal (MIC) for implant dentistry. The accessory mental foramen (AMF) was also evaluated in the study.
Materials and Methods: Cone beam Computed Tomography (CBCT) records of the one hundred patients (58 males, 42 females, mean ages: 35,8) who referred to the Department of Dentomaxillofacial Radiology were evaluated by a six years experienced Dentomaxillofacial Radiologist retrospectively. Demographic information of the patients was recorded. Locations, length, diameter of the MIC and AMF were determined.
Results: End of the MIC on the right side were found as 68 in the buccal and 32 in the lingual. On the left side were also found as 60 in the buccal, 40 in the lingual. Mean length of the MIC were found for right and left sides as 12.32, and 12.45 mm, respectively. Mean diameter of the MIC were found for right and left sides as 2.42 and 2.39 mm respectively. The mean approximation of MIC to base of the mandible was found as 9.1 mm in the right side and 8.89 mm in the left side. Out of the 100 patients, 78 AMFs were found in 60 patients.
Conclusion: Evaluation of MIC using CBCT may be crucial for implant dentistry involving the interforaminal region believed safety zone.

O-050

Assessment of lingual foramen characteristics regarding dental implant using CBCT

AM Aktan[1], F Sarı[2], Ö İşman[1], FZ Dolgun[2], ME Çiftçi[1]
[1]Department Of Oral Diagnosis And Radiology, Gaziantep University Of Dentistry, Gaziantep; Turkey
[2]Deparment of Prostodontics, Gaziantep University Of Dentistry, Gaziantep; Turkey

Purpose: The aim of the present study was to assess retrospectively characteristics mandibular lingual foramina using cone beam computed tomography (CBCT). Materials and Methods: Of 100 CBCT records of mandible with adequate quality and easily appearing mandibular inferior border were evaluated to exploit lingual foramen in the present study. A six years experienced examiner carried out all the measurements including length, location, and proximity to the base of the mandible of the lingual foramen. Results: Mean length and proximity to the base of the mandible of the lingual foramen were measured as 7.85 and 11.57 mm respectively. Out of the 100 CBCT records, 24 was classified as inferior lingual foramen, 71 was as superior lingual foramen, according to mental spine. On the 5 cases lingual foramen was found over the mental spine. Conclusion: Careful preoperative dental implant planning taking into account the anatomical variations of the foramen may help to avoid several complications including damaging to the foramen and their contents.

O-051

Creating a laboratory follow-up system by using RFID card technology

H Akbaba[1], M Zortuk[2], H Albayrak[1], A Çalışkan[1]
[1]Department of Prosthodontics, Faculty of Dentistry, Erciyes University, Kayseri, Turkey; Research Assistant
[2]Department of Prosthodontics, Faculty of Dentistry, Erciyes University, Kayseri, Turkey; Associate Professor

The number of dentists who make dentures has been increased along with the increasing demand. Nowadays prosthodontic applications have an important part in dentistry. In prosthodontic dentistry, communication between the dentist and laboratory is important for making perfect dentures. Communication between the dentist and laboratory is supplied by the help of follow-up forms or verbal communication. Using follow-up forms is a better communication method but it has some disadvantages like disappearance of follow-up forms. Sometimes it is impossible to understand explanations on the follow-up forms because of handwriting or environmental conditions like water or impression materials. On the other hand it is not probable to send photo that has information about colour or form of the denture when only follow-up forms are used. Especially in big hospitals where a number of dentists work it is another problem that putting the dentures or model to wrong dentists' compartment. These undesired problems cause waste of time and sometimes remaking of denture. Elimination of these problems is possible by using RFID card technology. It is possible to supply communication between the dentist and laboratory, find the missing box that is used for carrying models or dentures, transfer more information as the photos with the help of the system that include an RFID card on the box that is used for carrying models and dentures, RFID card reader stations and a computer software. Consequently, organizing the correlation between the dentist and laboratory is possible with the help of this system.

O-052

Evaluation of the marginal fit of fixed partial denture frameworks

R Üzgür, Z Demirtağ, V Şahin
Department of Prosthodontics, Faculty of Dentistry, University of Kirikkale, Kirikkale, Turkey

Purpose: The aim of this study is to evaluate the marginal fit of fixed partial denture frameworks fabricated with different CAM techniques before and after application of layering ceramics.
Materials and Methods: A 3D model simulating teeth #45 and 47 with a 1 mm chamfer marginal configuration and a 3° convergence angle was prepared. A conventional 3-unit fixed partial denture frameworks was modelled using 3Shape Dental System and the subsequent STL file was obtained. A total of 64 fixed partial denture frameworks were obtained using casting of milled wax frameworks, selective laser sintering, dense milling and soft milling techniques subsequently (n=16). The frameworks were scanned utilizing a topographic digitizer before and after the application of layering ceramic. Obtained 3D files were coincided with the corresponding 3D model and the marginal fits were evaluated. Marginal gap data was analyzed with Repeated Measures Analysis of Variance Test and Duncan post-hoc tests.
Results: Fixed partial denture frameworks obtained with the dense milling technique provided the lowest marginal gap values (-21.207±0.874); followed by the frameworks obtained with the casting technique (27.255±0.874). Soft milled (44.783±0.874) and selective laser sintered frameworks (45.923±0.874) provided the highest marginal gap values. Porcelain firing has led to an increase of the marginal gap values ($p<0.01$)
Conclusion: Different CAM techniques provide fixed partial denture frameworks with variable marginal fits. Porcelain firings tend to increase marginal gap values independent of the technique used to produce fixed partial denture frameworks.

O-053

Precise time saving implant impression technique

K Al Himdani
French Centre for Dental Implants Dental, United Arab Emirates

Background: Even though excellent impression materials are now available, for making accurate replication for hard and soft tissue, the dentists have faced lots of obstacles in making impressions of implant dentistry. A modified impression technique is proposed to simplify chairside procedures for the accurate implant impression.
Case Description: A new describes a simple clinical procedure using the double-mix impression technique with a step by- step approach to successful final impressions. This technique saves time and reduces the need for a complicated impression technique for multiple implants cases with limitations and difficulties in taking impressions.
Clinical Implication: This technique has several advantages, including higher impression quality, fewer impressions, and being more comfortable for the patient and less stressful for the clinician.

O-054

Bond strength and microleakage of glass-fiber posts cemented with different adhesive systems on laser etched root canal walls

Ö Parlar Öz[1], A Seçilmiş[1], C Aydın[2]
[1]Department of Prosthodontics, Gaziantep University, Gaziantep; Turkey
[2]Department of Prosthondontics, Gazi University, Ankara; Turkey

Purpose: The aim of this study was to evaluate the bond strength and microleakage of glass-fiber posts cemented with different adhesive systems on laser etched roots. Materials and Methods: 120 human mandibular premolars, extracted for orthodontic and periodontal reasons, were selected for using in the study. Teeth were classified in two groups for push-out bond strength test (n=60) and microleakage test (n=60). Each group was divided into 6 subgroups (n=10). Er:YAG laser etching (Fidelis Plus3; Preciso 300/20; MSP,60 mj,20 Hz) was applied on root canal walls for 3 subgroups. One type of glass-fiber post (EverstickPost) was used in this study. Fiber posts were cemented with three different adhesive systems: Total-etch (Variolink N), self-etch (Panavia F 2.0), self-adhesive (RelyX Unicem). For push-out test, 3 dentin discs (2mm thickness) were obtained from each tooth and bonding strengths of fiber posts were measured. Dye penetration method was used for evaluation of coronal microleakage. Linear microleakage was measured under a stereomicroscope. Bonding interfaces and operated surfaces were examined by scanning electron microscope.
Results: Data were analyzed by one way ANOVA and Tukey's HSD statistical tests. The highest bonding strength was observed total-etch and self-adhesive resin cement groups applied laser etching ($p<0.05$). The least bonding strength was obtained self-etch resin cement group ($p<0.05$). The most microleakage was detected self-adhesive resin cement group ($p<0.05$). There were no statistically significant differences between the other microleakage groups ($p>0.05$).
Conclusion: Bonding strength was increased by laser etching in all resin cement systems. Microleakage was reduced by laser etching in self-adhesive resin cement system.

O-055

Influence of desensitizing procedures on adhesion of resin to dentin

A Atay[1], Ö Kara[1], HB Kara[2], E Çal[3], A Üşümez[1]
[1]Bezmialem Vakıf University School of Dentistry, Department of Prosthodontics, Turkey
[2]Istanbul Medipol University School of Dentistry, Department of Prosthodontics, Turkey
[3]Ege University School of Dentistry, Department of Prosthodontics, Turkey

Purpose: To evaluate the effect of two desensitizer agents with glutaraldehyde and tetracalcium phosphate content and Nd:YAG laser irradiation on shear bond strength (SBS) of self-etch resin cement to tooth surface.
Materials and Methods: Forty-eight human caries-free premolars were embedded in acrylic resin blocks 2 mm below the cemento-enamel junction. Buccal surfaces of teeth were ground to expose dentin; and were randomly grouped (n=12) as; 1-No treatment (control), 2-Glutaraldehyde contained agent (Gluma, Heraus-Kulzer) 3-Nd:YAG laser (100mj, 10Hz) 4-Tetracalcium phosphate contained agent (Teethmate, Kuraray). Resin cement (Multilink N, Ivoclar-Vivadent) was applied to the conditioned tooth surfaces using teflon tubes. Specimens were thermocycled (5000 cycles, 5–55±1°C, dwell time 30s). SBS of each sample was measured using universal testing machine at crosshead speed of 0.5 mm/min.

SBS values were calculated in MPa and results were statistically analyzed using one way ANOVA and Tukey HSD tests. Further SEM and EDX analysis were also performed. Results: SBS values were not significantly different from each other (p>.05). Most of the specimens showed adhesive failure between resin cement-dentin.
Conclusion: Nd:YAG laser irradiation and tetracalcium phosphate-containing agent did not decrease bond strength of resin cement to dentin and bond strength values were not significantly different from conventionally used glutaraldehyde-containing agent.

O-056

Effect of surface coating with different techniques on titanium-porcelain bonding

MA Aslan[1], C Ural[2], S Arıcı[3]
[1]Department of Prosthodontics, Faculty of Dentistry, University of Abant Izzet Baysal, Bolu, Turkey
[2]Department of Prosthodontics, Faculty of Dentistry, University of Ondokuz Mayıs, Samsun, Turkey
[3]Department of Orthodontics, Faculty of Dentistry, University of Ondokuz Mayıs, Samsun, Turkey

Purpose: The purpose of the study was to evaluate the effects of coating titanium surface with micro-arc oxidation (MAO) technique and hydroxyapatite (HA) on the bond strength of porcelain to titanium surfaces.
Materials and Methods: One hundred twenty machined titanium specimens were prepared from titanium grade 5 as the metal substrate with dimension of 25×3×0.5mm. The specimens were divided into six groups (n=20) according to the surface treatment as follows: Group 1: without coating, which were exposed only to sandblasting as a control; Group 2: Coated with MAO for 5 min; Group 3: MAO for 15 min; Group 4: MAO for 30 min; Group 5: Coated with HA; Group 6: Combination of MAO and HA. Each group was further equally divided into two subsubgroups (n=10) according to the type of porcelain used as follows: Sub-subgroupsI: Titanium/Noritake Ti-22 porcelain; Sub-subgroupsII: Titanium/Vita Titankeramik porcelain. The bond strength was tested by a universal testing machine at 0.5 mm/min crosshead speed. The data were analyzed statistically using a One-Way ANOVA and Tukey's multiple comparisons test.
Results: The Ti6Al4V/Noritake (MAO for 30 min) and Ti6Al4V/Vita Titankeramik (MAO for 30 min) groups showed the highest bond strength (MPa) (44.42±7.47 and 45.48±4.59) values. The Ti6Al4V/Noritake Ti-22 (HA) group (41.80±7.07) significantly higher than control group (27.12±7.16), while Ti6Al4V/Vita Titankeramik (HA) group (31.99±3.71) was not significantly different from Vita control group (29.55±5.54).
Conclusion: The coating process making with either MAO or HA technique has improved titanium–porcelain adhesion.

O-057

Effect of cantilever length to stress distribution in implant-supported prosthesis

H Akça, İ Baran
Department of Prosthetic Dentistry, Kirikkale University, Kirikkale, Turkey

Purpose: Esthetic restrictions, poor bone quality in a specific site and the need for extensive bone grafting and sinus lifting are critical considerations for implant therapy. Cantilever

extensions have been commonly used to extend fixed dental prostheses (FDPs) over regions where there is insufficient bone, thus avoiding bone grafting and regarding invasive surgeries. The purposes of this study is to examine the stress distribution of implant supported distal cantilevered fixed partial dentures at posterior region of maxilla and determine an appropriate cantilever length.
Materials and Methods: In the present study, single implant supported two unit fixed partial dentures were designed and finite element (FE) models with different cantilever lengths (5,6,7,8 and 9 mm) were created. Models were designed with distal cantilevers determining the first premolar as abutment and extending the cantilever until the second premolar. 4,1 mm diameter and 10 mm long ITI implants were used as abutments and metal supported bridges were placed as artificial restorative materials. The 300 N loads were applied towards the cusp tips of the teeth in vertical and oblique directions during FE analysis.
Result: Compared to vertical, the severity of the effect was increased when the loads were applied in oblique direction. The stress distribution was intensified with the increase of distal cantilever length.
Conclusion: The FE analysis of the models revealed that maximum stress concentrations were observed according to Von Mises stress values on connectors of distal cantilevers.

O-058

Comparison of stress transmission on implant supported overdentures and removable partial dentures of edentulous mandible

G Sayın, O İnan
Selcuk University, Faculty of Dentistry, Department of Prosthodontics, Konya, Turkey

Purpose: The purpose of this study was to compare the stress transfer characteristics of two different types of implant supported prosthesis (implant supported overdenture and implant supported removable partial dentures) retained by 2 and 4-implants via photoelastic stress analysis.
Materials and Methods: Our study was designed to evaluate the force transmission of commercially available titanium implants inserted in edentulous mandibles made of photoelastic resin within 2-4 implants by using two different types of prosthesis: overdentures and implant retained removable partial dentures. In all models, implants were placed parallel to each other and to the midline. 300 N load was applied first premolar. The loading and stress distribution were photographed after the completion of the prostheses.
Results: In the models with two implants retained removable partial dentures, stress consideration was found lower than four implants retained removable partial dentures. Locator which is a stud attachment showed the most equitable stress distribution for overdenture models. Despite this non-splinted implants were caused high stresses around distal implant on the side of loading.
Conclusion: Mandibular implant-retained overdentures are primarily and effective treatment modality for edentulous patients, in particular, those who have persistent problems using a conventional mandibular prosthesis. Generally, in the edentulous mandible, a treatment concept using 2 or 4 implants to retain a mandibular overdenture has been proposed. In our study when the models were compared, loads were transmitted other implants by splinting the implants. The highest stresses were observed in all models around distal implant on the side of loading.

O-059

Stress evaluation of four implant supported overdentures

I Turp[1], V Turp[2], A Üşümez[1]
[1]Bezmialem Vakıf University, Faculty of Dentistry, Department of Prosthodontics, İstanbul, Turkey
[2]İstanbul University, Faculty of Dentistry, Department of Prosthodontics, İstanbul, Turkey

Purpose: The goal of our study is to evaluate the stress formation when angled locators are used on tilted implants and mini implants used to support a mandibular overdenture.
Materials and Methods: Four 3D finite element models of mandibular overdentures were established using four axial standard-sized implants (model-1), four standard-sized implants with the mesial ones axial and the distal ones tilted (model-2) and four mini-implants (model-3) with Locator attachments. Four types of load were applied to the overdenture in each model: Bilateral vertical (load-1), unilateral vertical (load-2) and inclined (load-3) 100 N loads on the left first molar and a 100 N vertical load on the lower incisors (load-4). The biomechanical behaviours of peri-implant bone, implants, abutments and overdentures were evaluated.
Results: The highest stress value of the cortical bone was observed in model 2 which also displayed alterations in the location of the highest stress. No remarkable differences were observed between standard-sized implants and mini-implants. The stresses generating in the overdenture at posterior loads were mostly observed around the implants.
Conclusion: Clinicians should keep in mind that; when overdenture treatment is supported by four implants where mesial ones are axial and distal ones are tilted, more stress is expected to develop in the bone.

O-060

Metal-ceramic bonding strength of Co-Cr fabricated with different methods

P Gültekin, A Kartal, M Aydın
Department of Prosthodontics, Faculty of Dentistry, Istanbul University, Istanbul, Turkey

Purpose: Limited information is available regarding the metal-ceramic bonding strength of Co-Cr alloys fabricated with different technologies and veneered with different porcelains. The purpose of this in vitro study was to evaluate the metal-ceramic bonding strength of Co-Cr substructures fabricated with four different techniques and two different veneering porcelains.
Materials and Methods: Twenty conventionally casted, twenty selective laser sintered, and forty milled (twenty CAD/CAM-Magnum Lucens, twenty CAD/CAM-Ceramill Sintron) Co-Cr specimens (25 mm x 3 mm x 0.5 mm) were prepared according to ISO standards. Each group containing twenty specimens were further divided into two subgroups of ten specimens for the application of two types of veneering porcelain (VitaVMK Master and Noritake). Three point bending test was applied to determine the metal-ceramic bonding strength in MPa. The data were statistically analyzed with One way Anova and Tamhane post hoc tests (α=0.05).
Results: Test results exhibited statistically significant differences between different fabrication methods ($p<0.01$). CAD/CAM machined Magnum Lucens substructures showed higher bond strength than the ones fabricated with casting or selective laser sintering. The difference between two types of veneering porcelain was also found to be statistically significant ($p<0.01$).

Conclusion: All specimens showed acceptable bonding value higher than 25 MPa whereas milled specimens exhibited significantly higher strength than casted and laser sintered groups. Bonding strength of Vita VMK was found to be higher than Noritake for all tested groups.

O-061

Influence of novel zirconia primer on ceramic-resin cement microtensile bond strength

G Akgüngör, D Sen, V Turp, B Tuncelli
Istanbul University Faculty of Dentistry, Department of Prosthodontics, Istanbul, Turkey

Purpose: Evaluation of the influence of 2 different primers on microtensile bond strength of resin cements to zirconia ceramic after artificial aging (Thermal cycling) and air-particle abrasion.
Materials and Methods: 6 zirconia blocks (23x20x10 mm) were prepered and divided into 3 groups (n=2) according to the following surface treatments: (1) airborne particle abrasion with 50 μm Al_2O_3 particles, (2) airborne particle abrasion and zirconia primer application, (3) airborne-particle abrasion and MDP-containing primer mixture application. Composite resin blocks were bonded to the pretreated zirconia surfaces using 2 different resin cements. Zirconia-composite blocks were cut to microbars with a cross-section of 1.0 ± 0.2 mm. The samples were thermocycled and microtensile bond strength tests were performed. Specimens were evaluated under optical microscope. Data were analyzed with 1- and 2-way ANOVA and Tukey multiple comparison tests (α=.05).
Results: MDP based resin cements provided similar bond strengths ($p>0.05$) to airborne particle abraded and primer pretreated zirconia surfaces. Bis-GMA based resin cements provided statistically higher bond strengths ($p<0.05$) to primer pretreated zirconia surfaces than airborne particle abrasion alone. No statistically significant differences ($p>0.05$) were detected between the zirconia primers used.
Conclusion: MDP containing resin cements or primers increase the bonding strength of zirconia. When using fixed partial dentures with zirconia substructures, clinicians are advised to use either primers or resin cements with MDP, if not both.

O-062

Resin cementation of zirconia with different bonding agents

M Çakırbay Tanış, C Akay, D Karakış
Gazi University, Prosthodontics, Turkey

Purpose: The purpose of this study is to evaluate the effects of different bonding agents on shear bond strength of zirconia-resin cement.
Materials and Methods: In this study 35 zirconia specimens were treated as follows: Group I: control, Group II: sandblasting, Group III: sandblasting+Monobond S, Group IV: sandblasting+Monobond Plus, Group V: sandblasting+Z prime. Specimens in each group were bonded with conventional composite resin cement Variolink II. After cementation specimens were stored in distilled water (37 Cº) 24 hours and shear test was performed.
Results: The highest shear bond strength values were observed in Group V and Group IV. The lowest shear bond strength values were observed in Group I.

Conclusion: Using Monobond Plus and Z-Prime combined with sandblasting can be an effective method to achieve resin bonding of zirconia.

O-063

Evaluation of vinyl polysiloxane impression materials using the one-step technique

A Köroğlu, I Özcan, TB Özçelik, SD Somay
Departman of Prosthetic Dentistry, Faculty of Dentistry, Baskent University, Ankara, Turkey

Purpose: The purpose of this study was to evaluate the quality of impressions made of vinyl polysiloxane (VPS) materials using the one-step impression technique.
Materials and Methods: A total of 150 fixed dental prosthesis impressions were taken by 3 experienced prosthodontists. The impressions were evaluated and rated visually by another prosthodontist and the respective casts were evaluated and rated visually by an experienced dental technician. The defects observed were noted as bubbles, voids, tears, or other defects. A scale was structured for the impressions and casts with ratings Alpha (excellent; no defects), Bravo (acceptable; small defects), Charlie (inadequate; defects that require remaking of impression) and Delta (unacceptable; substantial defects like at preparation finish lines). The data were analyzed with the Chi-square test for inter-operator, number of abutments and location of preparation variables (p=0.05).
Results: The scale rates were 85 (57%) Alpha, 52 (34%) Bravo, 6 (4%) Charlie, 7 (5%) Delta and 81 (54%) Alpha, 58 (39%) Bravo, 4 (3%) Charlie, 7 (5%) Delta for the impressions and casts, respectively. Sixty-nine percent of the impressions and respective casts were rated the same score. The scale rate results were not influenced by the inter-operator variability or number of abutments, whereas the location of the preparation variable was significant for anterior-posterior and not for maxillary-mandibular location.
Conclusion: Within the limitations of this study it can be concluded that the impressions made of VPS materials using the one-step technique are highly accurate independent of the operator differences, number of abutments or maxillary-mandibular location of the preparation but only anterior-posterior location.

O-064

Evaluation of different surface treatments between resin cement and titanium

E Şeker[1], MA Kılıçarslan[2], ST Deniz[2], E Mumcu[1], P Özkan[2]
[1]Eskisehir Osmangazi University Faculty of Dentistry Department of Prosthodontics, Turkey
[2]Ankara University Faculty of Dentistry Department of Prosthodontics, Turkey

Purpose: To investigate the effects of different micromechanical surface treatments versus atmospheric plasma on the adhesion of self-adhesive resin cement to titanium grade 5 (Ti-6Al-4V) alloy.
Materials and Methods: Sixty plates of machined titanium discs were divided into five groups (n=12) according to surface treatment techniques: 1) Untreated (CNT); 2) Sandblasted (SAB); 3) Tribochemically treated (ROC); 4) Roughening with a tungsten carbide bur (TCB); and 5) Plasma treated (APL). SEM analysis and surface roughness measurements were performed. Self-adhesive resin cement was bonded to the Ti surfaces and shear bond strength (SBS) tests, surface roughness (Ra) and failure mode examinations were carried out. 1-way analysis of variance (ANOVA), Post-hoc Tukey's and Games-Howell multiple

comparison tests were used. Failure mode data were analyzed by the chi-squared test ($p<0.05$).
Results: The lowest SBS values were obtained with the CNT group (3.65±2.11 MPa) and were significantly different from all other groups except for the APL group (4.40±4.02 MPa). The ROC group showed the highest SBS results (16.91±4.48 MPa) and was significantly different from the other groups ($p<0.05$) except for the TCB group (14.01±4.11 MPa; $P>0.05$). The ROC group (2.20±0.13 μm) showed the highest Ra value. Significant difference found between all groups ($p<0.05$) in terms of surface roughness.
Conclusion: The effect of atmospheric plasma was not sufficient to replace the contemporary protocol involving micromechanical roughening for titanium. This technique was found to have a potential for promoting adhesion to dental materials.

O-065

Evaluation of aging and surface treatments on bonding-strength to Y-TZP

İH Uzun[1], M Arslan Malkoç[1], AT Öğreten[1], YZ Akpınar[2], H Güngör[3]
[1]İnönü University, Turkey
[2]Abant İzzet Baysal University, Turkey
[3]Atatürk University, Turkey

Purpose: The aim of this study was to investigate the shear bond strength (SBS) of a repair material to Y-TZP after various aging and surface treatment methods.
Materials and Methods: A total of 72 Y-TZP specimens (5×5×3 mm) were prepared and divided into 3 groups. First group (NA) was evaluated in non-aged condition. DA group was aged in distilled water at 37°C for 52 weeks and OA group was aged by standard autoclave sterilization conditions, 134°C at 0.2 MPa. Then, all groups were divided into 3 subgroups (n=8) for repairing procedures. Repaired according to the manufacturers' (Cimara Zircon, VOCO, Germany) recommendations (C); after air abrasion (AA); and after application of Z-primer (ZP). SBS of the specimens were measured in a universal testing machine. The data were analyzed by Kruskal-Wallis and Mann-Whitney U test ($\alpha=0.05$).
Results: SBS values were not affected by the aging procedures except for OA-C group, which showed higher SBS value than the other C groups ($p<0.05$). There are no statistically significant differences between the C and AA groups ($p>0.05$), except NA-AA group which had the highest SBS in overall ($p<0.05$). ZP groups demonstrated the lowest SBS among all groups ($p<0.05$).
Conclusion: Bonding to Y-TZP was not affected by the aging process after the chipping fracture occurred. However, AA presents a promising protocol for a durable bonding of repair material to Y-TZP for both aged and non-aged groups.

O-066

Latest trends in digital dentistry presentation of a real total upper rehabilitation, with Toronto Bridge – through digital technologies application

E Cennerilli
EGS, Italy

This case is a clear example of how new technologies of digital dentistry are strongly entering as fundamental elements in dental practice.
We started with the patient's images management. We used an innovative software for

functional and aesthetic smile design. Thanks to the self-managed digital elaboration of this software, the dentist presented to the patient the final prosthetic result contextualizing it in the entire face, and at the same time provided all information to the technician for the work execution.
Once defined the aesthetic, the workflow switches to the recognition of the 3D data. In order to do that, we used a body scanner for the face detection plus an intraoral scanner. This part was fundamental for the volumes construction and for the consequent realization of the underlying framework. Indeed, we were able to study the relationship between teeth and lips as well as between teeth and posture.
Then, thanks to a desk 3D scanner with structured light technology the laboratory has got the chance to acquire accurate and precise data from the model.
At this point, all collected data were injected into a dental CAD, where it was possible to realize the framework by using the volumes studied. Through a 3D printer the dentist was able to print the framework in PMMA to be proved directly into the patient's oral cavity. After that, we constructed the substructure with simple dental CAD 3D modeling tools, according to the volumes tested. Finally, we managed and launched the CAM file in order to get a high translucency zirconia, able to faithfully reproduce each aesthetic and functional detail previously determined in digital.

O-067

Treatment options for anterior teeth with doubtful prognosis: To maintain or to extract? A series of case reports

T Diamantatou, E Kotina, S Kourtis
Department of Prosthodontics, Dental School, National and Kapodistrian University of Athens, Greece

Anterior teeth are one of highest concern both for the patient and the clinician as the esthetic result of the treatment depends entirely on them.
In certain cases the clinician is confrontated with a dilemma, to maintain or extract anterior teeth with doubtful prognosis. The clinician steps required to maintain anterior teeth may include periodontal surgery, orthodontic treatment and the use of transitional restorations. On the other side, extraction of the tooth may impose ridge presentation with and/or hard tissue grafts, formation of the pontic area or alternatively implant placement with or without augmentation. All the above mentioned treatment options have to be evaluated carefully during the treatment planning to achieve the best functional and esthetic result to the patient. The purpose of this presentation is to present the various available treatment options through a serie of clinical cases.

O-068

Full-mouth rehabilitation of a severely worn dentition

A Barfeie, JS Rees
Prosthodontics Department, School of Dentistry, Cardiff University, The United Kingdom

A 34-year-old male patient is presented in this report with multi-factorial nature of tooth surface loss and various degree of wear in different regions in the maxillary and mandibular arches, which occurred over 10 years. Generalised tooth wear with about 80% tissue loss in maxillary anterior region, also considering the young age of the patient shows the severity of the disease. After identifying the aetiology of the disease and preventing further causes of

tooth tissue destruction, it was attempted to establish the occlusal vertical dimension (OVD), resting vertical dimension (RVD) and freeway space (FWS). A reorganised approach was used to restore the worn dentition including fixed and removable prosthetic options. This case reports that a satisfactory clinical result was achieved by restoring the vertical dimension with an improvement in esthetics and function.

O-069

Esthetic rehabilitation with zirconia crowns and IPS e.max veneers

S Günsoy, MM Ulusoy, M Durmayüksel, S Ongun
Department of Prosthodontics, Near East University, Nicosia, Turkish Republic of Northern Cyprus

Introduction: Ensuring clinical success begins either a careful discussion of treatment planning, comprehensively covering all variables in simple or complex cases. Procedures including the mucogingival therapy and tooth restoration are essential treatment regimens requiring multidisciplinary expertise. The interplay of periodontics and prosthodontics are present at many fronts including the response of the gingival tissue to the prosthetic preparations. The adaptation of the margins, the contours of the restoration, the proximal relationships and the surface smoothness have a critical biological impact on the gingiva and the supporting periodontal tissues.
Case Summary: A 33 years old female patient was referred to our clinic for her gummy-smile and unsatisfied shape and width of her anterior teeth. After the examinations, it is determined to make gingivectomy for orientate gingival margins and the restorations of both central teeth were held with zirconia crowns. Also, laterals and canines were restored with IPS e.max laminates. Patient had a gummy-smile and anterior teeth with unproper dimensions. Gingival margins rearranged with diode laser (BIOLASE) make for prolong the clinical lenght of patient's teeth. After checking marginal fit, proximal contour and occlusion of restorations were cemented.
Conclusion: The prosthetic rehabilitation with gingivectomy allows tissue preparation and realise esthetic and physiological stability, achieving access to prosthetic margins preserving thus suitable prosthetic-periodontal unity. In follow up session, the margins were transduced with the zirconia restorations. This revealed that adaptation of restorations and periodontal tissues were perfect.

O-070

The art of handmade restorations

G Dazhaev,
Private Clinic, Russia

Summary: Not long ago, digital and dentistry were two words one did not expect to hear in the same sentence, but today we are the witnesses of the new era in dentistry. We have digital impressions, we have 3D printers and CAD/CAM technologies developing and improving every year. But at the same time there is still a niche existing for the handmade porcelain restorations created by highly talented and gifted master-ceramists.

O-071

Adverse reactions to dental materials. Diagnose- treat- document

P Kamposiora, P Papanagiotou, G Papavasiliou
University of Athens, Prosthodontics, Greece

Dental materials and dentistry developed and evolved mutually over the years. The discovery of new fundamental restorations were possible because dental materials allowed that to happen. Sometimes, adverse reactions can appear after the use of common dental materials. These reactions usually are painful and have a devastating effect on the patient's quality of live. As a result, the dentist stressfully tries to find a solution, while the trust between him and the patient is unsettled.
This presentation will discuss the major adverse reactions that can appear by materials used in daily dental practice and the therapeutic modality that needs to be followed by the dentist. It will also discuss the routine methods that dental personnel has to develop in order to prohibit adverse reactions happening in their working environment, as well as the obligation of the clinician to document and report such reaction to the official organizations.

O-072

Accuracy of different impression techniques for internal-connection angulated implants

G Tsagkalidis[1], D Tortopidis[1], P Mpikos[1], G Kaisarlis[2], P Koidis[1]
[1]Dept. of Fixed Prosthesis and Implant Prosthodontics, School of Dentistry, Aristotle University of Thessaloniki, Thessaloniki, Greece
[2]Department of Mechanical Design and Control Systems, School of Mechanical Engineering, National Technical University of Athens, Athens, Greece

Introduction: Several impression techniques have been suggested, without adequate documentation, to eliminate the impression inaccuracies developed during impression making of angulated implants.
Purpose: The purpose of this study was to compare the accuracy of splinted, non-splinted and snap-fit impression techniques for angulated internal-connection implants. Materials and Methods: An experimental device was used to allow a clinical simulation of impression making by means of open tray (direct) and closed tray (indirect) techniques. Three different impression techniques (direct acrylic-resin splinted, direct non-splinted and indirect snap-fit with impression plastic caps) for 6 internal-connected implants at three angulations (100, 150, 250) were examined using a polyether. Evaluation of implant impression accuracy was carried out by directly measuring the difference in 3D positional deviations between the implant body/impression coping positioned on the base of the device prior to impression making and the impression coping/laboratory analog within the impression, using a computerized Coordinate Measuring Machine (C.M.M.). Data was analyzed by the two-way ANOVA. Means were compared with the LSD criterion at $P<0.05$. Results: The results showed that: (1) at 250 implant angulation, the highest accuracy was obtained with the splinted technique (mean deviation ± SE: 0.39±0.05mm) and the lowest with the snap-fit technique (0.85±0.09mm), (2) at 150 implant angulation, there was no significant difference among splinted (0.22±0.04mm) and non-splinted technique (0.15±0.02mm), showing both the highest accuracy; the lowest accuracy was obtained with the snap-fit technique (0.95±0.15mm).

Conclusion: Splinted impression technique exhibited a higher accuracy than the other techniques studied when increased implant angulations were involved.

O-073

Platform switching and soft tissues response: A 5-years follow up

L Lago González, B Rilo Pousa, N Fernández Formoso, L Dasilva Domínguez, C García Álvarez, MJ Mora Bermúdez, T González Veiga, E Hernández Pérez, I López Darriba, R Pérez García, U Santana Mora, U Santana Penín
Department of Prosthodontics and Occlusion, Faculty of Medicine and Dentistry, University of Santiago de Compostela, Santiago de Compostela, A Coruña, Spain

Purpose: To evaluate with a non-invasive method the soft tissue response around a single tooth implant in the posterior zone using the platform switching concept.
Materials and Methods: In 15 patients, 31 ITI implant-supported restoration (Bone Level Type) were placed in posterior zone. Assessments of soft tissue after crown placement (baseline) and at 5-year follow-up examination were performed.
Results: The distance from the top of the papilla to the contact point varied from 2.08 to 1.31 mm at 5-year follow-up, the difference between the two measurements was considered to be statistically significant, ($p<0.001$). The apico-coronal crown length varied from 9.44 to 9.27 mm at 5-years, no statistically significant difference was shown between the two measurements.
Conclusion: This study suggests that, in a limited time period of 5 years, a reduction in the distance from the top the papilla to the contact point contact was observed (-0.36 mm), so growth of the papilla is observed after a year, and buccal margin did not show any perceptible change.

O-074

Robot system and present day implantology

N Forna
Department of Implantology, Removable Dentures and Tehnology. Faculty of Dental Medicine. Gr.T.Popa University of Medicine and Pharmacy, Iassy, Romania

Purpose: This automated system is a priority in the exigency and the training of the practitioner student in the area of implantology. Browsing is done in real time following a 3D planning for further reconstructions or oral implants.
Materials and Methods: Out of 92 studied patients, 42 were men and 50 were women, ages between 40-65 years. The patients were divided into two groups according to the intraoral status. Among this kind of cases we can enumerate: bone deficit or the complex approach when these techniques can reoptimize the classical techniques.
Results: The lots treated through classical techniques, respectively automated techniques show a long term success ensured by the latest preparation and treatment methods of the approached cases.
Conclusion: The few leading–edge automated systems that are applied on the modern dental medicine world market will become a landmark in the current practice allowing the dealing with some clinical cases that are difficult to manage.

O-075

Dental implants in patients with Sjögren's syndrome

A Korfage, GM Raghoebar, S Arends, PM Meiners, A Visser, FGM Kroese, H Bootsma, A Vissink
University Medical Center Groningen Center of Special Dental Care, Department of Oral and Maxillofacial Surgery, Netherlands

Purpose: To assess clinical outcome of dental implant therapy in a cohort of patients with Sjögren's syndrome (SS).
Metarials and Methods: All SS patients attending the University Medical Center Groningen for standardized follow-up (n=406) were asked whether they had dental implants. Patients were recalled in 2012-2013 to record implant survival, periodontal indices and bone resorption. Patients' symptoms, health-related quality of life, oral functioning and satisfaction were assessed using validated questionnaires.
Results: Of the 335 responding patients, 21% was provided with dental implants. Implant survival was 97% and peri-implant mucosa was healthy. Median marginal peri-implant bone loss was 0.7 mm (IQR 0.1-1.2). Patients were satisfied with their implant-retained prosthetic device. Worse oral functioning after dental implant insertion was associated with more dryness complaints, lower patients' satisfaction and worse subjective chewing ability.
Conclusion: Implant therapy is rather common in our cohort of SS patients. Considering the high implant survival, good peri-implant health, negligible marginal peri-implant bone loss and high patient satisfaction, dental implants are a good treatment option in the prosthetic treatment of patients with SS.

O-076

To graft or not to graft: Pink ceramics gingival perspective

J Markose
Prosthodontics, United Arab Emirates

Osseointegrated implants represents a highly predictable and successful when sufficient bone quantity as well as bone quality. Many times three-dimensional bone morphology, may not permit favorable implant positioning; leads bone grafting procedures. Although success rates of various bone graft techniques are high, inherent disadvantages of augmentation procedures include prolonged treatment times, raised treatment costs and increased surgical invasion associated with patient morbidity and potential complications. In spite of all the recent developments comprehensively and esthetically re-establishing the hard and soft tissue contours still represents a challenge. Creating a prosthetic gingiva can represent an esthetic and functional alternative for the predictable reconstruction of ridge deformities particularly in patients who do not want to undergo any surgical procedure. An interdisciplinary treatment plan required for the long-term success of this kind of restoration. We should have the skills to analyze the three-dimensional shape of the tooth, to determine the correct position of the prosthesis and to understand the principles of gingival esthetics

for the reconstruction of the gingiva in order to ensure harmony, balance, and continuity of form between the patient's natural gingiva and the prosthetic gingiva. The aim of this lecture is to (1) Provide clinical decision-making criteria to determine when integrated pink ceramics are the design option of choice; (2) present strict, well-defined design guidelines; (3) discuss the associated clinical and laboratory steps; and (4) confirm the esthetic potential of the Pink ceramics.

O-077

Acidic agents and ion leaching of dental porcelains

T Çelakıl, G Evlioğlu, B Gökçen Rohlig, H Keskin
Istanbul University Faculty of Dentistry Department of Prosthodontics, Turkey

Purpose: The purpose of this study was to evaluate the effect of acidic agents on ion leaching and surface characteristics of dental porcelain.
Materials and Methods: Fifty discs were fabricated from each 3 different types of porcelain (VITA VM 13, IPS Empress Esthetic, and IPS e.max Ceram). Baseline data of elemental compositions of all acidic and control storage agents were recorded. Four groups of discs (n=10) were then immersed in acidic agents (cherry juice, lemon juice and citrate buffer solution) and deionized water (control) at 37°C for 168 hours. One group was immersed in 4% acetic acid at 80°C for 168 hours. Ion leaching was measured with an inductively coupled plasma – mass spectrometer. Surface characteristics of specimens were examined using environmental scanning electron microscopy (ESEM). Data were analyzed using one way repeated ANOVA and Tukey HSD multiple comparisons ($p < 0,05$).
Results: This study revealed that each type of porcelain had demonstrated statistically significant leaching of various ions to varying degrees after being immersed in acidic agents and deionized water.
Conclusion: Within the limitations of this in-vitro study, it is concluded that acidic agents affects elemental dissolution of the 3 types of porcelains evaluated.

O-078

Surface changes of restorative materials upon immersion in different agents

I Karaokutan, F Aykent
Department of Prosthodontic, Selcuk University, Konya, Turkey

Purpose: Home bleaching has been routinely used for aesthetic purpose but there is little study about its effect on surface roughness of newly developed dental materials. Acetic acid have been used for restorative materials to simulate acidic environment. The aim of this study was to evaluate the effects of 16% carbamide peroxide and 4% acetic acid on the surface roughness of seven different aesthetic materials.
Materials and Methods: One feldspathic, one CAD/CAM lithium disilicate, one pressable lithium disilicate porcelain, two zirconium substructure and two ceromers were selected in this study. A total of 210 discs, 2 mm thickness and 10 mm diameter, for seven groups were immersed in 3 different solution, (1) 17% carbamide peroxide for 28 h (pH 6), (2) 4% acetic acid for 16 h (pH 2.4) (according to ISO 6872) and (3) buffer solution for 16 h (pH 7) (as a control). Surface roughness measurements were carried out by using a profilometer. Ra values were evaluated before and after the immersion. The data were analysed using two way ANOVA test ($p<.05$).

Results: All immersion solutions increased the surface roughness values of the all restorative materials. However only significant increases were observed at lithium disilicate, feldspathic porcelain and ceromer groups stored in acetic acid solutions.
Conclusion: Within the limitations of this study carbamide peroxide bleaching gel didn't cause surface roughness as acetic acid.

O-079

Color stability of different temporary prosthodontic materials after staining solutions

G Yerlioğlu[1], B Elter[1], Ö Kümbüloğlu[1], H Boyacıoğlu[2]
[1]Department of Prosthodontics, School of Dentistry, Ege University, Izmir, Turkey
[2]Department of Statistics, School of Science, Ege University, Izmir, Turkey

Purpose: The purpose of this in vitro study is to evaluate color change of five different temporary crown and bridge materials after immersion in different solutions for 1, 7, and 30 days.
Materials and Methods: Disc-shaped specimens (N=200, n=40) (10×3 mm) of each material (Structur Premium, Luxatemp, Tempofit, Kingscross, Temdent Classic) were fabricated using a plastic mold. Each group were stored in different solutions (water, tea, coffee, cola) and stored in an incubator at 37°C. Color measurements were taken before immersion, and then after 1, 7, and 30 days of immersion by dental spectrophotometer (Vita Easyshade). CIE L*a*b* values were recorded and color differences (ΔE) between baseline and each storage interval were calculated using 2-way ANOVA with Mann-Whitney U test for comparisons. ($p<=0.5$)
Results: Luxatemp AM Plus group (ΔE=17,56±4,09/coffee 30 days) showed significantly higher color stability as compared to other groups and Temdent Classic (ΔE=40,42±5,25/coffee 30 days) was the lowest color stable for all staining solutions and coffee solution had the most staining capacity for all temporary materials and the most color changes were shown at first day in coffee solution.
Conclusion: Material type, staining solutions and immersion time are significant factors that determine the color stability of temporary crown and bridge materials. Bis-acyrylic composite-based temporary crown and bridge resins were more color stable than methacrylate resin (Temdent Classic).

O-080

Color stability of provisional prosthetic materials after short-term immersion in sports and energy drinks

E Yüzbaşıoğlu[1], SE Özkır[2], B Yılmaz[1], M Özcan[3]
[1]Department of Prosthodontics, School of Dentistry, Istanbul Medipol University, Turkey
[2]Department of Prosthodontics, Faculty of Dentistry, Afyon Kocatepe University, Turkey
[3]Dental Materials Unit, Center for Dental and Oral Medicine, University of Zurich, Zurich, Switzerland

Purpose: The purpose of this study was to investigate the effect of sports and energy drinks on the color stability of different provisional prosthetic materials (PPM) over a 1-month period.
Materials and Methods: A total of one-hundred and eighty specimens (polyethyl methacrylate, polymethyl methacrylate and bis-acryl methacrylate) were prepared using a

PTFE mould. The specimens were randomly divided into six groups (N=60; n=10 per group). For experimental groups, the specimens were immersed in 5 mL of one of the five solutions for two minutes daily for up to a 1-month test period. Specimens stored in distilled water for 24 hours at 37ºC were used as control. All the solutions were refreshed daily. Color differences (ΔE) were measured using a spectrophotometer at baseline, after 1, 2, 3 and 4 weeks of immersion. Data were statistically analyzed using ANOVA and Bonferroni's multiple comparison tests (α=0.05).
Results: There were statistically significant differences in color differences of the PPM's in different immersion times ($p<0.05$) in different solutions ($p<0.05$). The specimens stored in distilled water demonstrated significant lower mean ΔE values when compared to the specimens immersed in sports and energy drinks after a 1-month evaluation period.
Conclusion: The effect of sports and energy drinks on color stability of PPM's depends on the duration of exposure time, and the composition of the material. Patients should be aware of the staining effects and erosive potential of sports drinks if consumed a longer period of time.

O-081

Surface hardness of provisional prosthetic materials after short-term immersion in sports and energy drinks

E Yüzbaşıoğlu[1], SE Özkır[2], B Yılmaz[1], M Özcan[3]
[1]Department of Prosthodontics, School of Dentistry, Istanbul Medipol University,
[2]Department of Prosthodontics, Faculty of Dentistry, Afyon Kocatepe University, Turkey
[3]Dental Materials Unit, Center for Dental and Oral Medicine, University of Zurich, Zurich, Switzerland

Purpose: The purpose of this study was to investigate the effect of sports and energy drinks on the surface hardness of different provisional prosthetic materials (PPM) over a 1-month period.
Materials and Methods: A total of one-hundred and eighty specimens (polyethyl methacrylate, polymethyl methacrylate and bis-acryl methacrylate) were prepared using a PTFE mould. The specimens were randomly divided into six groups (N=60; n=10 per group). For experimental groups, the specimens were immersed in 5 mL of one of the five solutions for two minutes daily for up to a 1-month test period. Specimens stored in distilled water for 24 hours at 37ºC were used as control. All the solutions were refreshed daily. Surface hardness was measured using a Vickers hardness measuring instrument at baseline, after 1, 2, 3 and 4 weeks of immersion. Data were statistically analyzed using ANOVA and Bonferroni's multiple comparison tests (α=0.05).
Results: There were statistically significant differences in hardness of the PPM's in different immersion times ($p<0.05$) in different solutions ($p<0.05$). The specimens stored in distilled water demonstrated significant lower mean surface hardness reductions when compared to the specimens immersed in sports and energy drinks after a 1-month evaluation period.
Conclusion: The effect of sports and energy drinks on surface hardness of PPM's depends on the duration of exposure time, and the composition of the material. Patients should be aware of the staining effects and erosive potential of sports drinks if consumed a longer period of time.

O-082

The effect of sealant agents on the surface roughness and colour stability of artificial teeth materials

O Şahin, DÖ Dede, A Köroğlu
Department of Prosthodontics, Faculty of Dentistry, Bülent Ecevit University, Zonguldak, Turkey

Purpose: The aim of this study was to evaluate the effect of sealant agents on surface roughness and colour stability of various artificial teeth materials.
Materials and Methods: Three different types of artificial teeth (IV Vivodent, PMMA; Vitapan, reinforced PMMA and IV Phonares II, composite resin) materials were used. Eighty disc shaped specimens were prepared for each materials and randomly assigned into four different surface treatment groups as; one conventional polishing and three sealant agent (Palaseal, Optiglaze, Biscover) coupling methods. Surface roughness (Ra) values were measured with a profilometer and a thermal cycling procedure applied for half of the test groups (n=10). The CIEL*a*b* colour parameters of each specimens were measured by a spectrophotometer at baseline and ten days storage in a coffee solution. The colour differences were calculated by using CIEDE 2000 (ΔE00) formula. Data were statistically analysed with 3-way analysis of variance (ANOVA) and Tukey HSD test (α=0.5).
Results: While the type of teeth material, surface treatment technique and their interactions were significant on Ra values, each variables and their interactions also significant on ΔE00 values ($p<0.5$).
Conclusion: Although the Palaseal and Optiglaze sealant agents were successful to obtain smoother surfaces with more stable colour values, using Biscover agent may cause an increase in Ra values according to the conventional polishing method.

O-083

Activation of endogenous proteases of dentin by self-etching adhesives

BS Oğuz Ahmet[1], R Seseoğullari Dirihan[2], A Tezvergil Mutluay[3]
[1]Medipol University, School of Dentistry, Department of Prosthodontics, Istanbul, Turkey.
[2]University of Turku, Institute of Dentistry, Adhesive Dentistry Research Group, Turku, Finland; Finnish doctoral Programme in Oral Sciences, University of Turku, Institute of Dentistry, Turku, Finland.
[3]Adhesive Dentistry Research Group, University of Turku, Institute of Dentistry, Turku, Finland; Turku University Hospital, TYKS, University of Turku, Finland

Purpose: The aim of this study was to evaluate the matrix metalloproteinase (MMP) or cysteine cathepsin (CC)-mediated degradation of dentin after phosphoric acid (PA) or self-etch adhesive treatment.
Materials and Methods: Dentin beams (6x2x1mm) were completely demineralized with ethylenediaminetetraacetic acid (EDTA). After baseline measurement of the dry mass, beams were divided into 6 groups (n=10/group) and treated with 1) 37% phosphoric acid (PA), 2) AdperTM Easy Bond (3M, USA), 3) AdperTM Scotchbond Universal (3M, USA), 4) All Bond Universal (Bisco, USA), 5) G-aenial Bond (GC, Japan) for five minutes. Demineralized beams with no further treatment were used as control. All beams were incubated in 1mL calcium and zinc containing media at 37 °C for 1, 3 or 21 days. After each incubation period, loss of dry mass was determined and aliquots of the incubation media were analyzed for pyridinoline-crosslink degradation fragment of the C-terminal telopeptide

of type I collagen (ICTP) for MMP-mediated degradation and deoxypyridinoline degradation fragment of the C-terminal telopeptide (CTX) for CC- mediated degradation using ELISA kits. Data were analyzed using ANOVA and Tukey's test.
Results: The overall ICTP release were significantly higher compared to CTX release ($p<0.05$). The CTX release with self-etch adhesives was significantly higher than the PA acid group or no-treatment control group. No significant difference was observed in ICTP release among self-etch adhesives or PA ($p>0.05$).
Conclusion: Self-etching adhesives can activate both CC-mediated and MMP-mediated degradation in dentin matrices.

O-084

In situ biofilm inhibition by a self adhesive resin cement containing silver nanoparticles

E Yüzbaşıoğlu[1], H Bilir[1], M Özcan[2]
[1]Department of Prosthodontics, School of Dentistry, Istanbul Medipol University, Turkey
[2]Dental Materials Unit, Center for Dental and Oral Medicine, University of Zurich, Zurich, Switzerland

Purpose: The purpose of this study was to investigate the in situ effect of nanoparticles of silver (NAg) incorporation to a self-adhesive resin cement (SARC) on biofilm inhibition, surface roughness and color parameters.
Materials and Methods: Fourty-eight disc shaped specimens (6 mm in diameter, 2 mm in height) were prepared from a self-adhesive resin cement in PTFE mould. %1, %0.8, %0.5, %0.3 and %0.1 by weight NAg were added manually before polymerization. Specimens without NAg additive served as control (n = 8). Eight (4 male, 4 female) subjects participated to this study. Specimens were mounted in individual oral splints and exposed to the oral cavity of participants for 4 hours. Biofilm formation was assessed by scanning electron microscopy (SEM) and confocal laser scanning microscopy (CLSM). 4,6-diamidino-2-phenylindone (DAPI) staining was used for quantitative analysis of initially adherent microorganisms. Surface roughness quantitative analysis were performed using a profilometer. Color parameters were evaluated using a spectrophotometer.
Results: The biofilm formation was significantly reduced on silver nanoparticle containing specimens compared to controls after four hours in situ ($p<0.05$). DAPI and CLSM analysis showed that increasing amount of NAg addition resulted in decreased amount of initial adherent bacteria. The surface roughness was increased by incorporation of higher amount of NAg. NAg addition resulted in decreasing in lightness and yellowish color.
Conclusion: The biofilm formation on various NAg concentrations of SARC's differed significantly. During this short term investigation, incorporation of silver nanoparticles into SARC's caused biofilm inhibiting effects in situ.

O-085

Adherence of streptococcus mutans to porcelain treated with polishing sequences

B Yüzügüllü[1], C Çelik[2], TB Özçelik[1], S Erkut[1], P Yurdakul[3], Y Ocal[3], B Sener[4]
[1]Baskent University Faculty of Dentistry, Department of Prosthodontics, Turkey
[2]Baskent University Faculty of Dentistry, Department of Restorative Dentistry, Turkey
[3]Ankara University, Faculty of Medicine, Cord Blood Bank Turkey, Turkey
[4]Hacettepe University, Faculty of Medicine Department of Microbiology, Turkey

Purpose: To determine whether extra-oral surface treatments on feldspathic porcelain surfaces influence initial adhesion of Streptococcus mutans.
Materials and Methods: 96 porcelain specimen discs were fabricated and were divided into 6 groups according to surface treatments (n=16). All discs were finished using diamond burs. Group 1, fine-grit diamonds; Group 2, self-glaze; Group 3, overglaze; Group 4, overglazed; finishing procedures repeated then overglazed; Group 5, Pearl Surface polishing system; Group 6, Diamond Twist SCL kit. Surface roughness and hydrophobicity by contact angle measurement were assessed using profilometer and sessile drop method respectively. Streptococcus mutans suspension was incubated on each specimen group and evaluated. One-Way ANOVA, Post Hoc Tukey, Honestly Significantly Different, Friedman and t tests were used for statistical analysis.
Results: Group 1 showed the highest surface roughness ($p<0.001$) and bacterial adhesion ($p<0.05$). Group 5 and 6 specimen surfaces presented significantly higher contact angles than other groups ($p<0.05$). Group 1 revealed the highest S. mutans adhesion; followed by Groups 3, 5, 6, 2, and 4 ($p<0.05$).
Conclusion: When extra-oral polishing is necessary on porcelain restorations, grinding the surface alone may result in rough surfaces, which may result in S. mutans adhesion. Reglazing after grinding may be beneficial in regard to a decrease in the formation of bacterial adhesion.

O-086

Nanocomposites for protection against harmful dental X-rays

S Ayyıldız[1], EH Soylu[2], J Özen[3], S Ide[4], K Kamburoğlu[5]
[1]Gata Dental Health Sciences Center, Dept. Prosthodontıcs, Turkey
[2]Karadeniz Technical University Faculty Dept Physics, Turkey
[3]Private Practice, Turkey
[4]Hacettepe University, Faculty of Engineering Department of Physics Engineering, Turkey
[5]Ankara University, Faculty of Dentistry Department of Dentomaxillofacial Radiology Turkey

Purpose: The aim of the present study was to compare a number of nanopowders for the fabrication of nanocomposites that are capable of protecting the jaw from ionizing radiation and to test the formability of Co-nanocomposite (Co-pnm) in form of a thin intraoral stent that is suitable for dental applications.
Materials and Methods: Four different types of nanopowders (Ti, ZrO_2, Ag and Co) were mixed in a polymer matrix to create nanocomposite synthesis. Small-Angle X-ray Scattering (SAXS) Analysis was performed to test the x-ray absorption of the nanocomposites and Co-pnm yielded the most promising values. Thus, Co-pnm samples of different thicknesses (0.20, 0.50, 0.57 and 0.60 cm) were tested in order to assess the effects of material thickness on x-ray absorption.
Results: The 0.50 cm Co-pnm had the lowest Dmax value of the different thicknesses of Co-pnm tested. For this reason, Co-pnm can be used as a protection shield for the harmful effects of dental X- rays.
Conclusion: This preliminary study is to be developed and nano materials, like shields, may be produced by using Co-nanopowder for the protection of unwanted tissues from the harmful effects of dental x-rays.

O-087

Mechanical reinforcement of conventional acrylic resin by copolymerization

Y Hayran[1], Y Keskin[2]
[1]Gaziosmanpasa University, Faculty of Dentistry, Department of Prosthodontics, Turkey
[2]Ankara University, Faculty of Dentistry, Department of Prosthodontics, Turkey

Purpose: The purpose of the present study was to improve mechanical properties of poly(methyl)methacrylate by copolymerization.
Materials and Methods: Test specimens were fabricated from conventional heat cured resin according to the ISO 1567:1999. Copolymer specimens were prepared by adding volumetric percent of 10-20-30-40 of ethyl-methacrylate (EMA), butyl-methacrylate (BMA) and isobutyl-methacrylate (IBMA) monomers into the methyl-methacrylate (MMA). Test specimens divided into 13 groups. For each group, 10 specimens were produced. The chemical structures of the resins were characterized by the nuclear magnetic resonance spectroscopy and infrared spectrum. Then all specimens were tested for flexural and impact strength. Elastic modulus values were also evaluated. The results were assessed stastistically.
Results: The datas of flexural strength, impact strength and flexural modulus were analyzed by applying one-way ANOVA. There was a statistically significant difference between acrylic resins in terms of flexural strength and elastic modulus ($p<0,01$). % 40 IBMA+MMA had the highest and % 30 EMA+MMA had the lowest flexural strength and elastic modulus values. There wasn't statistically significant difference between acrylic resins in terms of impact strength.
Conclusion: Flexural strength, flexural modulus and impact strength values of the copolymer structures were determined much higher than the required values by ISO standards for clinical use of heat-polymerized acrylic resins. Almost in all copolymer groups, flexural strength and elastic modulus values were found to be numerically higher than the control group. The test results showed that these copolymer material structures are compromising materials. It must be studied more on the volumetric percent of the monomers for better features.

O-088

Color matching ability of a resin nano-ceramic material as a function of material thickness and implant abutment materials

E Yüzbaşıoğlu[1], R Turunç[1], M Özcan[2]
[1]Department of Prosthodontics, School of Dentistry, Istanbul Medipol University, Turkey
[2]Dental Materials Unit, Center for Dental and Oral Medicine,University of Zurich, Zurich, Switzerland

Purpose: The purpose of this study was to investigate the effect of ceramic thickness and implant abutment material on resultant color of (resin nano-ceramic) RNC material.
Materials and Methods: Eight square-shaped specimens (7mm X 7mm) in 20 thickness (ranged 0.1 mm to 2 mm with 0.1 mm intervals) from two materials; RNC and fine-structured feldspathic ceramic. Three different implant abutment materials were evaluated; titanium alloy, Type III gold and zirconium dioxide, respectively. Each specimen optically connected to the abutment material with try-in paste and color of each specimen assemblies was measured with a spectrophotometer. The color differences (ΔE) between specimen assemblies and control color (A2 Vita Classical Shade) were calculated. Two-way ANOVA and general linear model were used to assess the effects of material thickness, implant

abutment materials, and their interactions to the resultant ΔE (α=0.05). Clinical significance was determined by comparing color differences to perceptibility and acceptability thresholds by using the t-test (α=0.05).
Results: Both ceramic thickness and implant abutment materials significantly affected the mean values of color difference (ΔE) (P<.001). The mean value of ΔE decreased as the ceramic thickness increased. There are significant color differences between 3 tested implant abutment materials (P<.001) and between RNC and feldspathic ceramic materials regardless of specimen thickness (P<.001).
Conclusion: Based on the results of the study, the colors of RNC materials were affected by both the ceramic thickness and foundation implant abutment materials. Increasing material thickness improved the resultant shade matching.

O-089

Accuracy of impression techniques and materials in angulated implants

S Kurtulmus Yilmaz[1], O Ozan[1], TB Özcelik[2], A Yagiz[3]
[1]Department of Prosthodontics, School of Dentistry, Near East University, Nicosia-Mersin, Turkey.
[2]Department of Prosthodontics, School of Dentistry, Baskent University, Adana, Turkey.
[3]Ay Tasarim Ltd., Ankara, Turkey

Purpose: The aim of this study was to investigate the accuracy of 2 different impression techniques and 3 different impression materials in models simulating parallel and angulated implants.
Materials and Methods: Three acrylic resin master models simulating partial edentulous mandible were fabricated. Two implants were placed at the sites of right second premolar (parallel) and right second molar of each model with different angulations (parallel, 10º or 20º angulated). Two different impression techniques [splinted-direct (D), indirect (I)] and 3 different monophase impression materials [polyether (PE), polyvinyl siloxane (PVS), vinyl polyether silicone (VPES)] were used for each master model and totally 180 impressions were made (n=10). Impressions were poured with Type IV dental stone. Master model and casts were scanned by a laser scanner and data were transferred to VRMesh software. Master model and duplicate cast scans were digitally aligned observing the superposition of anatomic markers. Angular and cervical deviations between master and duplicated copings were calculated and data were statistically analyzed.
Results: Statistical analysis revealed that angulation of implant effects both cervical and angular deviations of the impression copings (p<0.05). According to statistical analyses, for parallel implants, the accuracy of impression materials and techniques were ranging as PVS-D=PE-D>PVS-I=PE-I>VPES-D>VPES-I from most accurate to the least. For 10º and 20º angulated implants the most accurate material and techniques was PVS-D whereas the least accurate combination was VPES-I (p<0.05).
Conclusion: Within the limitations of this study, PVS impression material and splinted-direct technique is recommended for impressions of both parallel and angulated implants.

O-090

Effects of different surface treatments on bond strength of feldsphatic porcelain to zirconia

P Çevik[1], D Cengiz[2], M Aslan Malkoç[3]
[1]Gazi University Department of Prosthodontics, Turkey
[2]Konya Oral and Dental Health Center, Turkey
[3]Inonu University Department of Prosthodontics, Turkey

Purpose: The aim of this study was to evaluate various surface treatments on bond strength of zirconia and feldsphatic porcelain.
Materials and Methods: Fifty Y-TZP zirconia specimens were divided into five groups according to various surface treatments. Each group consists of 10 specimens and each named as GI: Control, no surface treatments but only liner application group; GII: Sandblasting with 110 µm Al_2O_3 particle abrasion+liner; GIII: Grinding with diamond burr+liner; GIV: Nd:YAG laser ablation+liner; GV: SIE technique+liner. Veneering feldsphatic porcelain (5 mm diameter and 3 mm height) was designed and fired on the surface treated zirconia specimens. The shear bond strength was tested using a universal testing machine at a cross head speed of 0.5 mm/min. The data of bond strengths were statistically analyzed using Mann Whitney U test ($p<0.05$). The fracture surfaces of the specimens were also evaluated by scanning electron microscopy (SEM).
Results: Bonding groups exhibited the following values in Mpa: GI=(8.62±1.12), GII=(13.87±5.08), GIII=(12.31±3.35), GIV=(17.32±6.16), GV=(16.17±4.55) respectively. Significant differences were observed between groups ($p<0.05$). Control group had the lowest bond strength values. Even though Nd:YAG group showed the highest bond strength, no significant differences were found between groups Nd:YAG, sandblasting and SIE.
Conclusion: Surface treatments had different effects on the shear bond strength of feldsphatic porcelain to zirconia.

O-091

The effect of luting cements shade on the color of various ceramic materials

DÖ Dede[1], G Ceylan[2]
[1]Department of Prosthodontics, Faculty of Dentistry, Bülent Ecevit University, Zonguldak, Turkey
[2]Department of Prosthodontics, Faculty of Dentistry, Ondokuz Mayıs University, Samsun, Turkey

Purpose: The purpose of this study includes evaluating the optical properties and color changes in combinations of ceramic material system and luting cements shade.
Materials and Methods: A2 shade 40 ceramic discs (11x1.5mm) were fabricated from IPS e.max with medium-opacity (mo) and high-translucency (ht) frameworks, In-Ceram Alumina and zirconia ceramics in appropriate core/veneer thickness. Three different shades (translucent, universal and white-opaque) of 120 cement discs (11x0.2 mm) also prepared from four brands of resin luting cements. The color measurements of ceramics with-without cement samples were performed by a spectrophotometer and data recorded as CIE L*a*b* color coordinates. Differences between the color coordinates of ceramics with-without cement samples (ΔL, Δa, Δb) and color change values (ΔE00) were calculated. Data were analyzed by three-way variance analysis (ANOVA) and Tukey HSD test (α=.05).
Results: L*a*b* values of ceramics were affected by luting cements shades. Additionally the

ΔE00 values were affected by the brand and shade of luting cement, ceramic material system and their interactions ($p<.05$). Only the ΔE00 value of IPS e.max ht with translucent shade Variolink-II group (2.36) was greater than clinically acceptable threshold (ΔE00>2.25). Conclusion: The trying out of luting cements shades is recommended prior to clinical applications for more translucent ceramics especially, due to manufacturer's insufficient standardization.

O-092

Evaluation of surface changes of a lithium disilicate ceramic

HB Kara[1], O Kara[2], G Sayin[3], U Çakan[1], AN Öztürk[3]
[1]Istanbul Medipol University, Prosthodontics, Turkey
[2]Bezmi Alem Vakif University, Prosthodontics, Turkey
[3]Selcuk University, Prosthodontics, Turkey

Purpose: The aim of this study was to evaluate the influence of various surface treatments on the surface roughness of a lithium disilicate-glass ceramic.
Materials and Methods: A total of 25 discs of lithium disilicate-glass ceramic (IPS e. max Press, Ivoclar Vivadent, Schaan, Liechtenstein) were prepared (10 mm in diameter and 2 mm in thickness) according to the manufacturer's instructions. Specimens were divided into five groups. The following treatments were performed: (1) no treatment; (2) air abrasion with alumina particles (50 μm), (3) acid etching with 9 % hydrofluoric (HF) acid, (4) Nd:YAG laser irradiation (1 mm distance, 100 mJ, 20 Hz, 2 W) and (5) Er:YAG laser irradiation (1 mm distance, 500 mJ, 20 Hz, 10 W). Digital images (25 μm x 25 μm) from the surfaces were obtained by means of an atomic force microscope (AFM) in taping mode. Surface roughness was measured in 10 μm x 10 μm boxes. Surface roughness (Ra) data (nm) were analyzed by one-way ANOVA ($p<0.05$).
Results The air abrasion group had a significantly higher mean surface roughness value ($p<0.05$) than the other groups. The acid-etching group had a significantly higher mean roughness value than the control group ($p<0.05$). No significant difference was found between the control group and the laser irradiation (Er:YAG and Nd:YAG) groups ($p>0.05$).
Conclusion: Surface roughness of lithium disilicate-based core ceramic (IPS Empress e.max) was not increased by any of the laser irradiation treatments.

O-093

Radiopacity of implant luting cements: A comparative study

E Çal[1], P Güneri[2], AG Türk[1], S Ünal[1], H Boyacıoğlu[3]
[1]Department of Prosthodontics, School Of Dentistry, Ege University, İzmir, Turkey.
[2]Department of Oral And Maxillofacial Radiology, School of Dentistry, Ege University, İzmir, Turkey.
[3]Department of Statistics, Faculty of Science, Ege University, İzmir, Turkey.

Purpose: To compare the radiopacity of the luting cements with respect to dentin (equivalent to bone) and the implant material.
Materials and Methods: Five specimens from 11 different luting cements were prepared according to ISO 4049 (5mm x 1mm) and coded as follows: Dycal (A) (Dentsply DeTrey GmbH, Germany), GC Fuji Temp LT (B) (GC Europe, Belgium), G-Cem LinkAce (C) (GC Europe, Belgium), Implantlink Semi (D) (Detax, Ettingen, Germany), Premier (E) (Premier,

America), Multilink Implant (F) (Ivoclar Vivadent, Liechtenstein), Poli-F (G) (Dentsply DeTrey GmbH, Germany), Panavia SA (H) (Kuraray, Japan), GC FujiCem2 (I) (GC Europe, Belgium), Dentotemp (J) (ITENA, France), Cavex Temporary (K) (Cavex, Holland). Tooth and implant sections of 1 mm thickness were obtained. Five digital radiographs of the specimens, dental tissues and 99% pure aluminium (Al) step wedge (SW) were acquired under standard exposure conditions using occlusal films. Mean gray values of all specimens, dental tissues and Al-SW were measured using a digital-imaging-software. Total of 210 measurements were converted to Al equivalent values with regression curve equations on each film. Shapiro-Wilk test was used for normality test and independent-t test were utilized for statistical analysis (p=0.05).
Results: All test materials had significantly different radiopacity values than dentin ($p<0.05$); only C material revealed a radiopacity close to that of dentin but the differences were still statistically significant (p=0.004).
Conclusion: D and E materials were less radiopaque than dentin (p=0.000 for both), and can not be recommended for clinical use when only “the radiopacity of the material” is considered.

O-094

Novel approaches in treatment of edentulous patients with immediate loaded implants

YU Aslan[1], Y Kulak Özkan[1], Y Özkan[2]
[1]Marmara University Department of Prosthodontics, Turkey
[2]Marmara University Department of Maxillofacial Surgery, Turkey

Purpose: Implant surgery has evolved following improvements of computer technologies according to patient’s demands. Since it has become important to have tooth in a single day for an edentulous patient, new techniques have developed for achieving ‘immediate smile’ goal. Flapless surgical protocol with computer guided procedures is the treatment option to achieve successfully immediate loading of implants.
Materials and Methods: Four patients with edentulous jaws (four maxillae and two mandibulae) were treated with conventional surgical stent and computer guided flapless implant system (Materialise, Belgium; R2GATE and Megagen Implant Co, South Korea) which were loaded immediately. 3D radiographic techniques such as computed tomography (CT) and computer software programs were used to plan precise implant locations. Surgical guides, CAD/CAM zirconia abutments and temporary crowns were manufactured prior to surgery. RFA measurements were performed and implants were loaded with temporary crowns at the same day of surgery. Zirconia crowns were cemented after 3 months.
Results: Computer guided implants can be a successful treatment alternative for immediate loaded implants in edentulous patients. The patients were satisfied with the treatment outcome.
Conclusion: Computed guided modern approach has many advantages like patient satisfaction, soft tissue management and precision of implant locations.

O-095

An alternate impression technique for implant retained overdentures

E Tokar[1], N Tokar[2], B Uludağ[3], O Karacaer[1]
[1]Department of Prosthodontics, Faculty of Dentistry, Gazi University, Ankara, Turkey
[2]Division of Oral and Dental Health, Cihanbeyli State Hospital, Konya, Turkey
[3]Department of Prosthodontics, Faculty of Dentistry, Ankara University, Ankara, Turkey

Purpose: Overdenture covers the entire occlusal surface of a root or implant and oral mucosa supports it. Good adaptation of the denture base and peripheral seal at the borders are so important for retention and stress distribution of the overdenture. Therefore, accuracy of impression for implant retained overdenture is crucial to obtain successful overdentures. This technique describes an alternate impression technique for implant retained overdentures.
Case: Preliminary impression of edentulous mandible with two implants was made using irreversible hydrocolloid impression material. The impression was poured with dental stone and the mandible framework was casted with a Cr-Co alloy. Self-cured acrylic resin was adapted over the mandible framework with holes in the areas of the implants and it was served as custom tray. Healing caps were changed with locator abutments. Borders of the custom tray was molded with modelling plastic impression compound. The impression of the alveolar mucosa was made using an eugenol free impression paste. The impression was removed from the mouth and excess of the impression paste around the locator abutments was cleaned. Impression copings were inserted on the locator abutments and then the impression seated intraorally. Pattern resin was added around the impression copings with a brush. Locator abutment analogs were inserted in the impression and master cast was fabricated with dental stone.
Conclusion: The main advantages of this technique are it ensures to record the implant components and denture bearing areas accurately. Also, chair time decreases in the denture delivery and post insertion maintenance.

O-096

Prosthodontic treatment of an ectodermal dysplasia: A case report

F Dumrul, B Özpınar
Department of Prosthodontics, School of Dentistry, Ege University, Izmir, Turkey

Hereditary Hypohidrotic Ectodermal Dysplasia (HED), an X-linked, recessive, Mendelian character, is seen usually in males and inherited through female carriers. It is characterised by congenital dysplasia of one or more ectodermal structures and manifested by hypohidrosis, hypotrichosis and hypodontia. It results from abnormal morphogenesis of cutaneous and oral embryonic ectoderm. Qualitative and quantitative disturbances in dental structures are common and may appear as agenesis, size and shape variations, carious and non carious defects, and eruption irregularition. Abnormalities in number, size, and shape of teeth, and reduced salivary secretion, and incontinentia pigmenti present in isolated oligodontia as well as in HED. These symptoms may appear in combination with clefts of lip and/or palate in some sporadical cases. Hypodontia of the primary and permanent dentition is the most common oral finding. Therefore, affected patients need prosthodontic treatments since adolescence. This report presents the prosthodontic treatment of 40 years old female patient affected by HED. Treatment was accomplished with fixed partial dentures combined

with removable partial dentures. Major impacts on self-esteem, masticatory function, speech and facial esthetic, were observed.

O-097

Multidisciplinary treatment of oromandibular dystonia: A clinical report

Z Yılmazcan[1], O Şakar[1], E Öge[2]
[1]Department of Prosthodontics, Istanbul University Faculty of Dentistry, İstanbul, Turkey
[2]Department of Neurology, Istanbul University Istanbul Faculty of Medicine, İstanbul, Turkey

Oromandibular dystonia, subset of focal dystonia, is a movement disorder consists of involuntary spasms which are originated from contraction of jaw, tongue and masticatory muscles. The etiology is generally idiopathic and the treatment is only for managing the symptoms not for the disease itself. This case report describes a case of a 55-year-old woman who presented at Istanbul University Faculty of Dentistry with oromandibular dystonia diagnosis. The patient was evaluated by videos and clinical examinations. A multidisciplinary treatment approach was presented including the fabrication of an intraoral appliance.

O-098

Immediately-loaded single-tooth implant restored with custom-made abutment

G Meriç[1], O Buhara[2], S Ongun[1]
[1]Near East University Faculty of Dentistry, Prosthodontics, Turkish Republic of Northern Cyprus
[2]Near East University Faculty of Dentistry, Oral Surgery, Turkish Republic of Northern Cyprus

Recent studies have encouraged a progressive shortening of the healing period for single-tooth implants and immediately loading has been proposed for the aesthetic zone in maxilla. A 20-year-old female patient was referred to the clinic due to the recent history of trauma and avulsion with loss of maxillary left central incisor. Immediate loaded implant was inserted into avulsed tooth socket with an increasing torque up to 45 Ncm, thus measuring the primary stability of the implant.
Implant was immediately restored with acrylic resin provisional crown.
After the 3 months healing period, it was decided to design a custom-made abutment to provide support for the obtained tissue-emergence profiles that support the esthetics and peri-implant environment. Impressions were taken by using polyether (Impregum Soft; 3M ESPE, Seefeld, Germany) and models were obtained. An aesthetic abutment was designed with the software inLab 3D. The meso structure (inCoris ZI meso blocks F0,5) was milled in the milling unit inLab MC XL and afterwards sintered. The custom-made zirconia abutment was placed into the implant. The final impression was taken, with polyvinyl siloxane (Coltene, Whaledent, Altsta ¨tten, Switzerland) and poured with type IV improved plaster to obtain stone die.
Single-unit all-ceramic IPS e.max Press (Ivoclar Vivadent, Schaan, Liechtenstein) crown was fabricated using the lost-wax technique and by pressure injection of ceramic ingots in the EP500 furnace (Ivoclar Vivadent). The restoration was followed up to two years.

O-099

Effect of different lasers on the bond strength of zirconia

Ö Kara[1], HB Kara[2], ES Tobı[3], AN Öztürk[3], H Sükürkılıç[4]
[1]Bezmialem University, Prosthodontics, Turkey
[2]İstanbul Medipol University Prosthodontics, Turkey
[3]Selcuk university, Prosthodontics, Turkey
[4]Selcuk University, Physics, Turkey

Purpose: To compare and evaluate effects of different laser systems on the surface roughness and shear bond strengths of two different zirconia ceramics.
Materials and Methods: Seventy two ceramic discs (10mm×2mm) were obtained from two sintered zirconia ceramics according to the CAD/CAM technique (Zirkonzahn, Zirkonzahn Prettau) (n=36), then divided into 3 groups (n=12) and treated with: (1) Femtosecond laser, (2) Nd:YAG laser, (3) Er:YAG laser. After laser irradiation scanning electron microscope was used at 500X magnification for qualitative examination. Following surface roughness (Ra) determination by profilometry, discs were cemented with resin cement RelyX U200. The specimens were stored in distilled water at 37 ºC for 24 hours then thermal cycled in water for 5000 cycles. Shear bond strength (MPa) test was performed using a universal testing machine at a crosshead speed of 1 mm/min. The data were analyzed by two-way analysis of variance (ANOVA) and Tukey HSD tests for pairwise comparisons among groups (p=0.05).
Results: Shear bond strength and surface roughness was significantly affected by laser type (P<.001) and that there was no significant interaction between the 2 zirconia ceramics. Femtosecond laser irradiation group had a significantly higher surface roughness and shear bond strength mean value (p<.05) than the other groups. No significant difference was found between the Nd:YAG laser and Er:YAG laser-irradiation groups (p>.05)
Conclusion: Femtosecond laser is an effective surface treatment for roughening surfaces of zirconia ceramics moreover it reveals the highest shear bond strength.

O-100

Durability of resin bonding to zirconia ceramic using new laser type

MA Malkoç[1], MG Subaşı[2], YZ Akpınar[3], AT Öğreten[1], HŞ Kılıç[4]
[1]İnönü University, Turkey
[2]İstanbul Aydın University, Turkey
[3]Abant İzzet Baysal University, Turkey
[4]Selçuk University, Turkey

Purpose: The purpose of this study was to evaluate the effect of shear bond strength (SBS) of Y-TZP ceramics with Z primer plus and different surface treatments combinations.
Materials and Methods: A total of 120 Y-TZP (VITA In-Ceram) specimens were prepared and polished. Specimens were embedded in a self-cure acrylic resin. Then, all groups were divided into 3 groups: 1-Clearfil Porcelain Bond Activator +Clearfil SE Bond Primer (CC), 2-Clearfil Porcelain Bond Activator + Z Primer Plus (CZ), 3- Z Primer Plus (Z). Then, all groups were divided into 4 subgroups (N=10): 1-Control 2- air abrasion with 110 μm Al_2O_3 particles 3- Nd YAG laser 4-Femtosecond laser. Then, Panavia F 2.0 resin cement was applied the zirconia surface using teflon mold (3x3mm). SBS was tested with a universal testing machine. The data were analyzed by Kruskal-Wallis one way ANOVA, Mann-Whitney U, and Wilcoxon signed rank tests (α=0.05).
Results: According to ANOVA and Mann-Whitney U; there is no significant difference among

CC groups (P>0.05). Femtosecond group showed significantly lowest SBS values among CZ groups (P<0.05). Also, Nd YAG laser group exhibited lowest SBS values among Z groups (P<0.05). Furthermore; Wilcoxon revealed that there are no significant differences control groups (P>0.05). Application of air abrasion and femtosecond laser were significantly increased the SBS in Z group (P<0.05).
Conclusion: The use of Z primer plus and Femtosecond laser combination may have more benefits than the other mechanical pretreatments to improve the SBS.

O-101

Effects of femtosecond-laser and different surface treatment on zirconia-porcelain bonding

T Yavuz[1], YZ Akpınar[1], MA Aslan[1], C Ural[2], HS Kılıç[3]
[1]Abant Izzet Baysal University, Faculty of Dentistry, Department of Prosthodontics, Turkey
[2]19 Mayis University, Faculty of Dentistry, Department of Prosthodontics, Turkey
[3]Selcuk University, Faculty of Science, Department of Physics, Turkey

Purpose: Present study evaluated the effects of different surface treatments on the shear bond strength (SBS) of zirconia and veneering ceramic.
Materials and Methods: 55 Square-shaped (2x10x10 mm) zirconia specimens were divided into 3 groups (n=18) according to surface treatment as follows: Group SB, air-borne-particle abrasion with 50 μm Al_2O_3; Group R, tribochemical silica coating; Group FL, femtosecond laser application. A rectanguler prism of veneering ceramic (3 mm height and 4x5 mm in weight) (Cerabien ZR) was fabricated and fired on the zirconia specimens. 45 specimens were subjected to shear force in a universal testing machine at a crosshead speed of 1 mm/min for evaluating shear bond strength. 3 specimens were analyzed with profilometer, SEM and XRD. The data were analyzed statistically using a One-Way ANOVA and Tukey's multiple comparisons test (α=.05). The failed specimens were examined microscopically at original magnification X40 to classify the mode of failure as cohesive in the core, cohesive in the veneer, or adhesive at the interface.
Results: The SBS values of Group FL were statistically higher than the other groups. While there were no significant differences in bond strength between Group SB and Group R (p>0.05), these groups were statistically lower than Group FL (p<0.05). Stereomicroscop evaluation showed that cohesive fracture in the veneering porcelain was the predominant failure mode on the zirconia surface.
Conclusion: The Femtosecond laser treatment was effective method on the zirconia ceramic's structure. Roughening the ceramic surfaces with the femtosecond laser provided higher bond strength for zirconia-porcelain bonding.

O-102

Femtosecond laser's effect on bond strength of porcelain to titanium

YZ Akpınar[1], MA Aslan[1], T Yavuz[1], HS Kılıç[2]
[1]Department of Prosthodontics, Faculty of Dentistry, University of Abant Izzet Baysal, Bolu, Turkey
[2]Department of Physics, Faculty of Science, University of Selcuk, Konya, Turkey

Purpose: The purpose of this study was to evaluate the effect of femtosecond laser on the bond strength of porcelain to titanium surfaces.

Materials and Methods: Sixty rectangular shaped commercially pure titanium (Grade 2) samples, each having the dimensions (25x3x0.5 mm), were cut from a prefabricated plate. The samples were divided into four groups of 15. Group SB: 50 µm Al_2O_3 sandblasting, Group SB-FL: 50 µm Al_2O_3 sandblasting followed by Femtosecond laser, Group FL-SB: Femtosecond laser followed by 50 µm Al_2O_3 sandblasting, and Group FL: Femtosecond laser. The bond strength of the porcelain to titanium surfaces was tested by a universal testing machine at 1 mm/min crosshead speed. The bond strengths for groups were analyzed, using ANOVA/Tamhane tests.
Results: The results showed that the femtosecond laser combined with 50 µm Al_2O_3 affected the bond strength of porcelain to titanium. The bond strength values among the groups exhibited statistical differences (ANOVA, $p<0.001$). The highest bond strength values were achieved in Group FS-SB; the bond strengths (mean±SD; MPa) for the groups were: Group SB=42.72±2.61; Group SB-FL=51.59±6.88; Group FL-SB=55.71±6.66; Group FL=39.87±4.38.
Conclusion: The use of femtosecond laser combined with 50 µm Al_2O_3 increased the bond strength of porcelain to titanium surfaces significantly.

O-103

Effect of Er: YAG laser on bond strength of flowable resin

I Keçik Büyükhatipoğlu[1], AS Özsevik[2], A Üşümez[3], A Seçilmiş[1]
[1]Gaziantep Universitesi Dis Hekimligi Fakultesi, Protetik Dis Tedavisi A.B.D.,Gaziantep, Turkey
[2]Gaziantep Universitesi Dis Hekimligi Fakultesi, Restoratif Dis Tedavisi A.B.D.,Gaziantep, Turkey
[3]Bezmialem Vakıf Universitesi Dis Hekimligi Fakultesi, Protetik Dis Tedavisi A.B.D.,Istanbul, Turkey

Purpose: To compare the effect of Er:YAG laser etching and adhesive systems on the microtensile bond strength (µTBS) of flowable resin to dentin.
Materials and Methods: The enamel of 20 wisdom molar teeth were removed up to come into the contact with the dentin surface and randomly divided into 2 groups (n=10): no laser etching (control), Er:YAG laser etching with QSP mode (120 mj, 10 Hz). One of the following adhesive systems was applied to dentin surface for each subgroups: Adeziv 200T, Single Bond Universal (3M ESPE) (n=5). A layer of flowable resin (Filtek Ultimate) was placed in 1 mm thickness and light-cured on top of the adhesive layer in the all specimens. After composite resin (Universal Restorative 200) build up, the specimens were thermocycled for 5000 cycles. Five microtensile specimens from each tooth measuring 1x1 mm were prepared. These sections were subjected to tensile testing and failure values were recorded. The data were subjected to a two-way analysis of variance and Tukey HSD tests.
Results: Statistically significant differences were found between the µTBS of the total etched and self-etched specimens ($p<.001$). Total etched groups served higher µTBS than self-etched groups ($p<0.05$). No significant differences were observed in the µTBS between self-etched groups and Er:YAG laser etched groups ($p>0.05$).
Conclusion: Additional acid-etching increased the µTBS of the flowable resin to dentin in both self-etched or Er:YAG laser etched specimens.

O-104

Laser usage in implant surface preparation

H Çelebi[1], P Uyar[2], S Akman[3], I Çelik[4]
[1]Necmettin Erbakan University Faculty of Dentistry Prosthodontics, Turkey
[2]Selcuk University Faculty of Science, Biology, Turkey
[3]Selcuk University Faculty of Dentistry, Prosthodontics, Turkey
[4]Selcuk University Faculty of Veterinary Histology – Embryology, Turkey

Purpose: Evaluate comparatively the adhesion and proliferation effect of human gingival fibroblastic cells on Grade 4 pure titanium discs prepared with three different surface-treatment with a laser and machined surfaces.
Materials and Methods: 28 samples of Grade 4 pure titanium discs in 2 mm thickness and 16 mm diameter were used. Titanium discs were divided into 4 groups. The surface of discs in three groups were treated with laser. Group 4 (machined surface) was determined as the control group. After the surface treatments, surface roughness of pure titanium samples were investigated with SEM and measured with mechanic surface profilometer. HGF-1 cell line was used to analyze the adhesion of fibroblasts on the sample surfaces. The adhesion of HGF-1 onto specimen surfaces and morphology of the cells after incubation for 72 hours were determined with SEM, XTT and Acridine Orange Test. XTT results and surface roughness values for all of the specimens were statistically analyzed using Kruskal Wallis test.
Results: Average surface roughness values of the groups were significantly different. According to the XTT results, group 3 and control groups were more succesful than groups 1 and 2.
Conclusion: Crosshatch formed groups of laser roughened surfaces and control group were more successful than the linear formed surface.

O-105

Avant-garde applications in dental medicine through 3D and laser simulations

D Forna, C Iordache, NC Forna
Faculty of Dental Medecine. Grigore T.Popa UMF Iasi, Prosthodontic Departement, Romania

Purpose: The purpose of the study was to quantify the importance of 3D simulation in the educational practice of the student and to underline the best method in its edification. The main characteristics of contemporary dental medicine are represented by avant-garde, precision, high technology and successful clinical finality.
Materials and Methods: A group of 3rd year students at Dental Medicine was followed during an observatory study being divided into subgroup A and B. Subgroup A was enabled through 3D simulation technique, whereas subgroup B was a witness, being trained only with the classical methods of education.
Results: During the observation the next parameters have been analyzed: the execution time, the preciseness of executing a maneuver, the correctness of applying the maneuvers and using the adequate instruments. All parameters have been 45% more advanced in subgroup A than in subgroup B. During the didactical process simulation has an important part prefacing practical maneuvers which leads to the training of practical abilities on each clinical entity of dental medicine.
Conclusion: In order to be competent in a continuously evolving field, governed by exigencies, esthetic rehabilitation and rigor, it is essential to have an excellent theoretical

and practical training. In conclusion we demonstrated that the 3D system is the most developed and advanced method used for the practical informing of the student.

O-106

Current demands on ergonomics in contemporary dental medicine

CM Iordache, D Forna
Faculty of Dental Medecine, Grigore T.Popa UMF Iasi, Departament of Prosthodontic, Romania

Purpose: In order to determine the muscular activity of the lumbar and cervical region in the sitting or orthostatic position, an electromyography evaluation of the regional muscularity has been done. In Romania the medicine based on proofs has underlined the fact that the dentist's profession is accompanied by several musculoskeletal disorders.
Materials and Methods: The exploration group consisted of ten subjects, dentists with at least 5 years of work experience. The electromyography study (EMG) compared the obtained parameters at the level of lumbar and cervical muscularity both in orthostatic and sitting position.
Results: The characteristics of the EMG signal corresponding to muscular activity, picked from both working positions on similar groups showed more important numbers for the sitting position, a thing which can also be found in professional literature where it is mentioned that the sitting position is more challenging than the orthostatic one. The electromyography accounts are more evident for the lumbar muscles and the slenius capitis ones. The repetitive activity, its vicious positions maintained for a long time, its high precision work solicits the stabilizing muscles of the peripheral joints and of the spine, especially the cervical and lumbar segment.
Conclusion: The EMG study which has been done on the lumbar and cervical muscularity in these two positions essential for the dentist, on healthy subjects, lead to a greater stress on the muscles while sitting.

O-107

Efficacy of novel computerised aid in designing removable partial denture

R Chidambaram Sivamani
Oman Dental College, Fixed Prosthodontics, Oman

Purpose: To evaluate the overall efficacy of the computerised aid in enhancing the ability in designing the removable partial denture by the dentists and its use as an interactive teaching tool.
Materials and Methods: 1. A group of 20 dentists were chosen. The computerised aid was introduced.
Tests were conducted pre and post usage of computerised aid to evaluate their ability to design.
2. The undergraduate students belonging to same class were randomly divided into control and experimental groups.
The control group were provided with a power point presentation and hand out [Conventional teaching] regarding removable partial denture designing.
The experimental group were also given the content of partial denture designing using the computerised aid (e-learning tool) through Oman Dental College Virtual learning

Environment.
Tests were conducted pre and post for both groups.
3. The perception of the dentist and the students regarding the usage of this aid was evaluated by filling a questionnaire form.
Results and Conclusion: As the study is ongoing the results and conclusion will be presented in the conference.

O-108

5 year outcomes of ball and locator attachments for implant-supported overdentures

Z Şanıvar[1], E Tuğcu[1], B Vanlıoğlu[1], Y Özkan[2], Y Kulak Özkan[1]
[1]Marmara University, Dentistry Faculty, Department of Prosthodontics, Istanbul, Turkey
[2]Marmara University, Dentistry Faculty, Department of Oral and Maxillofacial Surgery, Istanbul, Turkey

Purpose: Rehabilitation of edentulous patients with mandibular two-implant overdentures is an established treatment paradigm with predictable outcomes. Several attachment systems have been described for use with mandibular two-implant overdentures. The aim of this comparative study was to evaluate the survival rate, condition of peri-implant tissues, post-treatment care and patient satisfaction of implant supported overdentures with ball and locator attachments in severely resorbed mandible during a 5-year follow-up period. Materials and Methods: A total of 32 maxillary edentulous patients were enrolled in a 5-year prospective study. Sixteen patients were treated with overdentures supported by ball attachments, 16 patients with overdentures supported by locator attachments. During the 5-year follow-up period, implant survival and success rates, biological and mechanical complications, prosthodontic maintenance efforts, and patient satisfaction were evaluated. Results: All 32 patients were available for the 5-year follow-up and exhibited 100% implant survival and success rates. Peri-implant marginal bone resorption was not statistically significant for the two groups. Mean marginal bone loss was 0.35 mm at 5 years. Conclusion: There were no differences in the clinical effects of the attachment systems. Implant supported overdentures are a highly satisfactory treatment alternative.

O-109

10 years clinical and radiographic evaluation of implants

B Vanlıoğlu[1], Y Kulak Özkan[1], Y Özkan[2]
[1]Marmara University, Dentistry Faculty, Department of Prosthodontics, Istanbul, Turkey
[2]Marmara University, Dentistry Faculty, Department of Oral and Maxillofacial Surgery, Istanbul, Turkey

Purpose: The purpose of this long-term clinical study was to evaluate the survival and success rates and clinical-radiographic outcome in implant-supported fixed partial dentures (FPDs) and overdentures after 10 years of function.
Materials and Methods: A total of 512 implants were followed. In 114 partially and fully edentulous patients (placed with computer guided surgery), 460 implants were restored with implant-supported FPDs. In 21 edentulous patients 52 implants were and patients were treated with implant supported overdentures. Clinical parameters like plaque index, sulcus bleeding index, peri-implant probing depth (PD), and marginal bone loss (MBL) were recorded along with any biological and mechanical complications at baseline and recall evaluations. SPSS Version 20 were used for statistical analysis (p=.05).

Results: After 10 years of function the survival rate of FPDs supported by implants was 100 %. The success rate (event-free survival) of the FPDs was 99.13%. (In 4 restorations minor chipping of the veneering porcelain was observed). Mean PD was 1.8 mm for maxilla and 1.7 mm for mandible. Mean MBL was 0.22 mm. The cumulative implant survival of implant supported overdentures was 100% and success was 90.48%. No screw loosening was observed. The most common prosthetic complication of overdentures was the midline fracture of the mandibular denture. The patient satisfaction was high.
Conclusion: Fixed partial dentures and overdentures supported by Straumann implants showed low technical complications rates and high clinical success after 10 years.

O-110

Evaluation of the surface roughness of different cleaning agents on removable partial dentures

N Çapa, B Bal Küçük, M Alolo
Department of Prosthodontics, Faculty of Dentistry, Yeditepe University, Istanbul, Turkey

Purpose: Denture cleanser tablets are used in addition to brushing with liquid soap and toothpaste as cleaning agents for removable-partial-dentures. The purpose of this study was to evaluate the surface roughness caused by cleaning agents and brushing on the components of removable-partial-denture materials.
Materials and Methods: Sixty discs prepared from heat-cure acrylic discs (n=30) and Cr-Co discs (n=30) and 30 mandibular incisor acrylic artificial teeth (VITALumin-acryl) were embedded into acrylic. The initial surface roughness of each sample was measured from 3 points and averaged. Each sample group was preserved for 24 hours in water that contained Corega cleanser tablet and were divided into 3 sub-groups. The first group was brushed with water (control), second group with toothpaste and the third group with soap. Brushing was performed with an electric-toothbrush for 8 minutes. After brushing, surface roughness of the samples were measured from 3 points and averages were taken. Oneway Anova-test and Tukey HSD test were used for statistical analysis.
Results: There was a significant difference between the surface roughness of metal base, acrylic resin base and acrylic artificial teeth (p:0.001; $p<0.01$). The surface roughness of artificial acrylic teeth brushed with both toothpaste and soap was found to be significantly higher than metallic and acrylic bases ($p<0.01$). There was a statistically significant difference on the surface roughness of metal base brushed with toothpaste, whereas no statistically significant difference was noted for metallic base brushed with soap.
Conclusion: Brushing with liquid soap and toothpaste shows different surface roughness effects on different materials.

O-111

Denture cleansers' effect on surface characteristic of denture lining materials

ŞT Deniz[1], S Kurtulmus Yılmaz[2], El Kıyan[1], P Özkan[1], A Bakar Atıcı[3], O Güven[3]
[1]Department of Prosthodontics, Faculty of Dentistry, Ankara University, Ankara, Turkey
[2]Department of Prosthodontics, Faculty of Dentistry, Near East University, Lefkosa, Mersin 10, Turkey
[3]Laboratories for Radiation & Polymer Science (LRPS), Department of Chemistry, Hacettepe University, Ankara, Turkey

Purpose: This study evaluated the influence of denture cleansers on surface roughness and surface free energy of soft and hard denture lining materials.
Materials and Methods: Six different types of materials (acrylic and silicone soft liners and hard reline materials) were selected. Disc-shaped specimens were prepared, their surface roughness values were measured using a profilometer. The contact angles of three reference liquids were measured on the material surfaces and surface energy parameters were calculated in accordance with acid-base theory. Specimens were immersed in distilled water and various denture cleansers (Corega, Fitty Dent, Klorhexidin) for 8 hours a day during one month test period. After one month storage the final measurements were made for surface roughness and surface free energy. The data was statistically analyzed using Wilcoxon Signed Rank tests with Bonferroni correction, Kruskal-Wallis test and two-way ANOVA.
Results: There were no significant differences between the surface roughness values before and after immersion in denture cleansers ($p>0.05$). The effect of distilled on surface roughness was significantly lower than the other denture cleansers ($p<0.05$). Hard reline materials showed significantly different surface roughness values ($p<0.05$). Surface free energy values for the hard denture liners were similar to each other but not the soft liner.
Conclusion: Within the limitations of this in vitro study, the denture cleansers tested, did not cause significant changes in surface roughness of the denture liners. Differences in surface free energy of lining materials could indicate the degree of hydrophobicity/hydrophilicity that affect the adherence of microorganisms.

O-112

Effect of a disinfectant on the properties of denture material

A Kurt, T Sarı, A Üşümez
Bezmialem University Faculty of Dentistry, Department of Prosthodontics, Turkey

Purpose: The aim of this study was to compare the effects of a novel disinfectant solution with the ones in the market on mechanical properties of polymethyl methacrylate (PMMA) denture base material.
Materials and Methods: A heat-cure PMMA denture base material (Meliodent) and three different solutions (alkaline peroxide (Fittydent); 1% sodium hypochlorite; a novel cationic polymeric compound (Akacid Plus)) were used. A total of 40 PMMA rectangular specimens (64x10x3mm) were prepared and assigned to four groups. One group was used as control for the flexural strength measurement. The surface roughness and hardness of the rest of the specimens were tested after 48 hours of storage in water at 37±2 °C (t0), after two disinfection cycles (t1) and after storing 7 days in one of the solutions (t2). Finally all specimens were tested for flexural strength evaluation. Data were analyzed with (ANOVA) and analysis of covariance (ANCOVA) ($p < 0.05$).
Results: The surface roughness changes of the specimens were not significantly different among disinfectant solutions ($p>0.05$), but the hardness values of the specimens stored in sodium hypochlorite significantly decreased from t0 to t1 and t0 to t2. ($p<0.05$). The flexural strength of all groups were comparable to the control after t2 ($p>0.05$).
Conclusion: The use of this new cationic polymeric disinfectant solution could be an alternative method for disinfection of PMMA denture base materials.

O-113

Infected facial tissue fillers: Emerging problem in Kuwait case series

TS Ali
Oral and Maxillofacial Surgery Department, Amiri Dental Center, Ministry of Health, Kuwait

Soft tissue fillers provide an attractive option in facial rejuvenation. Trained dentists are allowed now to apply those fillers. With their increasing use the prevalence of complications is also expected to increase. Infectious complications of STFs were previously unknown in Kuwait. While these products are primarily meant for treatment of aging face, the age structure of our patients suggests their frequent misuse and spurious indications. Especially worrisome is recently observed application of fillers in cosmetic saloons. We believe that the use of STFs should be regulated and their administration in non-medical facilities prohibited. Patients with atypical course of facial inflammations should be questioned about previous history of cosmetic procedures.

O-114

Cleaning of implant screw holes with a modified oral irrigator

M Zortuk[1], H Albayrak[2]
[1]Department of Prosthodontics, Faculty of Dentistry, Erciyes University, Kayseri, Turkey; Associate Professor
[2]Department of Prosthodontics, Faculty of Dentistry, Erciyes University, Kayseri, Turkey;Research Assistant

Dental implants are highly successful for treating completely and partially edentulous patients. However, long term clinical reports of dental implants have shown some biological and biomechanical complications. Several studies point out that screw loosening is one of the most common prosthetic complications. Screw loosening may be affected by different factors, such as the finish of the interfaces, friction between the components, geometry, and material properties, etc. In addition contamination of screw holes may cause screw loosening and this can lead to serious prosthetic and periodontal problems. Implant screw holes may be contaminated by plaque, blood, saliva, food debris, etc. at different stages of the dental implant treatment, especially if there are many implants. This contamination may cause screw loosening. Various clinical problems may occur as a result of screw loosening, including displacement of the prosthesis and loss of prosthetic function. Movement at the deep implant abutment interface due to screw loosening often causes irritation and pain. Moreover, screw loosening increases the microgap between implant components and a larger gap may contribute to peri-implant inflammation. The use of debris-free screws minimize abutment screw loosening in the literature. For these reasons, clinicians should clean the threads of screw holes and abutment screws. The technique described in this oral presentation demonstrates how dentists may modify an oral irrigator to clean contaminated abutment screw holes.

O-115

Evaluation of the dimensional accuracy of different implant impression techniques

I Özcan[1], O Ozan[2], TB Özçelik[1], A Yağız[3], DS Somay[1]
[1]Department of Prosthodontics, Faculty of Dentistry, Baskent University, Ankara, Turkey
[2]Department of Prosthodontics, Faculty of Dentistry, Near East University, Lefkose, Turkish Republic of Northen Cyprus
[3]Ay Tasarim Ltd., Ankara, Turkey

Purpose: The purpose of this in vitro study is to compare the dimensional accuracy of four different implant impression techniques of a mandibular edentulous model with 5 implants.
Materials and Methods: Five dental implants were paralelly placed in an edentulous mandibular model. Forty impressions were obtained with four different impression techniques (n=10). In Group 1(G1) and Group 2(G2) closed tray impressions with plastic caps and without plastic caps were used respectively. However in Group 3(G3) and Group 4(G4) open tray impressions with direct splinted technique and a recently developed improved direct splinting technique were used respectively. All impressions were poured with type IV stone. Master and study cast models were scanned by a laser optical scanner, and aligned observing superpositions of the anatomic landmarks by a software. Apical, coronal and angular discrepancies of the master and study cast models were obtained and statistically analyzed with 1-way analysis of variance and post hoc LSD test.
Results: Lowest accuracy was obtained from G2 when angular (0.81°), coronal (0.17µm) and apical (0.13µm) deviations were tested ($p<0.05$) while no statistically significant differences were found within the other groups ($p>0.05$). The mean angular deviations of G1, G3 and G4 were 0.42°, 0.37° and 0.50° respectively. Similar mean, coronal and apical deviations were obtained from G1, G3 and G4.
Conclusion: Improved accuracy can be achieved by using direct splinted technique, improved direct splinted technique and closed tray impression technique with plastic caps whereas less successful results achieved from close tray impression technique without plastic cap in multiple implant cases.

O-116

Altering occlusal vertical dimensions in different cases

E Özdere, G Sayın
Selcuk University, Faculty of Dentistry, Department of Prosthodontics, Konya, Turkey

Purpose: The term 'tooth wear' is a general term that can be used to describe the surface loss of dental hard tissues. Some surface loss over the years is considered physiological. Several etiological factors, such as erosion, abrasion, and parafunctional habits have been reported to have a significant role in the loss of occlusal vertical dimension (OVD) and in the process of excessive tooth wear. The loss of OVD may result in dentoalveolar compensation or an increased interocclusal rest space and may lead to temporomandibular joint disorders. This situation will affect the efficiency of masticatory function, and esthetics. The purpose of this study was to report the management and treatment outcomes of different patients with tooth wear and decreased OVD.
Materials and Methods: Five patients with decreased oclusal vertical dimension were rehabilitated in this study. The occlussions were assessed and altered with different treatment methods. Full-mouth metal-supported porcelain crowns, implant supported fixed prosthesis and removable partial dentures with crowns were used in the alteration of occlusal vertical dimension.
Results and Conclusion: The rehabilitation of patients with tooth wear is a complex task.

Different treatment options should be presented to the patient with the time commitments, costs, and the advantages and disadvantages of each. Treatment methods such as removable dentures, crowns and implant supported bridges can be used in the restoration of patients with severe tooth wear and decreased occlussal vertical dimension.

O-117

Patient satisfaction with implant supported removable prostheses

S Keban, YU Aslan, Y Kulak Özkan
Department of Prosthetic Dentistry, University of Marmara, Istanbul, Turkey

Purpose: The implant-supported overdenture is an effective treatment for the rehabilitation of edentulous patients, able to restore both function and aesthetics. The aim of the study is to analyse the patients' satisfaction degree rehabilitated with implant supported removable prostheses between years 2003-2014.
Materials and Methods: Eighty patients rehabilitated with removable prostheses supported by 180 implants were included in this study. All of the implant surgeries were operated in Department of Oral and Maksillofacial Surgery, University of Marmara Faculty of Dentistry. All of the implant supported removable prostheses were made in Department of Prosthodontics, University of Marmara, Faculty of Dentistry. The study is involved of patients with overdentures fitted between January 2003 and February 2014, and with a minimum follow-up of six months. Eighty patients were asked to fill a questionnaire subjectively with 27 questions which interrogating their satisfaction degree about the implant supported removable prothesis by telephone surveying. Satisfaction of maxillar and mandibular prostheses were assesed with ease of use, speech, aesthetics, function, cleanliness and appropriate of cost.
Results: Seventy eight patients were satisfied with implant supported removable prosthesis. Avarage age of the prostheses was 4.3 years. Sixty eight percent of patients were satisfied with implant supported removable prosthesis treatment in terms of function, phonation, ease of use and aesthetic, but they mentioned their dissatisfaction with cost of treatment. Conclusion: Most of the patients are satisfied with treatment in terms of function, ease of use, cleanliness, phonation and aesthetics.

O-118

Laser gingivectomy in drug induced gingival overgrowth among partial edentulous patients

EM Awooda[1], YO Yousif[2]
[1]University of Meical Science and Technology, Khartoum, Sudan
[2]National Ribat University, Khartoum, Sudan

Purpose: Study was aimed to compare the effects of classical gingivectomy versus laser surgery on the degree of preoperative fear, postoperative pain and eating ability among partial edentulous patients with gingival overgrowth induced by cyclosporine.
Metarials and Methods: A kidney transplanted 32 patients (17 males and 15 females), with age (40-70 years old). Patients were informed about the treatment options and the purpose of the study. They were divided into two groups. Group 1 was treated first by conventional gingivectomy for upper jaw, followed after one week by laser for the lower jaw, while group 2 gingivetomy was done first by laser for upper jaw, followed after one week by conventional for lower jaw. Laser used was Diode 810 nm of 20 watts, energy 1.8J/s and frequency

10.000 Hz in continuous mode. Visual analog scale was used to determine the rate of preoperative fear, postoperative pain and eating ability. Paired t-test, Kruskal-Wallis and Mann-Whitney U test were used for statistical analysis.
Results: Patients treated by had less preoperative fear and high postoperative satisfaction $p<0.05$. The VAS scores for chewing difficulties and pain at 3 h, 3 days, and 7 days postoperatively were significantly lower in the group when laser surgery was performed compared with those treated conventionally ($P<0.05$).
Conclusion: From population studied laser treatment of gingival overgrowth induced by cyclosporine provides better patients perceptions for successes than treatment by conventional surgery.

O-119

Dental implant planning in the edentulous mandible – OPG or CBCT?

B Springe, U Soboleva
Riga Stradins University, The Institute of Stomatology of Riga Stradins University, Department of Prosthodontics, Latvia

Purpose: To evaluate the accuracy of digital orthopantomogram (OPG) and cone beam computed tomography (CBCT) for dental implant planning in edentulous mandible. Materials and Methods: This study included 45 edentulous women, aged from 54 to 85 years (mean age 72.08 ± 8.53), seeking mandibular overdenture treatment. Minimal bone width for smallest "standard" dental implant (3x10 mm) placement was assumed as 5 mm, but height – as 11 mm. Linear measurements were performed in the mandibular midline and 6 mm mesially from the mental foramina. OPG scans were used to determine mandibular height. CBCT sagittal scans were used to determine mandibular height and the border of 5 mm mandibular width. Also height above and below this line was measured, indicating the necessity of osteotomy and remaining bone. To define the significance of differences between mean measurements obtained by OPG and CBCT, t-test was used ($p<0.05$). Eight patients were excluded from the study.
Results: There was statistically significant difference between mean height measurements on OPG and CBCT scans. According to the OPG measurements, there was 100% possibility for every patient to place dental implants. According to the CBCT measurements, there was 100% need for osteotomy for every patient. Finally, after osteotomy it would not be possible to place dental implants in 10.8% patients in the right side as well as in 10.8% patients in the left side of the mandible.
Conclusion: For patients seeking mandibular overdentures prior dental implant insertion it is recommended to choose CBCT examination.

O-120

Prosthodontic treatments as alternative for establishing anterior esthetics

SM Sazvar, S Mehraban, H Ansari, MR Mobayeni, F Nematollahi, M Khorsand
Prosthodontics Department, Tehran Dental Branch, Islamic Azad University, Tehran, Iran

Purpose: Spacing, crowding and/or malposed could be hurtful to the patient both psychologically and socially. Prosthodontic treatments in patients with the mentioned problems, could present rapid and acceptable treatments. The purpose of this lecture (treatment study) is evaluation of patients tendency for alternative prosthodontic versus

traditional treatments with presentation of different types ugly anterior teeth and prosthodontic correction.
Materials and Methods: In this study 43 patients with anterior esthetic problems understood both traditional treatments (TT) and alternative prosthodontic treatments (APT) for their problems. They found advantages and disadvantages of both treatments methods. Each patient signed the prepared information sheet. All volunteers answered to the questions designed based on the objective. Patients received their selected treatments. All questions and answers evaluated with ANOVA, Chi^2 Correlation and other required statistical tests hence p-value < 0.05 showed significant difference between treatment options.
Results: 43 patients (25 female-18 male with 21-65 years old) in this study evaluated for the most reasons in order to trend treatment option. Time shortening, reasonable cost, social limitations and surgical phobia were their most reasons for tendency to prosthetic esthetic treatments. All patients who accepted TT were under 30 years old The patients were satisfied about their treatments and a-5.5 year follow-up showed acceptable results.
Conclusion: Despite of ideal and or classic/custom treatments for anterior esthetic correction, the patients have more tendencies to alternative prosthodontic treatments and it could be a trustable treatment for esthetic correction.

POSTER PRESENTATIONS

(Abstratcts)

P-001

Fiber reinforced composite for replacement of missing teeth: A case report

H Yeşil, Ö Öztürk, C Sipahi
Gulhane School of Medicine, Department of Prosthodontics, Turkey

Purpose: The present case report aimed to describe the prosthetic treatment of an edentulous space with fiber reinforced composite resin bonded bridge.
Materials and Methods: A patient with missing mandibular left premolar referred to our clinic for prosthetic treatment. The patient's complaints were aesthetic deficiency and chewing disability. After clinical and radiographic examinations it was determined that the mesiodistal length of the edentulous space was not sufficient to allow suitable implant placement. Thus, it was decided to fabricate a fiber reinforced composite resin-bonded bridge to fulfill esthetic and functional requirements of the patient. A mesioocclusal cavity was prepared on the second premolar tooth. This cavity and the lingual surfaces of the adjacent canine were etched with ortophosphoric acid and bonding agent was applied on etched surfaces. A woven type polyethylene fiber (Ribbond) with a thickness of 0.35 mm was placed along the prepared surfaces and bonded. The pontic of the bridge was formed with a light polymerized composite resin (3M ESPE) using the incremental technique. The occlusion was precisely adjusted with articulating papers.
Results: After a follow up period of 6 months it was determined that all functional and esthetic requirements were fully compensated without any complaint.
Conclusion: The combination of adhesive composite resin systems with suitable fiber materials is an innovative and conservative treatment alternative to metal-ceramic restorations. These restorations are preferable options due to their low cost, tooth preservation and short chairside laboratory procedures.

P-002

Evaluation of stress patterns in different ceramic laminate veneers: A 3D FEM analysis

Ö Üstün[1], N Öztürk[2]
[1]Gaziantep University, Faculty of Dentistry, Department of Prostodontics, Gaziantep, Turkey
[2]Selcuk University, Faculty of Dentistry, Department of Prostodontics, Konya, Turkey

Purpose: The aim of this study is to evaluate stress patterns in ceramic laminate veneers with different ceramic systems under functional loads by using finite element stress analysis method (FEM).
Methods: A three dimensional mathematical model of a central incisor restored with a laminate veneer was prepared with a computer using Solidworks and Cosmosworks softwares. Materials used in this study were assumed as homogeneous, isotropic and linear elastic. The following restoratives were used for modeling: IPS e.max, Ceramco, In Ceram and Cercon. A three dimensional finite element model of maxillary incisor was digitized, including all the different porcelain systems with incisal bevel design. Cement layer of 100 μm of luting composite resin was assumed, and a thickness of 500 μm of porcelain veneers were used. A total of 200 N masticatory load was applied from the incisal edge of all the models with 0^{o} angulation.
Results: The numerical values of stress were recorded. A significant difference in stress was observed. The maximum stress values recoded for each ceramic system was as follows: IPS e.max 22.37 MPa, Ceramco 24.36 MPa, In Ceram 22.94 MPa, and Cercon 21.64 MPa.

Conclusion: IPS e.max, Ceramco, In Ceram and Cercon were characterized by a different biomechanical behavior in terms of elastic deformations and stress distributions. Cercon displayed the best mechanical behavior in this 3D FEM analysis.

P-003

Types of ceramic materials for porcelain laminate veneer fabrication

P Gakis, C Boutari, I Roussou
School of dentistry University of Athens Prosthodontics, Greece

Purpose: The porcelain laminate veneer is an elective restoration, often placed in the absence of disease for purely esthetic reasons. The purpose of this poster is to present the latest ceramic materials that can be used for the fabrication of the veneers.
Materials and Methods: Articles have been identified by searching the PubMed and Medline databases. Inclusion criteria were case reports that describe aesthetic problems in the anterior region solved by using porcelain laminate veneers, articles that describe advances in dental veneers and articles referred to the survival rates of the veneers.
Results: Two types of materials are indicated for the fabrication of porcelain laminate veneers due to their translucency and potential to be used in small thickness: sintered feldspathic porcelain and pressable ceramics. Feldspathic porcelain provides great aesthetic value and demonstrates high translucency. However, they present low mechanical properties. On the other hand, pressable ceramics become extremely popular as restorative materials due to their high mechanical and physical properties.
Conclusion: Both categories show similar survival rates. Clinicians should choose the material that allows the most conservative treatment; satisfies the patient's aesthetic, structural, and biologic requirements; and has the mechanical requirements to provide clinical durability.

P-004

Esthetic and functional rehabilitation of maxillary anterior teeth using ceramic veneers and a laminate retained fixed partial denture

H Özsürmeli, E Tuğcu, C Yıldız, B Vanlıoğlu, Y Kulak Özkan
Marmara University, Dentistry Faculty, Department of Prosthodontics, Istanbul, Turkey

Purpose: The use of ceramic veneers to restore crowded teeth or diastema in the maxilla is a successful treatment alternative. Proper communication between the clinician and dental technician is required to achieve clinical success.
Materials and Methods: This case report presents a straightforward treatment plan and restorative technique that includes both the clinical and laboratory sequences necessary for predictable and stable postoperative outcomes. Two patients with missing maxillary lateral incisors were treated with laminate veneers and laminate retained fixed partial dentures. One of the patients had multiple diastemas in the maxillary anterior dentition. The other patient was suffering from severe crowding and gingival recession. Following the treatment plan a diagnostic wax-up was performed. The laminate veneers and laminate retained fixed partial dentures were constructed and cemented with resin cement. The patients were followed up to 6 months. Results and Conclusion: The patient satisfaction and the esthetic outcome was high.

P-005

Effect of die structures on fracture resistance of CAD/CAM monolithic crowns

N Polat Sağsöz[1], N Yanıkoğlu[1], Ö Sağsöz[2]
[1]Department of Prosthodontic, Faculty of Dentistry, Ataturk University, Erzurum, Turkey
[2]Department of Restorative Dentistry, Faculty of Dentistry, Ataturk University, Erzurum, Turkey

Purpose: This study investigated the influence of the supporting dies on the fracture resistance of CAD/CAM monolithic crowns.
Materials and Methods: Three different types of supporting die materials (dentin, epoxy resin, Ni-Cr alloy) were prepared. The monolithic crowns were fabricated using a CAD/CAM System; Cerec version 4.0. The CAD/CAM crowns were cemented to substructures using resin cement. The specimens were loaded using a universal testing machine at a crosshead speed of 1 mm/min until fracture occured. Data were statistically analyzed using one-way analysis of variance and LSD Post-hoc tests ($\alpha<0.05$).
Results: While CAD/CAM crowns on Ni-Cr alloy dies showed the highest fracture resistance values (606.29 N), CAD/CAM crowns on dentin dies showed the lowest fracture resistance values (578.00 N). But there is no statistically significant difference between groups.
Conclusion: The supporting die structure may be an important factor in identifying the fracture resistance of CAD/CAM monolithic crowns.

P-006

Fracture strength of endodontically treated teeth restorated with different post and crown materials

M Bankoğlu Güngör, S Karakoca Nemli, H Yılmaz, C Aydın, B Turhan Bal
Department of Prosthodontics, Faculty of Dentistry, Gazi University, Ankara, Turkey

Purpose: The purpose of the present study was to evaluate the effect of different post and crown materials on the fracture strength of endodontically treated teeth.
Materials and Methods: Sixty caries free maxillary central incisors were selected for the study and crowns were sectioned 2 mm coronally to the cemento-enamel junction. Root canals were instrumented with using rotary instruments and filled calibrated gutta-perchas. After endodontical treatment, six groups (n=10) were generated. Group 1, 2, and 3 were restorated with fiber post and resin nano ceramic crown, zirconia post and resin nano ceramic crown and resin nano ceramic endocrown, respectively. Group 4, 5, and 6 were restorated with fiber post and lithium disilicate ceramic crown, zirconia post and lithium disilicate ceramic crown and lithium disilicate ceramic endocrown, respectively. Then the specimens were subjected to a fracture strength evaluation in a universal testing machine. The specimens were loaded until fracture occurred, and the maximum fracture loads were recorded. And also the modes of fractures were determined.
Results: Zirconia posts had higher fracture resistance than fiber posts. Post and crown materials had different effect on the fracture strength of the endodontically treated teeth. Endocrowns showed comparable fracture strength with post-core restorations.
Conclusion: Endodontically treated anterior teeth could be restorated with the use of endocrowns as well as crowns supported by post-core structures.

P-007

CAD/CAM generated resin nanoceramic endocrowns in extensively damaged posterior teeth

İ Türkcan, M Bankoğlu Güngör, S Karakoca Nemli
Department of Prosthodontics, Faculty of Dentistry, Gazi University, Ankara, Turkey

Purpose: Several options have been proposed to restore endodontically treated teeth. Endocrowns are conservative and esthetic alternatives to full crowns in posterior teeth with a significant loss of coronal structure. Endocrowns can be fabricated from reinforced ceramics such as lithium disilicate or zirconium oxide with CAD/CAM systems. Resin nanoceramic (RNC) is a recently introduced millable ceramic which combines the advantages of a highly cross-linked resin matrix and ceramics. However, insufficient scientific information is available regarding its properties and yet its area of usage is limited. The purpose of this report is to represent outcomes of CAD/CAM generated RNC based endocrowns, used for the restoration of endodontically treated posterior teeth with insufficient coronal dental structure in two patients.
Materials and Methods: Temporary fillings of the non-vital teeth were removed and preparation was completed. Using CEREC system, optical impressions were made, virtual models were generated, and endocrowns were individually designed. The restorations were milled from RNC blocks. Polishing of the restorations was performed according to the manufacturer's instructions. Restorations were adhesively luted with dual cure resin cement according to manufacturer's instructions. The patients were recalled for evaluation every 6 months.
Results: During a 1-year follow-up period no biological or mechanical complications were observed and restorations were in function.
Conclusion: Endocrown is a conservative and esthetic alternative to full crowns for the treatment of non-vital posterior teeth, and RNC is a promising ceramic material with functional longevity.

P-008

CAD/CAM technology for repairing fractured denture tooth

N Tınastepe[1], A Aykor[2]
[1]Yeditepe University, Prosthodontics, Turkey
[2]Yeditepe University, Esthethic and Restorative Dentistry, Turkey

Purpose: One of the frequently encountered problem is fracture or debonding of acrylic or porcelain denture teeth from partial or full protheses. This case report includes an immediate repair of fractured denture tooth using computer-aided design/computer-aided manufacturing (CAD/CAM) technology.
Case presentation: An 62-year-old female presented a fractured left lateral incisor of her upper implant supported overdenture.
Materials and Methods: The fractured left lateral denture tooth (Vitapan,VITA Zahnfabrik, Bad Säckingen, Germany) was prepared like a porcelain veneer preperation. Digital images of the preparation and bite registration were captured using an intraoral camera then virtual models were created. The porcelain veneer restoration was milled from IPS e.max CAD (Ivoclar Vivadent, Amherst, NY). The restoration was luted with Single Bond Universal and Filtek Ultimate Composite Resin (3M ESPE St.Paul, MN, USA).
Conclusion: This case report decribed an alternate method to repair fractured denture teeth

using CAD/CAM technology. The patient's esthetic expectations were successfully met with a quick and simple method in dental office.

P-009

How to store fracture tooth fragment for optimal esthetics

S Turgut[1], B Bağış[2], H Kılınç[1], T Tüzüner[3]
[1]Karadeniz Technical University, Faculty of Dentistry, Department of Prosthodontics, Trabzon, Turkey
[2]Izmir Katip Çelebi University, Faculty of Dentistry, Department of Prosthodontics, Izmir, Turkey
[3]Karadeniz Technical University, Faculty of Dentistry, Department of Pedodontics, Trabzon, Turkey

Purpose: Fractured tooth fragment could be used by reattaching it to its remnant as a treatment of a fractured tooth. The aim of the study was to evaluate the affect of different storage solutions on optical properties of fractured crowns after different time periods. Materials and Methods: 60 central incisors crowns were divided into six groups (n=10): kept dry (Group1); kept in isotonic solution (Group2); water (Group3); milk (Group4); saliva (Group5); casein-phosphopeptide–amorphous-calcium-phosphate (CPP–ACP) for 30 minutes, 6 hours, 12 hours, 1 day, 1 week and 3 weeks. The color values were measured for all periods using a colorimeter according to CIEL*a*b* system. Data were analyzed with Kruskal – Wallis, Mann Whitney-U and Friedman Wilcoxon Test with Bonferonni stepwise correction ($p<0.05$).
Results: ΔE* values varied between 0.3-15.3 ΔE* during 3 weeks. The greatest color changes were exhibited from Group1 for all periods; while Group6 exhibited the least. Although L*,a*,b* and ΔE* values varied between T1, T2, T3 and T4 periods for all groups there were found significant differences between them ($p<0.01$) except L* and ΔE* values of Group2; and a* values of Group6 ($p>0.01$). Comparing the ΔE* values between the groups; group6 ΔE* values were found significantly different from the others for all periods ($p<0.01$) except Group4.
Conclusion: CPP-ACP complex solution seems to be a good choice for the storage of fractured crowns. Milk or saliva storage solutions result with perceptible color changes of fractured crowns during 3 weeks of storage.

P-010

Effects of an alternative primer on bond strength of repair systems to base materials

A Gürbulak[1], H Kocaağaoğlu[2]
[1]Department of Prosthodontics, The School of Dentistry, Erciyes University, Kayseri, Turkey
[2]Department of Prosthodontics, The School of Dentistry, Pamukkale University, Denizli, Turkey

Purpose: To compare the bond strength of porcelain repair systems on porcelain base materials and to evaluate the role of the application of an alternative primer. Materials and Methods: Disc specimens (N = 160) were fabricated using zirconia, alumina, non-precious metal alloys, and galvano materials (hard gold plates on non-precious metal alloys). They were bonded using 2 repair systems: half were bonded using their own primer and the other half were bonded using an alternative primer. After 1200 thermal cycles of

thermocycling, shear bond strength was obtained. Mann-Whitney U and Kruskal-Wallis tests were performed to evaluate the differences between the repair systems and between base materials.
Results: Non-precious metal alloys yielded the highest and the lowest strength values of shear bond in both repair systems. Galvano-coating had the lowest bond strength in both the Voco and Kuraray repair systems (7.09 ± 0.21 MPa). However, no difference in bond strength was found between alumina (10.31 ± 0.53 MPa), zirconia (9.88 ± 0.49 MPa), and non-precious metal alloys (14.55 ± 1.14 MPa) (P > 0.05).

P-011

Microshear bond strength of self-adhesive cements to resin-coated dentin

AB Bavbek[1], B Göktaş[1], M Özcan[2], G Eskitaşcıoğlu[1]
[1]Department of Prosthodontics, Yuzuncu Yil University, Van, Turkey
[2]Dental Materials Unit, Center for Dental and Oral Medicine, Clinic for Fixed and Removable Prosthodontics and Dental Materials Science, University of Zurich, Zurich, Switzerland

Purpose: Postoperative dentin hypersensitivity and contamination of dentin are the major early complications following the tooth preparation. To overcome these problems, the exposed dentin surface that is covered by the smear layer, can be coated by adhesive resin immediately after the tooth preparation (Immediate Dentin Sealing-IDS). This study evaluated the microshear bond strength (μSBS) of self-adhesive cements at different pH on the dentin with IDS.
Materials and Methods: Superficial flat dentin surfaces of freshly extracted human mandibular third molars (N=45) were exposed with low speed saw and grinded by fine abrasive papers. Two-step self-etch bonding system (Clearfil Protect Bond) was applied on the dentin surface. A thin layer of flowable resin-composite (Clearfil Majesty Flow) was polymerized. The specimens were stored in distilled water for two weeks and then randomly divided into three groups (n=15, per group) according to self-adhesive cements with different pH in ascending order: 1) Clearfil SA (Kuraray), 2) Bifix SE (Voco), 3) i-Cem (Heraeus-Kulzer). The μSBS measurements were accomplished using a microshear testing machine (Bisco) (0.5 mm/min) until failure occurred. Statistical analysis was performed by Kruskal Wallis and Mann Whitney U tests with Bonferroni correction.
Results: Mean μSBS for i-Cem (11.98±6.2) was statistically higher than those of Clearfil SA (4.47±2.59) and Bifix SE (4.09±1.89) ($p<0.05$). Adhesive type failures were observed in most of the groups.
Conclusion: Adhesion of self-adhesive cements on IDS treated superficial dentin was not impaired when resin cement with high pH was used.

P-012

Marginal gap evaluation of three unit fixed partial dentures

SS Türkaslan, K Çavdarlı, Z Demirekin, S Kan
Department of Prosthodontics, Süleyman Demirel University, Isparta, Turkey

Purpose: The aim of this study was to evaluate and compare the marginal fit of 3-unit- Fixed Partial Denture (FPD)s fabricated with 3 different techniques. Also three different luting agents were used in the cementation procedure of the FPDs.

Materials and Methods: The specimens were fabricated with 3 different fabrication techniques (induction, milling, laser) and cemented with three different luting agents (Zinc Phosphate, Glass Ionomer, Dual-cure Composite Resin). Therefore 9 groups were evaluated and ten 3-unit bridge stimulations were assigned for each group. The marginal adaptation of metal-ceramic bridges after the glazing procedure of porcelain veneers were recorded and these scores were compared with the after cementation values. 40 points were defined for a single abutment margin for each crown and a stereomicroscope was used for measurements.
Results: The marginal gap values of the 3-unit FPDs were similar for all groups and at the clinically acceptable levels when considering non-cemented scores. However, the after cementation values were higher due to the viscosity of the cements used. The conventional casting method samples recorded the highest values, so as zinc phosphate cement.
Conclusion: The two methods different than conventional casting are more trustworthy when evaluating the marginal gap values. Zinc phosphate cement may result higher marginal gap values.

P-013

The preparation reduction jig provides accuracy in the abutment dimensions

I Kormas[1], V Kofina[1], S Silvestros[2], V Chronopoulos[3]
[1]DDS, Private Practice, Athens, Greece
[2]Assistant Professor, Department of Prosthodontics, National and Kapodistrian University of Athens, Greece
[3]Professor of Restorative Dentistry, School of Dentistry and Oral Health, Griffith University, Gold Coast, Australia

Purpose: A common problem that both dentists and prosthodontists come across is that after the preparation of the tooth there is not enough space left for the materials of the restoration and it is imperative that we reduce our abutment. The Preparation Reduction Jig (P.R.J.) allows the dentist to reduce the tooth to the extent necessary, no more or less.
Materials and Methods: For the P.R.J. to work, the full cooperation of both the dentist and the laboratory is required. Material of choice can be a PMMA material cut via a CAD/CAM system, cold cure acrylic (usually pattern resin), base alloy or any material suitable for copings. The laboratory essentially, on the plaster cast, reduces the initial form of the P.R.J. and the abutment creating a guide for the dentist to reduce it precisely to the amount necessary.
Results: The dentist applies the P.R.J. on the original abutment and reduces it to match exactly the level of the P.R.J., thus acquiring the space needed, without losing crown retention.
Conclusion: The Preparation Reduction Jig is very accurate and reliable and results in an abutment which gets the maximum crown retention and the least dental substance loss at the same time. It is also a useful tool that saves the dentist time and the patient the trouble of additional sessions.

P-014

Prevalence of adjacent tooth damage during tooth preparation

M Yazıcı, R Gözneli, Y Kulak Özkan
Department of Prosthodontics, Faculty of Dentistry, Marmara University, Istanbul, Turkey

Purpose: The aim of this study was to investigate the prevalence of tooth damage at the proximal areas of adjacent tooth during tooth preparation between groups of dentists and dentistry students according to gender, experience and working area.
Materials and Methods: In this blind study, 3 different clinical level of clinicians were subjected to test. Groups were 4th grade students (G1, n=54), 5th grade students (G2, n=62) and dentists (G3, n=28). Adjacent 144 teeth were examined. The clinicians were unaware of the test. After the impressions had been made, the stone cast models were duplicated to examine the damage at the adjacent tooth. The stone cast models were evaluated by visual inspection method and the existence of damages were recorded according to gender and grade of the clinicians. The differences between 3 groups, the prevalence in gender and the area, which, the damage were made, were examined. In addition to descriptive statistical methods, chi-square test was used to determine the data.
Results: Damage was seen in 67 adjacent teeth. Although there were significant differences between groups, no statistical difference was found between 2 student groups (G1-G2, $p>0.05$). Significant differences were found between G3 and student groups ($p<0.0001$). There were no significant differences according to gender ($p>0.05$). But, according to the working area, more damages were seen at the posterior region.
Conclusion: As a conclusion, adjacent tooth damage during tooth reduction is affected by clinical experience and the working area.

P-015

Ceramic onlays with complete coverage of occlusal surfaces: Two case reports

S Cinel, CE Sağırkaya
Ordu University, Prosthodontics, Turkey

Adhesively placed all ceramic restorations with partial or complete coverage of the occlusal surface represent an alternative to composite restorations, post-cores, fiber-reinforced materials and traditional full coverage crowns, as they provide a more conservative approach in restoring weakened or missing tooth structure. With advancements in material sciences and adhesive technologies, all-ceramic onlay restorations have enough fatigue resistant, restore contact area in original form easily, exhibit good aesthetic properties to fulfill both functional and aesthetic requirements of the oral environment.
This report describes the rehabilitation of endodontically treated mandibular molar teeth characterized by complete loss of occlusal surfaces in two patients using with lithium disilicate glass-ceramic (IPS e.max Press) onlays. Border of prepared cavities were finished supragingival and included pulp chamber space. Full arch impressions were taken using polyvinyl siloxane. The restorations were prepared according to the manufacturer's instructions and were bonded with moderate pressure using a dual cure luting composite. Following periodic clinical controls, not any complaint nor complication was determined. Successful results could be obtained with appropriate diagnosis and treatment planning in the rehabilitation of teeth with excessive loss of substance with ceramic onlay restorations.

P-016

Comparison of effects of laser roughening treatments on titanium surfaces

D Ayalp, F Gönüldaş, DD Öztaş
Department of Prosthodontics, Faculty of Dentistry, University of Ankara, Ankara, Turkey

Purpose: Abutment surface roughening on implant supported-fixed prosthesis affect the bond strength of cements. The purpose of the study is to compare the effects of laser roughening between the connection of the cement and the titanium surface.
Materials and Methods: Titanium disc-shaped samples were prepared in 28 piece. The samples were embedded in acrylic blocks were 17 mm height, 12 mm wide and 25 mm length. Four groups were formed; Group A: The control group (free surface laser therapy), Group B: 240 nm wavelength laser applied to the surface, Group C: 480 nm wavelength laser applied to the surface and Group D: 960 nm wavelength laser applied to the surface. After laser application at different wavelengths on samples in B, C and D groups, the resin cement (Panavia, Kuraray, Japan) was applied to the surface 4 mm in height and 4 mm in diameter and were tested (0.5 mm/sn) (Lloyd Instruments, England) for bond strength.
Results: The highest value of bond strength has been measured on the samples that was applied laser roughening. Especially the samples named Group C (480 nm wavelength) showed the highest value.
Conclusion: The bond strength was increased on the groups that laser applied. Laser roughening may be advised to improve retention of implant supported fixed prosthesis.

P-017

Effect of surface treatments on bonding strength of titanium-resin cements

Z Yeşil Duymuş[1], F Süleyman[2], H Güngör[2], M Alkurt[2]
[1]Recep Tayyip Erdogan University, Faculty of Dentistry, Department of Prosthodontics, Rize, Turkey
[2]Ataturk University, Faculty of Dentistry, Department of Prosthodontics, Erzurum, Turkey

Purpose: This study aimed to investigate the effect of different surface roughening processes which were applied to the titanium samples to bonding strength of two type of resin cement.
Materials and Methods: 112 samples (10 mm thick and 12 mm diameter) cylinder of titanium were used. Samples were divided into 7 groups and each group 16 samples.
1 Group: surface roughened with Er:YAG laser,
2 Group: surface roughened covered with silica,
3,4,5,6 Group: surface roughened with industrial laser applied using different energy 100,200,400,800 Joule
and 7 Group: control.
Half of the samples were luted with Panavia F and half of the other groups were luted with RelyX resin cement.
Samples were subjected to shear test in universal test machine to measure the bonding strength and surface roughness test in profilometer.
Results: The mean shear bond strength between resin cement and titanium was the highest for RelyX 800 Joule laser resin cement (10.49 MPa) and lowest for Panavia F control resin cement (4.57 MPa). Control groups for both cements showed the weakest value for shear bond strength. The results of the Ra values indicated that there was a significant difference ($P<0.05$) between the control group and all other groups. Surface treatments resulted in increased bond strength and roughness for Panavia F and RelyX resin cements. ($P<0.05$)
Conclusion: The present study demonstrated that surface treatments may enhance bond strength of the resin cements. But surface treatments increased the surface roughness.

P-018

Effect of different surface treatments on porcelain-resin bond strength

T Yavuz[1], OY Ozyılmaz[2], ES Tobi[2], E Dilber[3], HS Kılıç[4]
[1]Abant Izzet Baysal University, Faculty of Dentistry, Department of Prosthodontics, Bolu, Turkey
[2]Selcuk University, Faculty of Dentistry, Department of Prosthodontics, Konya, Turkey
[3]Sifa University, Faculty of Dentistry, Department of Prosthodontics, Izmir, Turkey
[4]Selcuk University, Faculty of Science, Department of Physics, Konya, Turkey

Purpose: The aim of this study was to evaluate the effect of different surface treatments on surface structure and shear bond strength of different ceramics.
Materials and Methods: 168 disc-shaped cores were totally prepared from two all-ceramic systems, including 144 specimen for SBS and 24 specimen for SEM and AFM evaluation for IPS Empress e.max and Vita InCeram Zirconia. Both of the ceramic groups were divided into 6 groups (n=12): sandblasting 50-µm Al_2O_3; sandblasting 30-µm silica-modified Al_2O_3 particles (Cojet Sand); 5% hydrofluoric acid etching; Er:YAG (10W); Nd:YAG (0.8W) and Femtosecond laser (860mW) etching. After the surface treatments, luting cement (Clearfil Esthetic) bonded to the ceramic discs in all groups. After specimens had subjected to thermal cycling (1000), SBS test was applied then fracture types were observed. Specimens' surface had observed with SEM and AFM. The data were analyzed with 2-way analysis of variance (ANOVA) and Tukey's tests with 5% significance.
Results: Bond strength values of Cojet sandblasting [29.06 MPa] and HF acid etching [26.07 MPa] were statistically higher in IPS e.max and the highest values [28.08 MPa] were obtained in Cojet in In-Ceram. There were significant differences in SBS values between Femtosecond laser [12.65, 15.12 MPa] and the other laser systems (Er:YAG [4.91, 9.46 MPa] and Nd:YAG [5.29, 9.07 MPa]) in IPS e.max and In-Ceram respectively.
Conclusion: Cojet sandblasting and HF acid etching provided higher bond strengths for IPS e.max and In-Ceram Zirconia.

P-019

The effect of different surface treatment methods on surface roughness and color stability of provisional prosthodontic materials

A Köroğlu, DÖ Dede, O Şahin
Department of Prosthodontics, Faculty of Dentistry, Bülent Ecevit University, Zonguldak, Turkey

Purpose: The aim of this study was to evaluate the effect of different polishing methods on surface roughness and color stability of four provisional crown materials.
Materials and methods: Two polymethyl methacrylate (Tab2000 Kerr, Dentalon Plus) and two bis-acrylic composite resin (Protemp 4, Tempofit) based provisional crown materials were evaluated. Eighty disc shaped (10x2 mm) specimens were fabricated for each resin material and divided into 4 groups (n=20) through different surface treatment procedures; one conventional polishing and three surface sealent agent (Palaseal, GC Optiglaze, Biscover LV) coupling methods. Thermal cycling procedure was carried out for half of the specimens of each test groups (n=10). Surface roughness values were measured with a profilometer. CIEL*a*b* color parameters of each specimen were measured before and after staining procedure with a spectrophotometer. The color differences were calculated by using CIEDE 2000 (ΔE_{00}) formula. Data were statistically analyzed with 3-way analysis of variance

(ANOVA) and Tukey HSD test (α=.o5).
Results: According to three-way ANOVA results of Ra and ΔE_{00}, the type of provisional crown material, surface treatment technique and their interactions were significant (p<.05). The highest Ra value was obtained for conventionally polished Dentalon Plus group and the lowest for thermal cycling applied, Biscover sealent agent coupled Tempofit group. The highest ΔE_{00} was obtained for thermal cycling applied, conventionally polished Tempofit group and the lowest for Biscover sealent agent coupled Tempofit group.
Conclusion: Surface sealant agent coupling technique produced not only smoother surface but also more stable color values than conventional polishing method.

P-020

Comparison of temperatures rise of adhesive resin cements during polymerization

Z Yeşil Duymuş[1], M Gündoğdu[2], M Alkurt[2]
[1]Recep Tayyip Erdogan University, Faculty of Dentistry, Department of Prosthodontics, Rize, Turkey
[2]Ataturk University, Faculty of Dentistry, Department of Prosthodontics, Erzurum, Turkey

Purpose: This study aimed to compare the surface temperature changes that occur with the use of different adhesive resin cements during polymerization.
Materials and Methods: Three resin cements (Panavia F, Clearfil, RelyX) was polymerized on dentin (5x5x1 mm). A K-type thermocouple was used to measure the temperature increase during the 2 minute polymerization period. The temperature rise was measured under the dentin with a K-type thermocouple wire connected to a data logger in 20, 40, 60, 80, 100, and 120 seconds. The difference temperature readings were taken and the 100 calculated temperature changes were averaged to determine the mean value in temperature rise for each polymerization time period. Measurements were carried out seven times for each group. The data were analyzed with 2-way repeated measures ANOVA and the Tukey HSD multiple comparison test (α=.05).
Results: Surface temperature rise varied significantly depending on polymerization time period and type of resin cements (p<0.05). The RelyX resin cement group exhibited significantly the highest temperature increases. No significant differences were found between Panavia F and Clearfil resin cement groups. (p > 0.05).
Conclusion: The temperature increase was influenced by the polymerization time periods and type of resin cements.

P-021

Bond strength of an adhesive cement to internal bleached enamel

K Kılıç[1], Hİ Kılınç[1], T Arslan[2], O Er[2]
[1]Department of Prosthodontics, Erciyes University, Faculty of Dentistry, Kayseri, Turkey
[2]Department of Endodontics, Erciyes University, Faculty of Dentistry, Kayseri, Turkey

Purpose: This study evaluated the effect of delayed bonding and antioxidant (10% sodium ascorbate) application(AA) after internal bleaching (35% carbamide peroxide) on the shear bond strength (SBS) of an adhesive cement to enamel.
Materials and Methods: Buccal enamel of 84 extracted and endodontically treated human maxillary central incisors were submitted to finishing and polishing with metallographic paper to a refinement of #600, in order to obtain a 5 mm^2 flat area. An adhesive cement was

placed into a plastic tube with internal diameter of 3-mm and 3-mm height and cured on the enamel according to different protocols: unbleached and untreated enamel (C); immediate cementation of untreated emanel (Im); immediate cementation of AA enamel (Im-SA); 7 days delayed cementation of untreated emanel (7); 7 days delayed cementation of AA enamel (7-SA); 14 days delayed cementation of untreated emanel (14); 14 days delayed cementation of AA enamel (14-SA). After 24 hours, specimens were submitted to shear test on a universal testing machine. The data (MPa) were submitted to ANOVA and Fisher test (5%).
Results: Delaying of bonding is useful factor for enhancing bonding strength, but AA is not for all groups. Immediate and 14 delayed bonding weren't affected, but 7 delayed bonding was affected positively by AA. According to non-AA groups, effect of internal bleaching was neutralized after 14 day. Otherwise SBS of adhesive cement-enamel was decreased.
Conclusion: After internal bleaching, adhesive cementation on enamel is recommended either 14 days delay or 7 days delay with sodium ascorbate application prior to cementation.

P-022

Effect of a silicate layer on the zirconia/veneer interfacial adhesion

E Siarampi, E Kontonasaki, L Papadopoulou, P Koidis
Aristotle University of Thessaloniki, Greece

Purpose: The aim of this study was the evaluation of a silicate layer on the bond between a zirconia ceramic core and its veneer layer.
Materials and Methods: A yttria-stabilized tetragonal zirconia polycrystal (Y-TZP) core ceramic (IPS e.max ZirCAD, Ivoclar-Vivadent, Schaan, Liechtenstein) was used for the fabrication of 30 bar-shaped specimens (25x4x1mm). Half of the specimens were coated with a silica layer created by Silano-pen (Bredent GmbH & Co.KG), while the rest remained intact. Thirty bilayer specimens were manufactured by firing the veneering ceramic (IPS e.max ceram, Ivoclar-Vivadent, Schaan, Liechtenstein) onto the zirconia core specimens, according to manufacturers' instructions (veneer thickness 1mm). The specimens were mounted in a four-point bending jig on a universal testing machine and loaded on the core ceramic side at a cross-head speed of 0.01 mm/ min until fracture. Flexural strength values (σ in MPa) were calculated and One-way ANOVA was used to assess statistically significant differences between groups ($p<0.05$). Scanning electron microscopy (SEM) was used to assess the mode of failure.
Results: Higher flexural strength values were recorded for the silica-coated group ($p<0.05$). SEM analysis revealed various modes of failure, including cracking, delamination and catastrophic failure.
Conclusion: Under the limitations of this in vitro study, silica-coating seems an effective way to increase the flexural strength of veneered zirconia cores.

P-023

Evaluation of temperature changes of zirconia frameworks while grinding with different techniques

Ö Şivet, Ö Malkondu, E Kazazoğlu
Department of Prosthodontics, Yeditepe University School of Dentistry, Goztepe, Istanbul, Turkey

Purpose: The purpose of this study was to evaluate temperature changes of zirconia framework samples while grinding with different techniques.
Materials and Methods: Sixty zirconia samples were prepared in appropriate framework dimensions with 1 mm^3 on the occlusal surfaces. Specimens divided into 6 group (n=10) and ground with a high-speed hand piece diamond burs with two different grain size and micromotor with and without water cooling until the 1mm^3 was removed on a fixed mechanism for standardization. Temperature changes while grinding were recorded by a computer aided device with two probes. One of the probe was fixed under the occlusal surface of specimen, the other one measured the room temperature. The results were analyzed using a one-way ANOVA and Tukey HSD tests.
Results: The highest mean temperature value was obtained from micromotor grinding without water cooling (54.69±11.63°C). The highest value in this group was 72.10 °C. The lowest mean temperature value was obtained from high-speed hand piece grinding with thick grained diamond bur under water cooling (22.59±0.61°C). The lowest value in this group was 21.69°C.
Conclusion: In such cases like the zirconia framework is needed to ground; considering the material characteristics and previous studies, grinding with high-speed hand piece under water cooling is offered.

P-024

One to three year follow-up of the monolithic zirconia crown

Y Takaesu, E Mizumachi, S Nitta, M Sasaki, Y Shinozaki, A Seo, T Matsuura, H Sato
Department of Oral Rehabilitation, Section of Fixed Prosthodontics, Fukuoka Dental College, Japan

Purpose: All ceramic restorations have been popular for esthetic dentistry. Recently monolithic zirconia restorations have applied for clinical cases. However, assessment of the prognosis was limited. The aim of this study is to evaluate the prognosis of monolithic zirconia crowns from one to three year follow-up.
Materials and Methods: Five systems of monolithic zirconia restorations have been used at Fukuoka Dental College Medical and Dental Hospital. Most of the restorations were fabricated by Zenostar® (Wieland Dental), and single crowns for natural teeth which were fabricated by this system were selected and evaluated by modified California Dental Association (CDA) quality evaluation system which was developed by CDA in 1977.
Results: Twenty six crowns were fabricated from April 2011 to March 2013 for 15 patients (11 women and 4 men) with an average age of 49 years old (range, 25-60). Two cases showed few complications. The first complication case showed inflammation of the pulp, 13 months after cementation. Another monolithic zirconia crown was refabricated and set again after root canal filling. Nevertheless, 16 months later, an occlusal surface of the crown was chipped. The second complication case was chip of the veneering porcelain on the opposing tooth which was cemented a porcelain-fused-to-metal crown.
Conclusion: Most of the crowns showed good prognosis. More in detail will be discussed in the presentation.

P-025

Effect of pretreatments on the bond strength of glass ionomer to titanium based implant abutments

B Bağış[1], SM Ateş[2], I Çağlar[2], Z Yeşil Duymuş[2], FM Korkmaz[3], E Aydoğan Ayaz[3]
[1]Katip Celebi University, Faculty of Dentistry, Department of Prosthodontics, Izmir, Turkey
[2]Recep Tayyip Erdogan University, Faculty of Dentistry, Department of Prosthodontics, Rize, Turkey
[3]Karadeniz Technical University, Faculty of Dentistry, Department of Prosthodontics, Trabzon, Turkey

Purpose: The aim of this in-vitro study was to investigate the effect of pretreatments on the bond strength of glass-ionomer cement to titanium based implant abutments.
Materials and Methods: 50 disc-shaped titanium specimens 15 mm in diameter and 2 mm in thickness were produced and divided into 5 groups randomly to receive one of the following pretreatments. Group 1, Grinding with diamond bur; Group 2, Ultra fast fiber laser treatment; Group 3, Sandblasting; Group 4, Grinding with tungsten carbide bur and Group 5, No treatment (control). Glass-ionomer cement was placed inside a gel-cap and polymerized on the titanium disc surface. The shear bond strength of the specimens were tested by universal testing machine with crosshead speed of 5 mm/min. Mean shear bond strength values (MPa) were calculated. Data were analyzed with One-way ANOVA and Tukey's post hoc pairwise comparisons ($p=0.05$)
Results: This study showed that the bond strength of the laser treated titanium specimens (Group 2) were significantly higher than those of the other paired groups ($p<0.05$).
Conclusion: Ultra fast fiber laser pretreatment may be an alternative method to increase the bond strength of glass-ionomer cement to titanium based implant abutments.

P-026

The effect of different contaminations on the reverse torque value

HÖ Gümüş, M Zortuk, H Albayrak, M Dinçel
Erciyes University, Prosthodontics, Turkey

Purpose: Abutment screw loosening is a cause of implant restoration failure. The aim of this study was to compare the effect of blood, saliva and clorhexidine contaminations on reverse torque value of abutment screws.
Materials and Methods: One commercial bone level implant-abutment assembly was investigated in this study (AGS Medical, Implance 4.3 x 12 mm Bone Level, Trabzon, Turkey). Forty implants were divided into four groups (n=10) and then placed in a digital torquemeter (Mark-10 TT01 Series Digital Cap Torque Testers, NY 11726, USA). Control group (NC) wasn't contaminated. Screw holes of other thirty implants were contaminated with chlorhexidine (CG), fresh human saliva (SG) and blood (BG). The detorque values of the abutments were evaluated by the digital torquemeter after 1500 thermal cycles (Dentall Teknik, Konya, Turkey). Then, data were submitted to one-way ANOVA and Tukey HSD test.
Results: All groups presented reduced reverse torque value in comparison to the insertion torque. At laboratory conditions, contamination of the abutment screw with blood was reduced the reverse torque value significantly (18.950±2.641 N.cm). Against this, our findings indicated that reverse torque values of CG (20.280±0.878 N.cm) and SG (19.370±1.260 N.cm) decreased but, these declines weren't found statically significant by

Tukey HSD test (p>0.05).
Conclusion: Within the limits of this study contamination of abutment screw hole with blood decreases the reverse torque values statistically significantly. Clinically, this issue may increase screw loosening.

P-027

Oral rehabilitation with immediate loaded implant-supported hybrid prostheses

A Uyar, C Durmaz, A Gülses
Mevki Military Hospital, Center of Oral Health and Dentistry, Turkey

Purpose: The aim of this report is to present the full mouth rehabilitation of a patient with severe periodontal disease and multiple teeth loss by using implant supported hybrid prostheses.
Materials and Methods: A 43-years old female patient was referred our clinic with the chief complaints of chewing difficulties secondary to tooth mobility. Radiographs and pictures were taken, a CT scan was performed and diagnostic models were prepared. Following the clinical examination and the consultation with the oral surgeon, it was decided to place six implants per arch to support a fixed restoration. The patient was sedated for the surgery that involves removal of all the remaining teeth, alveoloplasty and implant placement. Prior to the flap closure, impressions were taken and dentures, fabricated in advance of the surgical phase, were checked. These dentures were converted to screw retained prostheses in the lab and placed next day. The patient was given instructions for post-op hygiene and scheduled for control sessions. After three months, the definitive hybrid prostheses which were consisted of a cast framework, denture tooth and an acrylic finish were fabricated and screwed in place.
Results: After one year follow-up, no problem of osseointegration, bone level, soft tissue, function or esthetics was seen.
Conclusion: With shortened surgery phase and screw retained provisional dentures, patient's high esthetic expectations were met in the shortest time period possible.

P-028

Location of the main occluding area after implant treatment

G Takaharu[1], I Yuichi[1], W Megumi[1], T Yoritoki[2], N Kan[1], I Tetsuo[1]
[1]Department of Oral and Maxillofacial Prosthodontics, Institute of Health Biosciences, The University of Tokushima
[2]Oral Implant Center, Tokushima University Hospital

Purpose: The "main occluding area", where food crushing occurs during the first stroke of mastication, is reported to be an important concept in occlusion. Our clinical survey suggested that the fracture of hybrid resin and porcelain veneer on implant superstructures often occurred at this area. The purpose of this study was to clarify the detail location of "main occluding area" and to discuss the significance of the location.
Materials and Methods: Eighty eight patients with implant treatments were instructed to freely bite once on a piece of dental stopping and the occluding contact area and bite force were measured using a Dental Prescale® System. The locations of the main occluding area were identified using the two clinical data.
Results: The location of the main occluding area was high in the following order; at the distal

region of the first molar and the mesial region of the second molar. The literature review suggested that the occlusal force is likely to be exerted on the distal region.
Conclusion: The main occluding area is mainly located at the distal region of the first molar with the closest occlusal contact and high bite force following implant treatment.

P-029

Proximal contact loss between implant supported prostheses and adjacent natural teeth

KY Kim, BY Jung, KD Kim
Department of Advanced General Dentristry, Yonsei Universtiy College of Dentistry, Seoul, Korea

Purpose: Complications associated with implant treatment includes screw loosening, fracture, retention loss, food impaction and peri-implant problems. Food impaction is common complain claimed by patients related with implant proximal contact loss. Since there are few reports considering PCL, purpose of this study is to investigate possible risk factors of PCL.
Materials and Methods: This study include 165 patients treated with implant fixed dental prostheses at Yonsei University Dental Hospital. Proximal contact tightness were measured at mesial, distal area in bounded cases or mesial in free end cases. 257 PC tightness were measured with metal strips thickness of 5, 10, 15, 20, 30, 40, 50, 100 μm. PC were regarded as “loss” when inserted maximum thickness metal strip was over 50 μm. Study variable that could affect PCL was grouped as followings: Demographic (age, sex), adjacent tooth condition (vitality, number of root, prostheses type, bone loss level), opposing dentition, parafunctional habit, implant prostheses factor (arch, position).
Results: PCL found in 113 cases out of 257 cases (44%). The PCL rate was 1.12 times higher in man compared to women,1.11 times higher placed at maxilla than mandible. The mean age of PCL group was 58.5 years old and PCL occurred 1.1 times more in attrition group. The PCL at mesial aspect was greater than distal aspect showing 78% of incidence. The PCL occurred 1.1 times higher next to non vital adjacent tooth,1.13 times more in free-ended position.
Conclusion: PCL occur closely related with food impaction. It could be cause of peri-implant problems. More attention must be payed on following visits at mesial side of implant in elder patient to prevent PCL. Treatment planning should include to check PCL in high risk patients to improve retrievability of implant.

P-030

Effect of acrylamide on the bond strength between denture base and reline materials

E Aydoğan Ayaz[1], B Bağış[2], S Turgut[1], FM Korkmaz[1]
[1]Department of Prosthodontics, Faculty of Dentistry, Karadeniz Technical University, Trabzon, Turkey
[2]Department of Prosthodontics, Faculty of Dentistry, Izmir Katip Celebi University, Izmir, Turkey

Purpose: PMMA is the most commonly used denture base resin and reinforcement of PMMA with addition of acrylamide is reported. However this addition may affect the bond strength between denture base and reline materials. This study evaluated the effect of

acrylamide addition to PMMA on its peel bond strength to reline materials. Materials and Methods: A heat cured acrylic resin (QC-20) and three soft denture liners (Ufigel P, Molloplast B, Flexor) were used. A total of 120 rectangular wax specimens (75x10x3 mm) were prepared and divided into two groups: control and reinforced group. Control group specimens were preraped according to the manufacturer's instructions. Acrylamide monomer was added to the liquid in the reinforced group. Heat cured acrylic resins were polymerised in water bath for 30 min at 100 °C and stored in distilled water for 24 hour. Before application of the liners bonding surfaces of the acrylic resins were wet grounded with silicon carbide paper and sandblasted with 50 μm Al_2O_3. Denture liners were applied according to the manufacturer's instructions. A universal testing machine was used to perform the peel bond strength test of the relined test specimens at an angle of 180˚C, after 1 week and 2 weeks. Three-way ANOVA and Fischer's LSD test were used at a confidence interval of 95%.
Results: There was not a significant difference between control and reinforced group after 1 week and two weeks ($p>0.05$)
Conclusion: Addition of acrylamide monomer did not affect the peel bond strength between denture base and denture liners.

P-031

Two years' observations of denture base characterization with composite resin material

K Matsuda, Y Maeda, Y Kurushima, Y Mihara, K Enoki, K Ikebe
Department of Prosthodontics, Gerodontology and Oral Rehabilitation, Osaka University Graduate School of Dentistry

Purpose: In reconstructing missing teeth and surrounding soft tissue with natural looking manner, not only the "white esthetic factors (in another words artificial teeth)", but also "pink esthetic factors (in another words denture base)" are very important even for edentulous patients. For improving pink esthetic factor, the denture base characterization is one of effective techniques for more real and highly individualized prosthesis than conventional pink colored denture. However, there were few studies reported the long-term stability of denture base characterization with composite resin material. The aim of this study was to report the long-term stability of denture base characterization.
Materials and Methods: The study participants were 9 (6 men and 3 female) edentulous patients of the Osaka University Dental Clinic. Complete dentures were fabricated with BPS method (Biofunctional Prosthetic System: Ivoclar Vivadent co.). Denture base characterization was provided with composite resin material (SR Nexco: Ivoclar vivadent Co.) on the cut backed surface of denture base material (Ivobase High-impact: Ivoclar vivadent co.). After adjusting the dentures, the observation period was started. The six items (1.Surface texture, 2. Discoloration, 3.Surface gloss, 4.Marginal gap, 5.Marginal stain, 6.Chipping) were evaluated in each 3 months.
Results: The average observation period was 19.7 months (range: 16-24). In all cases, the surface texture remains smooth. Discoloration, marginal gap, chipping was not observed. In only one case, the surface gloss was slightly tarnished, however it can be refinished by easy polishing.
Conclusion: The denture base characterization with composite resin material has good long-term stability in nearly two years observation.

P-032

Effects of post-polymerization methods on the color stability of polymethyl methacrylate resins

B Bağış[1], E Aydoğan Ayaz[2], S Turgut[2], FM Korkmaz[2]
[1]Department of Prosthodontics, Faculty of Dentistry, İzmir Katip Çelebi University, İzmir, Turkey
[2]Department of Prosthodontics, Faculty of Dentistry, Karadeniz Technical University, Trabzon, Turkey

Purpose: Polymethyl methacrylate (PMMA) is accepted as a favorable denture base material. However PMMA is susceptible to discoloration after immersion in the staining solutions. Color changes may be attributed to the residual monomer after the polymerization processes. The purpose of this study was to evaluate the effects of post-polymerization methods on the color stability of acrylic resin denture bases.
Materials and Methods: A total of 360 PMMA specimens from three different manufacturers: QC-20, Meliodent and Acron MC were used in this study. PMMA resins were divided into three groups according to post-polymerization methods: (A) water immersion, (B) microwave post-polymerization and (C) no post-polymerization as control. After the different post-polymerization methods, 10 specimens for each group were stored in distilled water, tea, coffee or coke. CIE L*a*b* color coordinates were recorded using a tristimulus colorimeter (ShadeEy, NCC, Shofu, Japan) at baseline and after immersion in solutions and then ΔE values were calculated. Data were subjected to three-way ANOVA and post hoc Fisher LSD test at a confidence interval of 95%.
Results: Statistical interactions were found in ΔE values among PMMA resins, post-polymerization methods and staining solutions ($p<0.001$). Post-polymerization methods decreased the ΔE values of all of the PMMA specimens significantly ($p<0.001$). There was not a significant difference between the two post-polymerization methods ($p>0.05$).
Conclusion: Post-polymerization of PMMA resins may decrease their discoloration in the staining solutions.

P-033

Dissolution of nystatin mixed with tissue conditioner and carrier materials

Z Muzsek[1], S Pál[2], B Kocsis[3], M Radnai[1]
[1]University of Pécs, Dentistry, Oral and Maxillofacial Surgery, Hungary
[2]University of Pécs, Institute of Pharmaceutical Technology and Biopharmacy, Hungary
[3]University of Pécs, Department of Medical Microbiology and Immunology, Hungary

Purpose: Tissue conditioners including antifungal drugs can be used in the treatment of stomatitis prothetica. The aim of the study was to find a material that would retard the relining material in order to keep the concentration in the saliva microbiologically effective for a long time.
Materials and Methods: UfiGel® (Voco GmbH, Germany) discs (diameter: 1 cm, thickness: 1.5 mm), which included 30(±1) mg Nystatin powder dispersed into different vehicle material, were used for the examination. The carrier materials were sodium alginate, sodium alginate and calcium chloride mixture and Eudragit® NE30D (Evonik Industries AG, Germany). As a control a disc was used containing only 30(±1) mg Nystatin. The discs were immersed in 150 ml artificial saliva, kept at room temperature and the dissolution of Nystatin was measured after 48h, 96h, 7, 10 and 30 days with spectrophotometer.

Results: The dissolution of Nystatin was even during the examined time period. By adding sodium alginate, the dissolution rate increased. In case of Eudragit®NE30D carrier the drug release was similar to the control disc. The dissolution rate with sodium alginate was the highest.
Conclusion: Application of sodium alginate as carrier molecule in saliva is not recommended, because of its changing volume. The dissolution of the Nystatin alone and with Eudragit® NE30D followed a similar pattern. According to this preliminary pilot study it can be assumed, that no carrier molecule is needed to prolonge the dissolution of the antifungal drug.

P-034

Clinical, histological and therapeutic study of the edentulous ridge's mucosa

MM Craitoiu
Department of Prosthodontics, Faculty of Dentistry, University of Medicine and Pharmacy of Craiova, Romania

Purpose: To present the prosthetic possibilities for partial and complete edentulous patients with variations of the residual ridges mucosal layer and emphasize the prosthetic importance of these histopathological variations.
Materials and Methods: The study was made on 26 partially and totally edentulous patients with modifications of the residual ridge's mucosa. The utilized methods were clinical and histopathological study and prosthetic treatment. From patients that required pro-prosthetic treatment, fragments of oral mucosa were obtained through excision of the residual ridge's modified mucosa, fixed in 10% formalin and processed through the paraffin histological technique. The sections were stained with Hematoxylin–Eosin and Goldner–Szeckelly trichromic.
Results: The histopathological study revealed the disappearance of epithelial crests, parakeratosis, acanthosis and acantholysis were observed. The lamina propria's connective tissue presented a process of collagen fibrosis with perivascular inflammatory infiltrate. The chorion was affected but maintained the recovery capacity, as the defense process was sustained by rich vascularisation. As the oral mucosa was only regionally affected and considering the recovery potential of its connective tissue, the prosthetic therapy was realized in normal functional conditions, with the denture supporting area able to support the prosthetic pressures. Treatment options and the influence of the mucosal characteristics upon the prosthetic therapeutic decision were presented for every patient.
Conclusion: Mobile dentures made through standard techniques are in conflict with the denture supporting area's mucosal layer, decreasing the prosthetic therapy's efficiency. The prosthetic treatment respected the mucosal characteristics and each prosthetic phase was individualized and adapted to the quality of the mucosal layer.

P-035

Lone standing Premolar in removable partial denture

H Baghdadi[1], S Sazvar[2]
[1]University Paris Diderot Paris7 Paris, France
[2]Prosthodontic Department, Tehran Dental Branch, Islamic Azad University, Tehran, Iran

When there is an isolated premolar in distal extended partial missing teeth and a removable partial denture (RPD) is definitive treatment, the premolar is vulnerable to unfavorable leverage and destructive forces.
We have to apply particular measures or prevention and/or decreasing the destructive forces. Splinting to the adjacent anterior tooth (teeth) by a fixed partial denture is the first treatment because it could change the single root premolar to multiple roots. The second is medium or short post copping and the third is particular changes in the RPD design. This illustrative poster describe the mentioned methods for prevention of destructive leverage forces.

P-036

Flexible removable restorations: A combined survey in Greece and Croatia

P Ntovas[1], P Lagouvardos[2], Polyzois G[3], Nikolinakos N[3], Pandis E[3], Kranjcic J[4], Vojvodic D[4]
[1]University of Athens, Dentistry, Greece
[2]University of Athens, Operative Dentistry, Greece
[3]Dept of Prosthodontics and Operative Dentistry, School of Dentistry, Athens, Greece
[4]Dept of Prosthodontics, School of Dental Medicine, Zagreb, Croatia

Flexible partial dentures are very common in certain countries around the world. The purpose of this study was to investigate their use in Greece and Croatia. A questionnaire of 16 questions was originally prepared and translated into Greek and Croatian language. The questionnaires were uploaded in the internet and their URL addresses were sent to nearly 4000 dentists in each country in order to have an adequate predefined response. The questions of open and closed type concerned the frequency of their use, dentists' satisfaction, dentists' knowledge etc. Statistical analysis was based on chi-square tests $p<0.05$. 378 dentists from Greece and 304 from Croatia participated in the study. 36.7% of the Greek and 19% of the Croatian participants were providing flexible dentures for their patients. Statistical analysis showed that there is a significant difference between the two samples in respect to gender, age and clinical experience. Provision and reasons were also different between the two samples. There are differences between the two countries in the use, selection and provision of flexible dentures. Only 1/5 to 1/3 of the practitioners provide flexible dentures for their patients, but a high percent of them were satisfied in a 1 year follow up.

P-037

Satisfaction of patients using removable partial prostheses

K Kılıç[1], A Uzel[2], D Unlu[1], HI Kılınç[1]
[1]Erciyes University Faculty of Dentistry Department of Prosthodontics, Kayseri, Turkey
[2]Dentist, Elazig, Turkey

Purpose: Purpose of this study was to evaluate effect of various factors on patient satisfaction.
Materials and Methods: 199 patients who received removable partial prostheses (RPP) at Erciyes University Faculty of Dentisry Departmant of Prosthodontics between 2008-2012 participated in this study. The patients scored visual analog scale (VAS) including esthetic, comfort, hygiene, stability of prostheses, speaking and chewing performance. All data was grouped according to responsible dentist (student or research assistant), whether patients

used a previous RPP or not and type of major connectors (maxillar or mandibular). Statistical analysis were performed with chi-square test.
Results: There was no statistically significant difference between RPP made by research assistants or students in terms of patient satisfaction ($p>0.05$). Furthermore, existance removable prostheses did not cause any statistically significant difference in terms of patient satisfaction ($p>0.05$). In evaluation of mandibular major connectors no significant difference was found in terms of chewing and stability ($p>0.05$) but significant difference was found in terms of esthetic, hygiene and phonetion ($p<0.05$). It is found that there was no significant difference between maxillar major connectors in terms of patient's satisfaction ($p>0.05$).
Conclusion: In the light of this study, patient satisfaction was high in removable prostheses groups which were made by student or research assistant. It is also observed that existence of a previous removable prostheses were not increased patient's satisfaction in new prostheses. It can be said that lingual bar is a preferable mandibular major connector but type of maxillary major connector is not effective on patient's satisfaction.

P-038

Differences in food intakes by occlusal force among complete denture wearers

K Enoki, K Ikebe, KI Matsuda, T Okada, C Inomata, H Takesita, Y Mihara, M Uota, Y Maeda
Department of Prosthodontics and Oral Rehabilitation, Osaka University Graduate School of Dentistry

Purpose: Good nutritional status is important to maintain good general health and to reduce the risks of systemic disease. However tooth loss is lead to low masticatory ability and alternative food choice. The aim of this study was to investigate the association of occlusal force with food intake in independently living Japanese elderly edentulous wearing complete denture.
Materials and Methods: The study population was 168 community-dwelling people wearing complete dentures aged 69 to 81 years old. Dietary habits during the preceding one month were assessed using a brief-type self-administered diet history questionnaire (BDHQ). The BDHQ is a structured questionnaire that consists of consumption frequencies of selected food commonly consumed in Japan and calculates energy-adjusted nutrient intakes. Maximal occlusal force in the intercuspal position was measured with pressure-sensitive sheets (Dental Prescale 50H, GC Co.). They were divided into 2 groups by occlusal force (cut-off: 100N). The Mann-Whitney U test was used to compare the food intake according to occlusal force. P-values < 0.05 were considered to be statistically significant.
Results: The low occlusal force group for men (n=27) took significantly less meat and sea foods with high elasticity than the others (n=59). The low occlusal force group for women (n=36) took more confectioneries than the others (n=46). These results were indicated that the occlusal force was one of the important factors for selecting or avoiding food items among complete denture wearers.
Conclusion: This study showed the different food intakes according to occlusal force and sex in complete denture wearers.

P-039

The effect of prostheses' palate shape to the voice

A Atay[1], D Pınar[2], E Özkır[3], S Karaçay[4], E Cekin[2], H Çalışkan[2]
[1]GMMA Haydarpasa Training Hospital, Prosthodontics, Turkey
[2]GMMA Haydarpasa Training Hospital, Department of Otolaryngology-Head nad Neck Surger, Turkey
[3]Afyon Kocatepe Univ Faculty of Dentistry, Prosthodontics, Turkey
[4]GMMA Haydarpasa Training Hospital, Orthodontics, Turkey

Purpose: The aim of this research was to investigate the influence of two different modelation of prostheses' palate on the acoustic features of voice.
Materials and Methods: Fourteen patients were included in this research. For seven pateints' prostheses palate modelating as rugae. The other seven patients' prostheses palate modelating as conventional surface. The fundamental frequency (F0) and first three formant (F1, F2, F3) frequencies of the Turkish sustained vowels /c/, /ç/, /s/, /ş/, /z/, /j/ were measured using the Praat programme. Formant analyses for each vowel were determined using linear predictive analysis on a spectrogram.
Results: The fundamental frequency (F0) and first three formant (F1, F2, F3) frequency values were found to differ between two groups. Second formant for the vowel c/, /s/ and /j/ in the palatal rugae group were higher than conventional group. Fundamental frequencies, first and third formant frequencies for the vowel /c/, /ç/, /s/, /ş/, /z/, /j/ in the conventional group were higher than other group ($p<0.05$).
Conclusion: The shape palate of prostheses had significant effect on fundamental and format frequencies of the patients.

P-040

Evaluation of removal effectiveness of biofilms by denture cleaning methods

M Sato[1], T Ohshima[2], N Maeda[2], C Ohkubo[1]
[1]Department of Removable Prothodontics, Tsurumi University School of Dental Medicine, Yokohama, Japan
[2]Department of Oral Microbiology, Tsurumi University School of Dental Medicine, Yokohama, Japan

Purpose: To determine the criteria for the most efficient denture cleaning methods, this study evaluated and compared the effect of current chemical and mechanical cleaning methods by *in vitro* assay.
Materials and Methods: In the first experiment, *Candida* biofilms formed on denture base resin pieces were immersed either in denture cleansers or distilled water. Immersing or rinsing in water was repeated once a day for 5 days, and the test was repeated with denture cleanser. The remaining *Candida* was calibrated according to fluorescence levels in the medium supplemented with REDOX Indicator. Second, the effect was determined according to the surface roughness of the denture base resin and removal effectiveness of biofilms for the following experimental conditions: immersing in five kinds of denture cleansers, brushing with toothpaste, and brushing with denture paste.
Results: There was a significant difference in the amount of remaining *Candida* between the denture cleanser group and the control group ($p<0.05$). The surface roughness was increased further after brushing, and significantly increased after brushing with toothpaste because of the abrasives. As for the removal effect of *Candida* biofilms, highly abrasive

toothpaste produced significantly higher results than low abrasives, not recognized only with brushing, but the highest results were from denture cleanser.
Conclusion: Our results indicated that the most effective means of denture plaque removal was cleaning with a brush without toothpaste followed by immersing in a denture cleanser overnight every day.

P-041

The evaluation of denture hygiene methods and habits in removable denture wearers

ZA Yıldırım Biçer[1], I Peker[2]
[1]Department of Prosthetic Dentistry, University of Gazi, Ankara, Turkey
[2]Department of Dentomaxillofacial Radiology, University of Gazi, Ankara, Turkey

Purpose: The aim of this study was to evaluate the denture hygiene methods and habits regarding the use of removable dentures and whether patients have been instructed on how to clean their dentures.
Materials and Methods: This study included 301 totally and partially edentulous patients using prosthesis minimum 1 year, applied to Gazi University Faculty of Dentistry (Ankara, Turkey) for prosthetic rehabilitation. The questionnaires including socio-demographic characteristics, medical history and denture hygiene habits were prepared and clinical examination were performed to evaluate oral health and dentures appearance. All evaluations were recorded by the prosthodontist. Data analysis were performed with descriptive statistics and chi-square tests.
Results: Of the participants, 40.53% had the nocturnal wearing habits. Mechanical brushing was the most common cleaning method by the participants (63%) and 36.6% of the participants used any disinfectants. There was statistically significant difference between education levels-nocturnal wearing and monthly income-usage any disinfectants ($p<0.05$). Of the participants 77.4% participants did not receive any instruction from their dentists on how to clean their dentures.
Conclusion: This study showed that education levels and monthly income affected in hygiene habits and behavior. The most of participants reported that no instruction received about how to clean their prosthesis. Dentists should inform the patients about denture hygiene and importance of daily cleaning.

P-042

Conventional vs. computerized determination of the level and inclination of the artificial occlusal plane

LV Strajnic
University of Novi Sad, Faculty of Medicine, Clinic for Dentistry of Vojvodina, Novi Sad, Serbia

Purpose: This study evaluated the reliability of the Camper's plane as a guide to determine the artificial occlusal plane in edentulous subjects and utility of cephalometric parameters for this purpose.
Metarials and Methods: A total of 60 lateral cephalometric radiographs of subjects with natural dentition and class I skeletal jaw relationship of Serbian nationality from the region of Vojvodina were included in the investigation. Thirty subjects were males, and thirty females, their age range was 20 to 29 years. The obtained values after cephalometric analysis were used as objective parameters in prosthodontic treatment for exact control of the determined

artifitial occlusal plane in edentulous patients. Cephalometric radiographs of 60 edentulous patients and class I skeletal jaw relationship of Serbian nationality from the region of Vojvodina have been done with models and definitlly precised, and marked with lead foils, the level and inclination of artifitial occlusal plane according to Camper's plane. The present study included twenty-five men and thirty-five women, aged between 45 and 78 years. Cephalometric analysis was performed by using “Dr. Ceph” computer software (FYI Technologies, GA, USA). The examined cephalometric parameters were: angle between palatal plane and mandibular plane (PP/MP), angle between occlusal plane and palatal plane (OccP/PP); angle between occlusal plane and mandibular plane (Occl/MP).
Result and Conclusion: Statistical analysis of data obtained from this study showed statistically significant differences between the values of the inclination of artificial occlusal plane in edentulous patients and the inclination of natural occlusal plane in subjects with natural dentition: PP/MP ($p<0.05$), OccP/PP ($p<0.05$), OccP/MP ($p<0.05$).

P-043

Maxilla's neutral zone registration concept. Myth or Reality?

P Ravanis, G Papavasiliou, P Kamposiora
National and Kapodistrian University of Athens, Dental School, Department of Prosthodontics, Greece

Purpose: Providing complete denture therapy to patients with atrophic residual alveolar ridges is challenging. Removable denture prosthesis has shown a great demand in recent years due to increase of older population. The purpose of this presentation is to describe through clinical cases, a registration technique of the neutral zone in the maxilla, which aims to improve the function and acceptance of these restorations.
Materials and Methods: Two patients with highly absorbed maxilla crests were treated with removable dentures. All the necessary clinical and laboratory construction stages of a typical complete removable denture were followed. Before the final delivery of the dentures, patient’s neutral zone was recorded in the maxilla with the use of medium consistency vinyl polysiloxane. Appropriate registration movements required to register the envelope of movement of the upper jaw. The two patients were followed up in two days, in one week, in two weeks, in one month and in six months. Patients were requested to answer predetermined questions regarding the stability, vocalization, function and mastication.
Results: Patients responded positively to all the questions by stating the immediate acceptance of complete removable prostheses without problems.
Conclusion: The technique of recording the neutral zone in the upper jaw can be a solution in the hands of trained dentist especially when they have to deal with highly absorbed ridges.

P-044

The influence of Aramany IV maxillary defect on supporting bone

H Hase[1], A Shinya[2], K Yoshida[1], A Shinya[2], Y Takahashi[1]
[1]Division of Removable Prosthodontics, Department of Oral Rehabilitation, Fukuoka Dental College, Japan
[2]Department of Crown and Bridge, The Nippon Dental University, School of Life Dentistry at Tokyo, Japan

Purpose: The aim of this study was to compare the physical behavior of two different size of maxillary defect with obturator prosthesis.
Materials and Methods: Two different of maxilla alveolar bone size, i.e. Aramany class IV maxillary defect and non-defect were used. Two different denture clasp design, i.e. double Akers clasps and multiple I-bar clasps were selected in this study. 3D FE models of removable prosthesis with non-defect maxilla, obturator prosthesis with Aramany class IV defect maxilla, were constructed with mucosa, alveolar bone, molars (26, 27 teeth) premolars (24, 25 teeth), double Akers clasps and multiple I-bar clasps. In boundary condition, base area of alveolar bone base was fixed in all directions. A vertical force of 30 N applied to the center on 14, 15, 16, 17 teeth (Total: 120 N).
Results: Maximum values of stress at the supporting bone on the Aramany class IV defect model were approximately fifteen times higher than the non-defect model. Comparison of higher stress value between clasp designs, multiple I-bar clasps model were lower than double Akers clasps model. Direction and amount of displacements were different, and they were related with bone size. A higher value of displacement was observed in the Aramany class IV defect model, and twist motion was also observed. The differences of clasp designs were not affected for displacement.
Conclusion: Higher stress value and widely stress distribution on the alveolar bone were observed on the big maxillary defects model. The twisted motion of obturator prosthesis was observed on Aramany class IV defect model.

P-045

Creating digitized database of maxillofacial prostheses (Obturators)

M Elbashti, M Hattori, Y Sumita, S Yoshi, H Taniguchi
Tokyo Medical and Dental University, Maxillofacial Prosthetics Department, Japan

Purpose: Maxillectomy patients are rehabilitated with obturator prosthesis that is essential for their speech, swallowing, and mastication. Although the conventional fabrication of obturator is complicated, an alternative rapid process for the complicated structure of the obturator is required in emergency cases such as fracture or lose the obturator in disasters. Therefore, creating a digitized database for the fabricated obturators can be a solution for both clinicians and patients. The purpose of this study was to create a digitized database for the fabricated obturators at the clinic to be kept for emergency needs of the patients.
Materials and Methods: Chairside oral scanner was used to scan both polished and fitting surfaces of the patient's obturator. The scanned data were checked for the surface scanning quality and saved as standard triangulated language (STL) file format. The scanned data were registered as a single STL file guided by shape of surface into three-dimensional (3-D) modelling software. Small defect holes and/or triangulating errors were repaired according to the automatic algorithm of the 3-D modelling software. A simulated obturator model was manufactured using stereolithography.
Results: The entire surface of the obturator was successfully scanned regardless of complicated structure of obturator and modeled as 3-D data. A simulated obturator model was also successfully manufactured. The model was accurate enough to be invested and replaced with dental material.
Conclusion: 3-D digitized data can be used to make a replica of an obturator rapidly in emergency.

P-046

The characteristics of denture-space of the patients with tongue defects

S Yoshi, YI Sumita, M Hatttori, H Taniguchi
Tokyo Medical and Dental University (TMDU), Maxillofacial Prosthetics, Japan

Purpose: The purpose of this study was to reveal the characteristics of the denture-space of the patients with tongue defects quantitatively by using digital technology.
Materials and Methods: Six mandibular edentulous patients with tongue defects and four mandibular edentulous patients without some defects as controls were recruited in this study.
The patient's denture-space were recorded by using piezography technique. The piezographic records were cut at occlusal plane.
The piezographic records were scanned by cone-beam computed tomography. Then the scanned data were transferred into 3D models and saved as stereolithography data. The areas where surrounded by lingual surface of the denture-space and midline which were decided by pupillary line were measured by computer aided design software. The direction of the midline were set as from lingual side midpoint to pharyngal side. The distance of the midline were set 10, 15, 20 and 25 mm following the midline.
The areas of left side and right side were measured and compared the ratios of larger area to smaller area (larger area/smaller area).The ratios were statistically analysed using wilcoxon rank sum test.
Results: The ratios (larger area/smaller area) were significantly different ($p < 0.05$) between the subjects and the controls.
Conclusion: The results suggested that the denture-space of the patients with tongue defects was more likely to be asymmetry.

P-047

Prosthodontic treatment of a patient with significant trauma to the maxiller and mandibular jaws from a gunshot wound: A clinical report

I Leblebicioğlu Kurtuluş[1], BC Çanakçı[2], A Yaşar[1], A Güleryüz Gürbulak[1], FG Çanakçı[3]
[1]Erciyes University Dentistry Faculty Department of Prosthodontics, Kayseri, Turkey
[2]Erciyes University Dentistry Faculty Department of Endodontics, Kayseri, Turkey
[3]Erciyes University Dentistry Faculty Department of Maxillofacial Surgery, Turkey

Large defects of dentofacial structures may result from trauma, disease (including neoplasms), and congenital anomalies. The location and size of the defects are related to difficulties that patients report relative to speech, mastication, swallowing, facial esthetics and self-image. The aim of this case report is the evaluation and prosthodontic treatment of a patient who suffered significant trauma to the maxilla and mandibula from a gunshot injury. The patient who had a gunshot injury 7 years ago was consulted to the prosthodontology department of Erciyes University Dentistry Faculty with the complaint of his speech and appearance. Bone augmentation and implant theraphy was declined by the patient because of the cost of the treatment. Conventional modified partial denture theraphy including upper and lower jaws retained by fixed crowns was decided as the treatment plan after conservative and endodontics treatments. The patient was instructed to maintain oral hygiene and return periodically for follow-up visits. A six-months follow-up was carried on. It is observed that the patient was satisfied with the appearance, function and speech of his maxillar and mandibular denture.

This is a method that can be used for the patients who has maxillo-mandibular defects and limited economic options. In addition to this, one of the advantages of this method is also being an easy approach for the practioner. This report describes a conventional routine approach to restoring the appearance, function, psyche and speech of a man injured by a gunshot.

P-048

Prosthetic rehabilitation of a maxillary defect: A case report

P Adımcı[1], B Bağış[1], S Turgut[2], E Aydoğan Ayaz[2]
[1]Department of Prosthodontics, Faculty of Dentistry, Izmir Katip Celebi University, Izmir, Turkey
[2]Department of Prosthodontics, Faculty of Dentistry, Karadeniz Technical University, Trabzon, Turkey

Surgical resection is a common procedure for the treatment of maxillofacial tumors. Obturator prosthesis is the most popular choice of treatments for the reconstruction of maxillary defects. The aims of an obturator prosthesis are closure of oral and nasal cavity; restoration of missing teeth, surrounding tissue, functions, aesthetic appearance and physiological support. The factors, which affect the success of the prosthetic rehabilitation, are measure of the defect, presence of the hard and soft tissues in defect area and expectation of patient. In this case report, prosthetic rehabilitation of a 64 year-old maxillary edentulous man who underwent Aramany Class II maxillary resection because of tumor mass was described. The obturator prosthesis, which has a metal framework and relined with soft relining material, was designed for the treatment. The patient was satisfied with the esthetic and functional outcomes of this treatment.

P-049

Oral health-related quality of life in implant retained overdenture wearers

A Şener, H Albayrak, HH Kocaağaoğlu, HI Kılınç, HO Gümüş
Department of Prosthodontics, Faculty of Dentistry, Erciyes University, Kayseri, Turkey

Purpose: The aim of this clinical research was to evaluate the impact of treatment with implant retained overdentures in edentulous patients by using Turkish version of OHIP-14. The another aim of this study is to estimate reliability, acceptability, replicability and intelligability of OHIP-TR.
Materials and Methods: In this study, 83 patients who recieved implant-retained overdentures and wearing prostheses at least 3 months, were assessed. The effect of age, sex, number of implants and implant type (bone-level, tissue level) on oral health-related quality of life (OHRQL) is appreciated. Intraoral examination is performed by prosthodontists; stability, retention, occlusion, adaptation and defects of base plate are examined. The correlation between clinical values and OHIP-TR is analysed with Mann–Whitney and Kruskal–Wallis tests, and the Pearson coefficient were applied ($p <= 0.05$).
Results: OHIP-TR index answers (none=0, rare=1, sometimes=2, quite often=3, frequently=4) are analysed and calculated, the sum is found between 0 and 56. If the result is close to 0, OHRQL is accepted to be improved. All of participants found that OHIP-TR was comprehensible.
The correlation of age (P=0.177), sex (P=0.239), number of implants (P=0.223) and implant

type (P=0.930) with OHRQL is not significant.
Conclusion: The results of this research are indicated that implant-retained overdentures have favourable effects on patient satisfaction and promote quality of life of individuals. Because of the present study includes at least 3 month worn prostheses, to determine preserving continuity of existing quality of life, long-term clinical studies need to be done.

P-050

An alternative long term cross arch transitional fixed restoration

G Natsios, T Gonidis, P Ravanis, I Roussou
National and Kapodistrian University of Athens, Dental School, Department of Prosthodontics, Greece

Purpose: The introduction of implants in restorative dentistry has provided solutions in the restoration of edentulism. In case of insufficient bone volume, the use of grafts is requested, in order to place implants. Bone grafted regions should be left out of pressure otherwise the result could be jeopardized. The provisional restoration of such edentulous regions during the healing period is a challenging situation. The purpose of this presentation is to describe an alternative long term cross arch transitional fixed restoration, which protects the grafted areas, using teeth and tissues for support.
Materials and Methods: Two patients were treated in the maxilla. The treatment planning included a fixed partial denture in the anterior area and two implant-supported fixed partial dentures in the posterior. Due to insufficient alveolar bone in the posterior, sinus lift was necessary in both sides. All posterior teeth were extracted and the sinus lift was performed. A cross-arch transitional fixed restoration with teeth and tissue support was fabricated. The anterior teeth with good prognosis were used as abutments and the tuberosity areas contributed to the support of the restoration.
Results: A fixed restoration was delivered to the patients during the whole healing period. Phonetics, function and aesthetics were also evaluated at this stage.
Conclusion: This type of transitional restoration seems to be an adequate solution in clinical cases in which extended graft and implant placement are necessary in order to protect the grafted areas from overpressure.

P-051

Effect of a prosthesis on the prognosis of adjacent teeth

T Nogawa, Y Takayama, A Yokoyama
Department of Oral Functional Prosthodontics, Division of Oral Functional Science, Graduate School of Dental Medicine, Hokkaido University, Sapporo, Japan

Purpose: The aim of this retrospective study was to compare the five-year survival and complication-free rates of the teeth adjacent to partial edentulous spaces of implant-supported fixed prostheses (ISFP) and removable partial dentures (RPDs).
Materials and Methods: The subjects were patients with ISFPs or RPDs inserted from 2003 to 2011 at Hokkaido University Hospital. Patients who had complete dentures or an observation period of less than one year were excluded. Complications were defined as tooth extraction, treatment for fracture, caries, periapical disease, periodontal disease or loss of retention of prostheses. The five-year survival and complication-free rates of the adjacent teeth were estimated by Kaplan-Meier analysis. Differences of these rates for the

prostheses were evaluated using the log-rank test (α= 0.05).
Results: One hundred two patients (ISFP: n=41, RPDs: n=61) were selected. The five-year survival rates of the teeth adjacent to the partial edentulous spaces in the ISFP group and the RPD group were 97.6% and 93.1%, respectively. There was no significant difference between the two groups. However, the 5-year complication-free rate was significantly higher in the ISFP group (90.8%) than in the RPD group (78.8%).
Conclusion: In this retrospective study, the results showed that the incidence of complications of the teeth adjacent to partial edentulous space was lower for ISFPs than for RPDs.

P-052

Retrospective analysis of the prevalence of tooth loss and wearing fixed prosthesis in university clinic patients: A preliminary study

I Kürkçüoğlu[1], HY Yay[1], D Yıldırım[2], ÜG Alkış[2]
[1]The University of Süleyman Demirel, Faculty of Dentistry, Department of Prosthetic Dentistry, Turkey
[2]The University of Süleyman Demirel, Faculty of Dentistry, Department of Dentomaxillofacial Radiology, Turkey

Purpose: The aim of this study was to investigate the prevalence of tooth loss and fixed prosthetic restorations in patients applied to a university clinic retrospectively.
Materials and Methods: The panoramic radiographs of 727 patients applied to the Süleyman Demirel University, Faculty of Dentistry between the dates of 1st January-1st March 2013 were examined. Patients' age, gender, the missing teeth, the presence of the fixed prosthetic restorations were recorded.
Results: Of 727 patients, 377 (51.9%) were female and 350 (48.1%) were male. The mean age was 40.6±15.3, range 18-83 years. Among all subjects, 87 (12%) were fully dentate and 19 (2.6%) were totally edentulous. 56 (7.7%) of the patients had 1 missing tooth, 68 (9.4%) had 2 missing teeth and 53 (7.3%) had 3 missing teeth. The highest incidence of tooth loss was observed in the mandibular first molars (46% for lower right and 38% for lower left molars). In all patients, 83 (11.4%) had fixed prosthesis in their upper jaw, 66 (9.1%) in their lower jaw; 121 (16.6%) patients had fixed prosthesis in both jaws. 110 (15.1%) abutment teeth were endodontically treated. 38 (5.2%) subjects had post-core restorations in their abutment teeth. Panoramic radiographs revealed 235 implant applications.
Conclusion: The results showed that a high majority of the patients (88%) in this study population had one or more missing teeth. To determine the incidence and prevalence of tooth loss and prosthetic needs in Turkish population, larger study groups should be investigated.

P-053

Prosthodontical solutions of complex cases

E Kotina, T Diamantatou, S Kourtis
Department of Prosthodontics, Dental School National Kapodistrian University of Athens, Greece

Purpose: The aim of this poster is to present different types of temporary prostheses which are designed individually in order to provide solutions in complex cases after

biological/prosthodontic complications.
Metarials and Methods: Presentation of clinical cases using alternative temporary prostheses depending on the needs of each patient. The construction of specific tooth-supported provisional restorations-a modified-type of Maryland bridges-used for the partially edentulous patient during the implant osseointegration period to avoid the use of removable prostheses. Moreover, there are presented modified-provisional restorations that are used in order to repair biological or prosthodontical complication. These restorations provide better comfort and avoid the psychological stress of using a removable prosthesis. Additionally, the problems associated with removable dentures over implants or grafts can be eliminated. Finally, the existing transitional restoration can be used as a guideline to reproduce the final restoration.
Results: Long-term provisional restorations offer an esthetic, comfortable and fuctional outcome, according to individual circumstances and patients' requirements.
Conclusion: In this poster different clinical approaches and techniques have been suggested to provide patients with long-term temporary prosthesis in complicated cases. These techniques may help the clinician in the general practice to formulate an accurate diagnosis and therefore to predict more precisely the feasibility of the chosen treatment plan and provide a fuctional and controlled outcome.

P-054

Partial edentulous pathology quantification elements

RD Feier, C Iordache, C Oniciuc, O Stamatin, NC Forna, D Forna
Umf Gr.T.Popa Iasi, Romania

Purpose: The purpose of this study is to show that computerized program can improve medical reasoning for dental students, and to show to the patients the outcome of their treatment plan.
Materials and Methods: We used a computerized program, developed by Prof. Dr. Norina Forna, for medical reasoning in choosing a correct treatment plan, for partial edentulous patients, a program developed for dental students and young practitioners, that offers the best prosthetic solution according to clinical evaluation, general health, psychological, and economical status. We applied this program for a number of 156 fifth year students of the Faculty of Dental Medicine, in the Department of Removable Prosthetics, in May and June 2014.
Results: For all the patients treated, in number of 28 we started clinical evaluation, general health evaluation, psychological evaluation and environmental evaluation. In view of all that we asked dental students for a treatment plan and after we asked them to reassess the cases by the use of the computerized program, and we compared the results. The results that we obtained showed that dental students do not have the holistic view over a case, that they regard only the clinical aspects, and less the general, psychological and environmental status of the patients, so they can easily obtain an incorrect solution for a case.
Conclusion: A fully comprehensive computerized program is proven to be extremely efficient in adapting prosthetic rehabilitation to the patient, in order to obtain maximum of efficiency.

P-055

A method to make a proper impression of mobile teeth

R Gözneli[1], Z Sanıvar[2], Y Kulak Özkan[3]
[1]Assistant Professor, Department of Prosthodontics, Faculty of Dentistry, Marmara University, Istanbul, Turkey
[2]Research Assistant, Department of Prosthodontics, Faculty of Dentistry, Marmara University, Istanbul, Turkey
[3]Professor, Department of Prosthodontics, Faculty of Dentistry, Marmara University, Istanbul, Turkey

Various techniques on making an impression of mobile teeth have been reported to prevent the teeth of being accidentally extracted during the impression procedure. A technique of blocking out the undercut using wax and another technique of using a combination of irreversible hydrocolloid and vinyl polysiloxane impression material, have been commonly used. However, evenly, placing wax may not be impressed accurately due to extensive block out and, the other technique; using two different type of impression materials may cause a detached area. This detachment may cause inaccuracies in the dental stone cast. In addition to this purpose, a different technique may be used to prevent the inadequate fit of a prosthetic restoration. This report describes a technique on making a proper impression of mobile maxillary anterior incisors and canines to have an accurate stone cast for producing laminate veneer restorations.
The procedure of this technique can be summarized as making putty-wash impression accompanied with fixing mobile teeth passively to immobile teeth by using orthodontic wire and composite resin.

P-056

Dentists' awareness and clinical approaches about postcementation hypersensitivity

Z Demirtağ[1], M Turkal[2], R Üzgür[1], Z Üzgür[1], H Çolak[3]
[1]Department of Prosthodontics, Faculty of Dentistry, Kırıkkale University, Kırıkkale, Turkey
[2]Department of Prosthodontics, Faculty of Dentistry, Gaziosmanpaşa University, Tokat, Turkey
[3]Department of Restorative Dentistry, Faculty of Dentistry, Ishik University, Erbil, Iraq

Purpose: The aim of this article was to obtain dentists' perceptions by an internet survey as to the prevalence, causes, and prevention of postcementation sensitivity and evaluate their responses.
Materials and Methods: First of all questionnaire was prepared which contains twenty-five questions on online survey site and total of 322 participants were included to the questionnaire. The first six questions contained general questions (e-mail address, city of residence, sex, graduation year from dental faculty, area of specialization in dentistry, the organization where s/he works) about the participants. The next two questions were about number of cemented abutments monthly and ratio of PCH. The last remaining 17 questions were related to the participants' experience and perceptions.
Results: Attendances found that the amount of tooth preperation (%42.06), preparation with highly water cooling (%11.21) and provisionals (%10.9) as most important factors respectively.
Conclusion: Comparing respondents' opinions the incidence of postcementation sensitivity appears to be underestimated.

P-057

Short-term clinical follow-up treatment results of obstructive sleep apnea patients: a pilot study

ŞB Türker, MA Keleş
Department of Prosthodontics Marmara University Istanbul, Turkey

Obstructive sleep apnea syndrome (OSAS) is a type of sleep disorder characterized by pauses in breathing or instances of shallow or infrequent breathing during sleep. The prevalence of OSAS in population-based studies is estimated to be from 3% to 7% in men and 2% to 5% in women. There is an important role for mandibular advancement devices in treatment for sleep apnea.
Purpose: The aim of this study was to determine the outcome of oral appliance treatment with nontitratable, custom-made appliances used for treating OSA.
Materials and Methods: Five obstructive sleep apnea patients (4 men; mean age: 55.2, 1 woman; 60 years old) were referred to Marmara University, Department of Prosthodontics. All of them have polysomnogram performed by a sleep lab. The mean AHI value was 21.28. A questionnaire for identifying the details of patients' social status, medical and dental anamnesis was developed. Required dental treatments were completed and nontitratable, custom-made appliances were constructed for each subject. Patients were controlled after 1 and 2 weeks and subjects were asked again for the success of appliance.
Results: At the 2-week follow-up, a significant reduction of the subjective complaints was noted by 60% and moderate reduction noted by 40% of 5 patients. Patients reported increased night sleep time, decreased cardiovascular problems, reduced anxiety and increased quality of life.
Conclusion: Oral appliance treatment for OSAS patients showed satisfying results. Further studies are needed to evaluate the long-term usefulness of oral appliances for OSAS patients.

P-058

Tooth preparation of dental students using different types of burs

P Kupfer, J Hey, C Wegner, J Setz
Martin- Luther- University, Department of Prosthetic Dentistry, Germany

Purpose: Precise tooth preparation is the basis of optimal fit and esthetics of dental restorations. The exact definition of the finish line is essential for computer-assisted design and manufacturing of crowns or copings. The quality of the chamfer finish line may depend on bur design. In dental education bur types used for tooth preparation are often a matter of subjective preference. The purpose of this investigation was to evaluate the performance of dental students in the preparing a defined chamfer finish using two diamond-bur types a cylinder round-nose and a cylinder with rounded-edge.
Metarials and Methods: Thirty one second-year dental students were randomly assigned to two groups. Group-A-students (n=21) made tooth preparations with cylindrical burs with round-nose. Group-B-students (n=20) prepared the teeth using cylindrical burs with rounded-edge. Each student prepared an upper first incisor for CAD/CAM fabricated all ceramic crowns in a phantom head with an electric handpiece. Every student had the same preparation time of 60 minutes. The goal was to prepare a chamfer finish line with a width of 1.5 mm±0.2 mm. The preparations were scanned and the shoulders were analyzed using special programmed software.

Results: Seven students of group-A reached the goal and 13 students of group-B reached the goal. The difference was significant ($p<0.05$).
Conclusion: Using a cylinder bur with rounded-edge more dental students reached an ideal shoulder preparation for CAD/CAM fabricated all ceramic crowns. The results indicate that this type of bur is easier to handle.

P-059

Conventional versus computer-assisted education in prosthodontics

C Wegner, R Schweyen, J Hey, J Setz
Martin- Luther- University, Department of Prosthetic Dentistry, Germany

Purpose: A dental curriculum should make graduates feel comfortable with dental procedures. Tooth preparation is not easily learned and students often feel uncomfortable with it. With CAD/CAM technology students can design crowns on their own without dental technician. The direct feedback of preparations quality may strengthen confidence in this skill. We investigated whether students having used CAD/CAM-technology in their practical clinical training feel more confident in tooth preparation.
Metarials and Methods: We developed an extracurricular course about CAD/CAM-based all-ceramic single crown fabrication and offered it to students on a voluntary basis. Participants designed all-ceramic single crowns on their own and were allowed to use their knowledge in the course of clinical procedures in prosthodontics. After the final examinations all students were asked to quote the number of teeth they prepared during their whole practical clinical training and to evaluate their self-confidence in tooth preparation using a visual analogue scale (VAS) that ranged from 0 to 10.
Results: Students (n=46) using CAD/CAM-technology in their practical clinical training prepared 6.9 crowns in average. Fellow students (n=38) who did not use CAD/CAM technology, prepared 6.5 crowns in average ($p=0.48$, u-test). Students using CAD/CAM-technology to design single crowns felt more (6.91 on VAS) self-confident in tooth preparations than their fellow-students (6.23 on VAS) ($p=0.034$, t-test).
Conclusion: The results suggest that implementation of CAD/CAM-based fabrication of fixed partial dentures in dental education enhances self-evaluation, self-assessment and self-confidence of dental students in tooth preparation.

P-060

Early loaded implants in various augmentation techniques

Y Kulak Özkan[1], B Vanlıoğlu[1], Y Özkan[2]
[1]Marmara University, Dentistry Faculty, Department of Prosthodontics, Istanbul, Turkey
[2]Marmara University, Dentistry Faculty, Department of Oral and Maxillofacial Surgery, Istanbul, Turkey

Purpose: The reconstruction of dentoalveolar defects has been a challenge for surgeons. Extensive loss of bone and teeth presents a complex problem for reconstruction. The aim of this study was to evaluate the treatment outcome of early loaded implants in various augmentation techniques.
Materials and Methods: A total of 232 implants in 106 patients were installed and the success rates of implants placed in the reconstructed or distracted areas were evaluated. The implants were divided in 4 groups: (1) implants placed in after major vertical or

horizontal bone augmentation (or both); (2) patients treated using the "sinus lift" technique. The patients had residual bone equal to or greater than 5 mm, the sinus was lifted, bone grafted in sites and implants installed during the same surgical procedure; (3) distraction osteogenesis was performed and implants were installed (4) implants placed in extraction sockets with the application of membranes and grafts. After osseointegration, patients were treated with implant supported fixed partial dentures. The patients were recalled from six months to 5-10 years period. Mean follow up time was 6.7 years.
Results: The implants were in function and clinically stable when tested individually; the periimplant soft tissues were clinically healthy. Periimplant marginal bone loss was in clinically acceptable levels and the patients were satisfied with the prosthetic outcome. The clinical results reported here has shown several procedures may be necessary for the rehabilitation of the patients with extensive bone loss. As a result early loading of implants in variously augmented bone reveals satisfactory results.

P-061

The effect of bone porosity on the biomechanical behaviour of a dental implant with three dimensional finite element discritization method

C Dergin[1], S Mestanlı[1]
[1]Okmeydanı Dental Hospital, Department of prosthetic Dentistry, Istanbul, Turkey
[2]Department of Aeronautical and Aerospace Engineering, Istanbul Technical University, Istanbul, Turkey

Thread design is an important factor that effect the behavior of bone-implant interference in different bone type under occlusal forces. The aim of this study investigates the biomechanical performance of three different implant design in three different spongiose bone type. Different spongiose bone porosity modeled which has fully orthotropy and transversely isotropic material properties. Porosity parameters include the density, size and placement of porous zones. Bone-implant interface model was created and meshed in Ansa 13.2.3 software with ortho-triangle elements. Three dimensional finite element discretization method was used for numerical analysis. Static loading calculations and distributions have been analyzed for three different porous bone with ANSYS Workbench 14.5 software. Von-Mises static stress visualizations have been handled with CFD-POST post-processing software.

P-062

Enhancing osteoblastic extracellular matrix formation on titanium-hydroxylapatite-coated micro-roughened surfaces

M Yamada, M Nakazawa, K Sakurai
Department of Removable Prosthodontics & Gerodontology, Tokyo Dental College, Japan

Purpose: Titanium-hydroxylapatite (Ti-HA) contains titanium atoms in the apatite lattice, which modify the physicochemical properties of the titanium implant surface without changing its topography. The purpose of this study was to determine the physicochemical properties of micro-roughened titanium surfaces coated with Ti-HA and the cellular functions of osteoblasts cultured on them.
Materials and Methods: Rat femur-derived osteoblastic cells were cultured on shot blasted, large grit, and acid-etched titanium discs with or without Ti-HA coatings. Samples were

analyzed for cell proliferation, alkaline phosphatase (ALP) activity, and collagen and osteocalcin secretion. Surface roughness, chemical composition, and wettability were evaluated with laser-microscopy, an electron probe micro-analyzer, and a contact angle meter, respectively. Data were analyzed with student's t-test (α=0.05). Results: Osteoblast proliferation at day 4 was higher on the Ti-HA coated surface than on the non-coated surface. ALP activity at day 7 was increased on the Ti-HA coated surface compared with on the non-coated surface. The Ti-HA coating markedly increased collagen secretion at day 7 and osteocalcin secretion at day 19. The Ti-HA coating had no effect on surface topography as assessed by roughness parameters, but did change water wettability from hydrophobic to hydrophilic status. Calcium atoms were only detected on the Ti-HA coated surfaces.
Conclusion: Ti-HA coating enhanced the osteoblast proliferation and extracellular matrix formation on micro-roughened titanium surfaces possibly through calcium modification and increasing wettability.

P-063

Bone regeneration around a dental implant using demineralized bone

M Shirai[1], R Yamamoto[2], T Chiba[3], K Komatsu[4], S Shimoda[3], S Oida[2], C Ohkubo[1]
[1]Department of Removable Prosthodontics, Tsurumi University School of Dental Medicine, Yokohama, Japan
[2]Department of Biochemistry and Molecular Biology, Tsurumi University School of Dental Medicine, Yokohama, Japan
[3]Department of Oral Anatomy, Tsurumi University School of Dental Medicine, Yokohama, Japan
[4]Department of Pharmacology, Tsurumi University School of Dental Medicine, Yokohama, Japan

Purpose: Since demineralized bone formed to a sheet has an endogenous biologically active substance, it can be expected to release into the tissue gradually and to contribute to making space. This study aimed to evaluate the anatomical volume of alveolar bone regeneration at the time of the immediate implant placement using a sheet of demineralized bone.
Materials and Methods: Male SD rats 5.5 weeks old were used in this study. After extraction of the upper left first molars, a screw-type pure titanium implant was placed into the mesial root socket. The rats were divided into three groups: placement of implant only, implant and other root sockets covered with demineralized bone sheet (1.5 mm × 3.0 mm), and implant and other root sockets filled with demineralized bone powder (diameter, 0.1–0.5 mm) under the sheet. The animals were sacrificed 4 weeks after implant surgery. After fixation, the peri-implant alveolar bone form was analyzed with micro-computed tomography.
Results: On the frontal plane, two groups of demineralized bone sheet and demineralized powder with sheet indicated higher peri-implant alveolar bone than did another group with implant placement only. However, there was no significant difference in the width of the peri-implant alveolar bone among the three groups.
Conclusion: Using demineralized bone sheet, peri-implant alveolar bone can become higher without becoming wider. Demineralized bone would be effective for regenerating peri-implant alveolar bone.

P-064

Trayless definitive impression technique for implant prostheses

D Kurihara[1], C Ohkubo[1], H Shimpo[1], A Tokue[1], Y Miyama[2]
[1]Department of Removable Prosthodontics, Tsurumi University School of Dental Medicine, Yokohama, Japan
[2]The Dental Technician Training Institute, Tsurumi University School of Dental Medicine, Yokohama, Japan

Purpose: For implant prostheses, definitive impressions have generally been made with the system's impression coping and an individual or stock tray. This presentation will describe a definitive impression technique for implant prostheses without the use of a tray.
Materials and Methods: The clinical procedures were the following: 1) The system's impression copings were conventionally fixed with a screw, and autopolymerized resin was applied to connect them; 2) The first impression for the residual ridge was made with silicone impression material; 3) After the impression was removed, silicone maxillomandibular registration material was injected and applied to the occlusal surface, and the patient was guided into the centric occlusion position; 4) A second wash impression was taken for the remaining teeth without impression copings. The laboratory procedures were as follows: 1) The plaster was poured, and the cast was pinned using the conventional double-arch tray technique; 2) The casts were mounted on the plane line articulator; 3) Implant replicas were embedded into the cast using the first impression with copings; 4) The implant prosthesis was conventionally fabricated on the cast.
Results: The relationship of the position of the implants was maintained correctly because each impression coping was firmly connected with autopolymerized resin even if a tray was not used.
Conclusion: Because centric occlusion can be reproduced on the articulator using this technique, the time required for occlusal adjustment is reduced. However, this technique can be used for the bounded missing and centric occlusion determined by the remaining teeth.

P-065

Screw's preload under different tightening sequences of implant superstructure

M Al Sahan[1], R Akeel[2]
[1]Department of Prosthetic Dental Sciences, College of Dentistry, King Saud University, Riyadh, Saudi Arabia; Department of Oral Health Sciences, Faculty of Dentistry, University of British Columbia, Vancouver, BC
[2]Department of Prosthetic Dental Sciences, College of Dentistry, King Saud University, Riyadh, Saudi Arabia

Purpose: This study evaluated the behavior of implant superstructure under different screw-tightening sequences and methods.
Materials and Methods: A metal framework connected to 4 ITI implants was fabricated. The vertical gap was measured after complete tightening of framework. Preload was measured using strain gauges during six sequences of screw tightening [(A)1-2-3-4, (B)4-2-3-1, (C)4-3-1-2, (D)1-4-2-3, (E)2-3-4-1, (F)3-2-4-1] and two methods (one-step and three-step). A total of 60 experiments (6 sequences×2 methods×5 replications) were conducted. Data were analyzed using Two-way ANOVA.
Results: The vertical gap measurements were 27.9, 141.4, 43.2, and 41.5 µm for implants 1-4; respectively. There were significant differences in the screw preload between different

tightening sequences, and methods. The preload on each implant varied on each step of the tightening sequence. The one-step tightening resulted in wider variations in preload between different sequences than the three-step tightening. The variations were related to the sequence of the implant with the highest vertical gap. In the three-step tightening, higher sum preload was found in B (311.5 N±84.6), C (245.9 N±54.1), and D (309.8 N±95.5). In the one-step tightening, higher sum preload was found in A (285.5 N±94), E (763.4 N±141.4), and F (349.7 N±68.7). Tightening sequence E in the one-step method (763.4 N±141.4) resulted in a significantly higher sum preload than all other sequences ($P<0.05$).
Conclusion: The preload was significantly affected by the sequence of the highest vertical gap during the one-step tightening. Tightening the implant that exhibits the largest gap early in the sequence resulted in the highest preload.

P-066

Microscopic comparison of the interface between screw and inner surface of abutment in both clinically failed implant fixed partial denture and new implant abutment

KL Jung, KY Kim, KD Kim, BY Jung
Department of Advanced General Dentistry, Yonsei University College Of Dentistry, Korea

Torquing an abutment screw has a clamping effect, called the preload, which holds the abutment to implant fixture. Effective clamping force is greater than functional forces applied to the system. However, errors in procedure result in screw loosening or fracture, followed with prosthesis fracture, crestal bone resorption and loss of osseointegration.
The patient who was restored with implant prosthesis using non-hex connection screw type abutment in September, 2008 complained of the prosthesis movement in April, 2012. It was diagnosed with abutment screw loosening, looseness of implant prothesis. After grinding proximal surface to make the prosthesis rotate, removal of the prosthesis was carried out because of failure of unscrewing a coping screw. A test specimen was made and examined through a microscope. Compared with microscopic images, defects on the interface between the screw and the inner surface of abutment were observed. Observation for normal condition was performed for a new abutment with coping screw.
Too small torque leads to low clamping force, too large torque results in fracture of the screw or stripping of the thread. Wear of screw surface is described as screw settling, and will result in loss of initial preload. Additional occlusal loads can have cumulative effects with the preload, and material may go into the plastic region, exceeds yield strength. Plastic deformation occurs and the screw begins to deform because of axial load and bending. This deformation causes the screw loosening, failure of the device. Therefore, proper torque, confirmation with radiographic images, periodic check-up are needed.

P-067

CAD/CAM fabrication accuracy of short- vs. long-span implant-supported FDPs

P Müller, J Katsoulis
Department of Prosthodontics, School of Dental Medicine, University of Bern, Bern, Switzerland

Purpose: To compare the precision of fit of long- versus short-span implant-supported screw-retained FDPs made from CAD/CAM titanium and veneered with ceramic.

Materials and Methods: CAD/CAM titanium frameworks for implant-supported maxillary FDPs on implants with a flat platform were fabricated on one single master-cast. Group A consisted of six 10-unit FDPs connected to six implants (FDI-positions 15, 13, 11, 21, 23, 25) and group B of six 5-unit FDPs (three implants, FDI-positions 21, 23, 25). The CAD/CAM system from Biodenta Swiss AG (Berneck, Switzerland) was used for digitizing (laser scanner) the master-cast and anatomical CAD of each framework separately. The frameworks were milled from a titanium grade V monobloc and veneered with porcelain. Median vertical distance between implant and FDP platforms from the non-tightened implants (one-screw test on implant 25) was calculated from mesial, buccal and distal scanning electron microscope measurements.
Results: All measurements showed values <40 µm. Total median vertical microgaps were 23 µm (range 2–38 µm) for group A and 7 µm (4–24 µm) for group B. The difference between the groups was statistically significant at implant 21 (p=0.002; 97.5% CI -27.3 to -4.9) and insignificant at implant 23 (p=0.093; -3.9 to 1.0).
Conclusion: CAD/CAM fabrication including laboratory scanning and porcelain firing was highly precise and reproducible for all long- and short-span FDPs. While all FDPs showed clinically acceptable values, the short-span FDPs were statistically more precise at the 5-unit span-distance.

P-068

CAD/CAM implant bar rehabilitation of oral cancer patient (Case Report)

Ö Kümbüloğlu
Ege University School Of Dentistry, Prosthodontics, Turkey

A patient with oral cancer involving the tongue referred to our clinic for prosthetic rehabilitation after surgical treatment followed by placement of four implants on the anterior mandible. Excessively deep and adjacently placed implants avoided any implant-supported denture for almost two years. After clinical and radiological evaluation, two implants were excluded from prosthetic planning. Due to the fact that it was not possible to find a stock healing cap (over 6 mm) sufficient to compensate the excessive depth of implant, the healing cap of one of the remaining two implants was observed to be completely covered with soft tissue after every surgical intervention. An individualized device to serve as a healing cap, as well as impression transfer coping was designed and produced by using computer aided design and manufacturing (CAD/CAM) techniques from grade 5 titanium alloy. Considering the location and position of implants, an overdenture supported by individualized CAD/CAM bar from grade 5 titanium alloy over implants was fabricated. The patient has been under constant clinical and radiological follow-up controls on a periodical basis.

P-069

Managing the edentulous maxilla with custom made CAD/CAM abutments

B Evren[1], B Vanlıoğlu[1], C Küçük[1], Y Özkan[2], Y Kulak Özkan[1]
[1]Marmara University, Dentistry Faculty, Department of Prosthodontics, Istanbul, Turkey
[2]Marmara University, Dentistry Faculty, Department of Oral and Maxillofacial Surgery, Istanbul, Turkey

Custom implant abutments allow the clinician to improve an implant's emergence profile, to customize cervical margins in accordance with the anatomy of the natural root, and to compensate for poor implant angulation. All of these are essential for optimum esthetic outcomes. The aim of this report is to describe two case reports treated with implant supported restorations using custom made titanium implant abutments and monolithic zirconia fixed partial dentures fabricated with CAD/CAM. Implants were placed in the edentulous maxilla of one male and one female patient. To improve the esthetic outcome custom made titanium abutments were fabricated with CAD/CAM technology. The patients were treated with monolithic zirconia fixed partial dentures. The patient satisfaction with the final esthetic outcome was high. There were no complications regarding the emergence profile and cervical margins. As a result CAD/CAM technology allows the clinician to design custom implant abutment configurations and create natural looking superstructures that are in harmony with the soft tissue.

P-070

A survey on cementation techniques in dental implantology

MM Özarslan, M Arslan, N Türker
Akdeniz University Dentistry Faculty, Turkey

Purpose: The purpose of this survey is to determine which dental cementation protocols are taught and recommended by dental practitioners.
Metarials and Method: The online survey having 10 questions about cementation of on denture implants was sent to dental practitioners. The questionnaire was prepared using an electronic platform and there was a special data base to register the answers. The questionnaire asked the recipients which implant manufacturers provided the products used at their clinic. Additionally, recipients were queried as to the choice of material and techniques for abutment and restoration preparations prior to definitive cementation. The data was analyzed with descriptive statistics.
Results: The surveys which were completely answered were evaluated. According to the data gathered from 78 surveys the mostly used implant systems were respectively Bego, Mis, Straumann and Implance. The most commonly used technique prior to definitive cementation is to airborne-particle abrade the intaglio surface of the restoration. Polycarboxylate cement is the most frequently used luting agent for cementing implant restorations. The dental practitioners generally change the cement according to the type and configurations of abutment material. Mostly temporal filling material is used to close the screw access and the screw access is completely filled.
Conclusion: According to clinical condition a variety of cementation protocols are used.

P-071

Effect of laser treatment on the bond strength of resin cement to titanium

FM Korkmaz[1], İ Şatıroğlu Çağlar[2], SM Ateş[2], Z Yeşil Duymuş[2], B Bağış[3], S Turgut[1]
[1]Department of Prosthodontics, Faculty of Dentistry, Karadeniz Technical University, Trabzon, Turkey
[2]Department of Prosthodontics, Faculty of Dentistry, Recep Tayyip Erdogan University, Rize, Turkey
[3]Department of Prosthodontics, Faculty of Dentistry, İzmir Katip Celebi University, İzmir, Turkey

Purpose: The purpose of this study was to investigate the effect of ultra fast fiber laser treatment on the bond strength of titanium and resin cement.
Materials and Methods: A total of 60 pure titanium discs (15 mmX2 mm) were divided into 6 test groups (n=10) according to the surface treatment used; Group 1) Control, machining; Group 2) Grinding with a diamond bur; Group 3) Ultra fast fiber laser application; Group 4) Resorbable blast media (RBM) application; Group 5) Electro-erosion with copper; Group 6) Sandblasting. After surface treatments, resin cements were applied to the treated titanium surfaces. The samples were subjected to shear bond strength testing universal testing machine after storing in distilled water at 37 °C for 24 h. Data were analyzed with one-way ANOVA and TUKEY HSD post hoc test ($p<0.05$).
Results: The highest bond strength values were observed in laser application group while grinding was the lowest. Sandblasting and laser application resulted significantly higher bond strengths than the control group ($p<0.05$).
Conclusion: Ultra fast fiber laser treatment and sandblasting may improve the bond strength between resin cement and titanium.

P-072

10 years clinical and radiographic outcome of implant supported overdentures

E Tuğcu[1], Y Özkan[2], B Vanlıoğlu[1], Y Kulak Özkan[1]
[1]Marmara University, Dentistry Faculty, Department of Prosthodontics, Istanbul, Turkey
[2]Marmara University, Dentistry Faculty, Department of Oral and Maxillofacial Surgery, Istanbul, Turkey

Purpose: The aim of this comparative study was to evaluate the survival rate, condition of peri-implant tissues, post-treatment care and patient satisfaction of 3 different implant systems supporting an overdenture in severely resorbed mandible during a 10-year follow-up period.
Materials and Methods: Three groups of 36 edentulous patients were treated with two implants inserted in the intraforaminal region of mandible. A total of 72 implants (24 Straumann, 24 Swiss Plus, 24 Astra) were placed. Plaque index (PI), sulcus bleeding index (BI), peri-implant probing depth (PD), and marginal bone loss (MBL), complications, patient satisfaction were recorded annually for 10 years. Repeated-measurement ANOVA, Kruskal-Wallis test, Wilcoxon signed rank test and paired samples test were used for statistical analysis ($p=.05$).
Results: The cumulative implant survival rate after 10 years of loading was 100%. Mean PD values of Astra group was significantly higher then Straumann and SwissPlus group ($p<0.05$). Although mean MBL was in the clinically acceptable levels for all groups, there were significant differences among the three groups for MBL scores between baseline and 10 years ($P<0.05$). Mean MBL of ITI group was significantly lower then Astra and SwissPlus group ($p<0.05$). In 10 years of evaluation period most common prosthetic complication was the dislodgement of the female attachment part and fracture of the acrylic portion above the attachment.
Conclusion: Mandibular implant overdenture treatment is a successful treatment modality in severely resorbed mandible.

P-073

Anterior single tooth implant supported restorations on customized zirconia abutments

Z Güder[1], O Tak[1], B Kan[2], F Çoşkunses[2]
[1]University of Kocaeli, Faculty of Dentistry, Department of Prosthodontics, Kocaeli, Turkey
[2]University of Kocaeli, Faculty of Dentistry, Department of Oral and Maxillofacial Surgery, Kocaeli, Turkey

Purpose: Absence of an anterior tooth results numerous negative consequences such as low self-esteem and lack of self-confidence. Achieving natural-looking restorations in the aesthetical zone is one of the biggest challenges in implant dentistry. In this case series treatments of 2 young patients who have absence of central incisors were presented.
Materials and Methods: Two male patients who have lost their central incisors by trauma referred to our clinic. The patients were examined intraorally and radiographically. After examinations bone level implants (Straumann AG, Basel, Switzerland) were placed one for each patients. After healing, final expressions (Impregum, 3M Espe, Seefeld, Germany) were made and custom made zirconia abutments were fabricated. Final zirconia based crowns were fabricated and cemented with zinc polycarboxylate cement (Adhesor Carbofine, Spofa Dental, Germany) after verification of aesthetic, occlusion.
Results: Follow-up data over six months period are presented. Good aesthetic results were achieved, and at the end of the follow-up period neither biological nor biomechanical complications were observed.
Conclusion: Custom made zirconia abutments and zirconia based crowns are satisfactory options to achieve natural-looking restorations in the aesthetical zone.

P-074

Prosthetic rehabilitation after split osteotomy: A report of two cases

Y Okutan[1], MT Yücel[1], H Küçükkolbası[2]
[1]Selcuk University, Faculty of Dentistry, Department of Prosthodontics, Konya, Turkey
[2]Selcuk University, Faculty of Dentistry, Department of Oral and Maxillofacial Surgery, Konya, Turkey

Alveolar atrophy may present an anatomical limitation to the placement of endosseous implants. Alveolar bone splitting and implant placement have been proposed for patients with severe atrophy of the maxilla and mandibula in the horizontal dimension. The aim of these case reports is to show the success of the split osteotomy technique for augmentation of the narrow ridges.
65-year-old female was referred to our clinic for prosthetic treatment of the right maxillary region. After the intraoral and radiographic evaluation, split osteotomy technique and anorganic bovine bone matrix (Bio-Oss, Geistlich Biomaterials GmbH, Germany) were applied to implant region on maxilla for augmentation of alveolar ridge. After 5 months, 3 implants (Tapered Screw-Vent, Zimmer Dental, USA) were placed and 3 months after this operation implant supported zirconia (Zirkonzahn GmbH, Germany) fixed partial denture was made using a CAD/CAM technique.
The other patient was a 34-year-old female who have missing teeth on the posterior mandibular regions. The treatment of the left mandibular posterior region was obtained with split osteotomy, graft augmentation, 2 implant placement and metal ceramic restoration. The patients right mandibular posterior region also treated with 2 implants without split osteotomy and the maxillary old restorations were changed by using zirconia ceramic for

anterior and metal-supported ceramic for posterior regions.
Both of the patients were satisfied with the functional and aesthetic results. Clinical and radiological examinations were made 6 months and 1-year after loading.

P-075

Reformed emergence profile around implant prosthesis: Two case reports

Ö Çölgeçen, G Amansız, A Keski
Prosthodontics, Faculty of Dentistry, Izmir Katip Celebi University, Izmir, Turkey

Desired esthetic and healthy peri-implant soft tissue can be achieved by the optimum emergence profile around implant supported restorations. When the implants or surrounding soft tissue are not in correct position (too lingually, coronally...ect.), the ability to provide similar gingival appearance for implant supported crown to adjacent teeth in the esthetic zone becomes challenging. If the gingival contours are not reformed, this leads either unesthetic appearance or unacceptable crown counturs for cleaning procedures. The aim of the cases reported in this paper was to create suitable emergence profile around the implant restorations achieving desired esthetic and anatomic contours. In first case, the patient had missing left maxillary first premolar and an implant in this area. Gingival margin contour was markedly below from adjacent teeth. To solve this problem, an impression was taken with transfer copings and gingival replica was trimmed in desired contour on model. A screw retained temporary crown had true marginal contour was fabricated. Gingival soft tissue was reorganized with gingival surgery and temporary crown was inserted immediatelly. After seven days, permanent zirconia crown cemented. In second case, another patient had two implants in mandibular posterior region. The mesial implant in esthetic zone was positioned too lingually and emergence profile was not suitable for both esthetic and cleaning. By the same procedure with first case, buccal soft tissue reformed and permanent restoration was made.

P-076

The use of hyaluronic acid in oral implantology

A Gülses[1], S Omurtay[2], C Durmaz[1], M Ayna[3], A Uyar[1], Y Açil[4]
[1]Mevki Military Hospital, Center of Oral Health and Dentistry, Turkey
[2]Mevki Military Hospital, Center of Oral Health and Dentistry, Germany
[3]Private practice, Düsseldorf, Germany
[4]Christian Albrechts University, Oral and Maxillofacial Surgery, Germany

Purpose: Used on a routine basis in many areas of medicine, hyaluronic acid is now starting to be successfully employed in modern oral implantology as well. The aim of this presentation was to share the clinical results following hyaluronic acid applications in dental implant therapy.
Materials and Methods: The use of hyaluronic acid in external sinus floor elevation, immediate implant placement, reconstruction of osseous defects around dental implants and autologous ramal bone grafting procedures were illustrated.
Results: All patients have tolerated the procedures well. No complications were observed. The results were satisfactory both functionally and aesthetically.
Conclusion: Sufficient alveolar bone volume and favorable architecture of the alveolar ridge are essential to obtain ideal functional and esthetic prosthetic reconstruction following

implant therapy. Because of its high viscosity and antibacterial properties, hyaluronic acid contributes to the optimal shielding of the implant recipient site and thereby helps prevent bacterial contamination of the surgical field. Besides it's good biocompatibility, the ease of its clinical application offers a great advantage. As a conclusion, based upon the authors' clinical experience, hyaluronic acid is a highly promising material for improving therapeutic outcomes in implant patients.

P-077

Material analysis of dental crown restorations

Ü Özad[1], I Sadıkoğlu[2]
[1]Barts and the London, School of Medicine and Dentistry, London, UK
[2]Near East University Faculty of Dentistry, Nicosia, Cyprus

There are various crown materials used in dentistry. Each model has its own advantages and disadvantages. Metals, composites, ceramic, porcelain, resin and many more types of materials have established different areas of usage. The aim of this study is to provide material analysis of different dental crown materials currently used in dentistry and establish validity for areas of use.

P-078

The evaluation of surface roughness of Ti6Al4V (Grade 5 ELI) alloys

HO Gümüş[1], H Şentürk Çeşmeci[1], HH Kocaağaoğlu[2], HI Kılınç[1]
[1]Erciyes University Faculty of Dentistry, Department of Prosthodontics, Kayseri, Turkey
[2]Pamukkale University, Faculty of Dentistry, Department of Prosthodontics, Denizli, Turkey

Purpose: The objective of this study was to evaluate the effects of different surface treatments on surface roughness of titanium abutment materials (Grade 5 ELI titanium alloys).
Materials and Methods: 50 Grade 5 ELI titanium plates (15x15x1.5 mm) were fabricated. Specimens were polished according the manufacturer's instructions using a polishing machine until they reached the brightness of the whole mirror. Titanium specimens were divided into five groups: no treatment (control group); air-borne particle abrasion with 50 µm Al_2O_3; air-borne particle abrasion with 125 µm Al_2O_3; air-borne particle abrasion with 250 µm Al_2O_3; air polishing with sodium bicarbonate powder (Airflow). Specimens were characterized by profilometry. Statistical analysis was performed using Mann Whitney U test.
Results: There was no statistical difference between control and Air flow groups ($p>=0.05$) Air-borne particle abrasion groups showed higher surface roughness than the other two groups. The surface roughness is increasing significantly as Al_2O_3 powder particle size increases (50, 125 and 250 µm) ($p <0.001$).
Conclusion: Air-borne abrasion method is an effective method to achieve surface roughness for Grade 5 ELI titanium alloys. Air-polishing with sodium bicarbonate powder (Airflow) can be used safely for preventing surface roughness.

P-079

An in-vivo analysis of ion release from dental alloys

A Alp[1], S Dikicier[2]
[1]Mevki Military Hospital, Department of Prosthodontics, Ankara, Turkey
[2]Corlu Military Hospital, Department of Prosthodontics, Tekirdag, Turkey

Purpose: Several ions might be released from metal alloys as a result of physical or chemical factors, and they could be transmitted to the oral tissues. The purpose of this study was to determine the quantity of the ions transmitted to the body fluids and their possible effects the oral mucosa.
Materials and Methods: Cr-Co, Cr-Ni base metal and gold alloys were tested on rabbits using submucosal implantation technique. The amount of the ions in the body fluids were measured before and after the implantation. The effects of these ions to the oral mucosa were investigated by means of histological methods on specimens obtained on the post-implantation phase.
Results: The results revealed that ions released from Cr-Co and Cr-Ni alloys, especially with statistically significant quantitites for Cr-Co, were transmitted to the body fluids and oral tissues. No ion release was observed from the gold alloys.
Conclusion: Cr-Co and Cr-Ni alloys which are use to prosthetic dentistry mostly due to economic restrictions were adversely influenced by the body fluids. Therefore the gold alloys should be the material preferred for the metal restorations.

P-080

Surface roughness of base metal alloys obtained with 3 different manufacturing methods

C Sipahi, M Kar, B Pişkin
Gulhane Military Medical Academy Department of Prosthodontics

Purpose: The present study aimed to compare the surface roughness of Ti and Co-Cr base metal alloys obtained with casting, CAD/CAM milling and selective laser sintering methods.
Materials and Methods: Totally 60 metal plate specimens (30 mm x 10 mm x 1 mm) were obtained with Ti and Co-Cr alloys using conventional casting, CAD/CAM milling and SLS methods. Obtained specimens were assigned to 6 experimental groups (Co-Cr/Cst, Co-Cr/Mill, Co-Cr/SLS, Ti/Cst, Ti/Mill, Ti/SLS) (n=10). The milling of Co-Cr and Ti specimens as well as the plastic patterns used for the lost wax procedure were standardly milled with a CAD/CAM system (YenaDent, D-30). A selective laser sintering system (EOS 270, EOS GmbH) was used for laser sintered groups. Obtained specimens were ground with 600, 800, 1000 grit abrasive papers and subjected to a standard polishing procedure using polishing pastes (Diapat) and rotary instruments. Surface roughness measurements were performed with a profilometer (TR100 Surface Roughness Tester) and mean Ra values were obtained. Statistical analyses were performed with SPSS 9.0 software program.
Results: Mean roughness values (μm) ranged as follows; Co-Cr/SLS (0.046) < Ti/SLS (0.051) < Co-Cr/Cst (0.053) < Ti/Mill (0.08) < Co-Cr/Mill (0.11) < Ti/Cst (0.55). Lowest Ra values were obtained in Co-Cr/SLS and Ti/SLS groups. No significant difference was found between Group Co-Cr/Cst and Co-Cr/SLS and Ti/SLS groups. Ti/Mill, Co-Cr/Mill and Ti/Cst groups showed significantly high roughness values.
Conclusion: Ti and Co-Cr metal alloys manufactured with selective laser sintering method

displayed significantly smooth surfaces compared to specimens obtained with casting and milling methods.

P-081

Radiopacity of zirconia-based ceramic materials

S Sarıdağ[1], G Pekkan[2], K Pekkan[3], D Yiğit[4], E Köseler[1]
[1]Department of Prosthodontics, Faculty of Dentistry, Kocaeli University, Kocaeli, Turkey.
[2]Department of Prosthodontics, Faculty of Dentistry, Dumlupinar University, Kütahya, Turkey.
[3]Department of Glass and Ceramics, Faculty of Fine Arts, Dumlupinar University, Kutahya, Turkey.
[4]Department of Endodontics, Faculty of Dentistry, Kocaeli University, Kocaeli, Turkey.

Purpose: The aim of this study was to evaluate the radiopacity of difference core thicknesses in zirconia- and monolithic zirconia-based ceramic systems.
Materials and Methods: A total of 120 specimens, 30 specimens of each material were prepared from Cercon ht (Dentsply Int), Prettau (Zirkonzahn GmbH), Alliance (Noritake Dental), and Ice Zirkon (Zirkonzahn GmbH) with 10 mm in diameter. Ten specimens of each group were prepared in three different thicknesses (0.3, 0.5 and 1 mm). The optical densities of each material and an aluminum step wedge were measured from radiographic images using a transmission densitometer. The optical densities of the specimens were used to determine the equivalent aluminium thicknesses. The results were analyzed with one way ANOVA and Tukey-Kramer multiple comparisons test (α=.05).
Results: The radiopacity of one-millimeter-thick specimen groups were the highest and statistically significantly different than that of the other groups (P<.05). There were no significantly different radiopacity values within groups of specimens that were 0.3, 0.5 and 1 mm in thickness. Cercon ht and Prettau specimens that were 0.3 mm in thickness revealed statistically similar radiopacity values as the same material groups that were 0.5 mm in thickness (P>.05). There were no statistically significant different radiopacity values between monolithic zirconia and zirconia materials (P>.05).
Conclusion: Different thicknesses of the zirconia core materials revealed different radiopacities. However, decreasing the thickness of the zirconia core material did not necessarily decrease the radiopacity in each material.

P-082

Evaluation of translucency and contrast ratio of the zirconium

B Kalaycı[1], F Bayındır[2]
[1]Karadeniz Technique University, Prosthodontics, Turkey
[2]Atatürk University, Prosthodontics, Turkey

Purpose: This study aimed to determine the effects of number of firings, porcelain thickness and aging on the translucency of the zirconium based restorations.
Materials and Methods: Three different zirconia frameworks were used: Zirkonzahn (ZZ) (Stegger, Brunneck, Italy), Noritake Alliance (NA) (Noritake Co, Nagoya, Japan), Lava Zirconia (LZ) (3M ESPE, Seefeld, Germany). Ninty disc-shaped cores, 6 mm in diameter with 0.5 mm thickness were prepared which each system provides 30 samples. The specimens divided into three subgroups (n=10) according to veneering with ceramic

thicknesses: as 0.5, 1.0, 1.5 mm. Repeated firings (3 or 5) were performed and translucency parameters of the specimens were measured using ShadeEye NCC Dental colorimeter (Shofu Dental). After that the specimens were subjected to an accelerated aging process to 300 hours. Translucency measurements were repeated, and the data were statistically evaluated with Wilcoxon Rings test and Bonferroni post hoc test.
Results: CR (Contrast Ratio) and TP (Translucency Parameter) values of ceramic systems were effected by number of firings, porcelain thickness and accelerated aging process but there was no significant differences. Increasing the ceramic thickness resulted an increase in the CR values and a decrease in the TP values ($p<0.001$). LZ system is the most translucent system ($p<0.001$). After acceleerated aging process, no significant differences were recorded for CR and TP.
Conclusion: The final translucency of zirconia restorations can be manipulated by varying the dentin porcelain thickness.

P-083

Effect of shaded zirconia cores on the color of all-ceramics

M Ulusoy, S Kurtulmuş Yılmaz
Department of Prosthodontics, Faculty of Dentistry, Near East University, Lefkosa, Mersin10, Turkey

Purpose: To evaluate the effect of zirconia coloring techniques on the color reproduction capacity of different zirconia all-ceramic systems.
Materials and Methods: Three zirconia all-ceramic systems [In-Ceram YZ (VYZ), ICE Zirkon (ICE) and Katana (KTN)] were tested and a lithium disilicate glass-ceramic (IPS e.max Press-IPS) was served as control group. Square-shaped specimens with 0.5 mm thickness were fabricated from all of the systems in A1, A2 and A3.5 shades according to Vitapan Classical shade tab (n=11). Specimens were then veneered and glazed with corresponding veneer ceramic recommended by manufacturers of and the total thickness was set to 1.5 mm. CIE L*a*b* color coordinates of the specimens were measured using VITA Easyshade Compact spectrophotometer and the restoration mode of spectrophotometer was used to calculate the color difference (ΔE) between intended and reproduced color of specimens. Data were statistically analyzed and $\Delta E>2.6$ were evaluated as perceptible; $\Delta E>5.5$ were evaluated as clinically unacceptable.
Results: There were statistically significant differences among the ΔE values of systems. According to statistical analysis, ΔE values for A1 shaded specimens were ranked as VYZ<IPS<ICE<KTN; for A2 shaded specimens VYZ=IPS<ICE<KTN and for A3.5 shaded specimens VYZ=IPS<ICE=KTN.
Conclusion: All color differences between the intended and reproduced color were within clinically acceptable range. Color differences of A1 shaded ICE group and A1, A2 and A3.5 shaded specimens of IPS and VYZ groups were not perceptible to the human eye.

P-084

The effect of repeated firings on the marginal opening and internal fit of the monolithic zirconia, bilayered zirconia and metal-ceramic crowns

AC Bulut[1], S Atsü[1], M Turkal[2]
[1]Department of Prosthodontics, Kırıkkale University, Kırıkkale, Turkey
[2]Department of Prosthodontics, Gaziosmanpaşa University, Tokat, Turkey

Purpose: The aim of this study was to evaluate the effect of repeated firings on the marginal opening and internal fit of the monolithic zirconia, bilayered zirconia and metal-ceramic crowns with the silicone replica technique and an image analysis system.
Materials and Methods: The in vitro marginal opening and internal fit of 3 different crown systems; Monolithic zirconia crowns (BruxZir), bilayered zirconia crowns and metal-ceramic crowns were evaluated. A total of 15 crowns were prepared for 3 groups (n=5 for each groups). Measurements of marginal opening (marginal opening center of chamfer area, end of chamfer area) and internal fit (axial wall and occlusal surface) were performed after repeated firings (1, 3, and 5) at 15 points for each crown using the silicone replica technique and an image analysis system. The 1-way analysis of variance (ANOVA) and Duncan test were used to compare data (a=.05).
Results: Statistically analyse show some increase and decrease.
Conclusion: Repeated firing effects gap of the margin, lateral wall and occlusal part of the crowns.

P-085

Translucency of ceramic material in different core–veneer combinations

P Kursoğlu, PF Karagöz Motro, E Kazazoğlu
Department of Prosthodontics, Faculty of Dentistry, Yeditepe University, Istanbul, Turkey

Purpose: To investigate the translucency parameters (TPs) of core–veneer thicknesses in two different ceramic materials.
Materials and Methods: Fifty-six ceramic discs of different thickness were fabricated as cores according to the manufacturer's recommendations and divided into groups (n=7). Each was veneered with its compatible veneer ceramic with a different thickness (0.2, 0.5, 0.7 mm). One group of each ceramic type was left without veneer. The groups were named according to core names (Group IPS e.max Press [EP], Group IPS Empress Esthetic [EE]), and numbers were given according to thickness combination: 1=(1.00+0.5); 2=(0.8+0.7); 3=(1.00); 4=(0.8+0.2). All surfaces were measured by profilometry to ensure consistency within the groups. A glass disc (1.5 mm) positive control (Group P) and a metal core (1.5 mm) negative control (Group N) were prepared. The TP values were calculated using spectrophotometry by calculating the color differences of the specimens over black and white backgrounds.
Results: One-way ANOVA revealed significant differences among the TP values of the ceramic groups ($p<.01$). A one-sample t test was performed to determine thickness consistency, and oneway analysis was performed to ensure surface roughness consistency within the groups ($p>.05$).
Conclusion: Total ceramic thickness affected the translucency; higher combined ceramic thickness resulted in lower TP values. When total thickness decreases, the translucency of core material has more effect than that of veneer material on TP values.

P-086

Light transmission of different full ceramic materials with different thickness

İ Kürklü, E Talay, I Yöndem
Selcuk University Faculty Of Dentistry, Department of Prosthodontics, Turkey

Purpose: Yttrium partially stabilized polycrystalline zirconia (Y-TZP) is the material of choice for all-ceramic restorations with its excellent mechanical properties. However, the polycrystalline content causes increased opacity that changes the optical properties of the material. The aim of this study is to evaluate light transmission of lithium disilicate glass ceramic (IPS e.max CAD), new generation full ceramic system with different zirconia contains (Vita Suprinity) and yttrium stabilized zirconium oxide (IPS e.max ZirCAD) materials.
Materials and Methods: Lithium disilicate glass ceramic (IPS e.max CAD), new generation full ceramic system with different zirconia contains (Vita Suprinity) and yttrium stabilized zirconium oxide (IPS e.max ZirCAD) materials were used in this study. Cores specimens were made in three different thickness (0.5 mm, 0.8 mm and 1 mm) with Isomet; Buehler for each ceramic systems. The translucency and color coordinates of specimens were measured using Konica Minolta colorimeter on black and white background. Contrast ratios and translucency parameters were used to assess the translucency of all materials. For color evaluation, CIE L*a*b* color coordinates were recorded. Data were analyzed using three-way ANOVA test.
Results: According to the three-way ANOVA results, when comparing different thickness, there were statistically significant differences among groups ($P<0.05$).
Conclusion: For any thickness, there appeared to be adequate transmission of light through the IPS e.max CAD and Vita Suprinity samples. There were no significant differences in IPS e.max ZirCAD groups.

P-087

The bond strength of veneering materials to zirconia

M Hatta[1], A Shinya[2], A Shinya[2]
[1]Department of General Dentistry, The Nippon Dental University Hospital, Tokyo, Japan
[2]Department of Crown and Bridge, School of Life Dentistry at Tokyo, The Nippon Dental University, Tokyo, Japan

Purpose: The purpose of this study was to evaluate the effects of surface treatments on shear bond strength of layering porcelain and hybrid composite to zirconium dioxide ceramics.
Materials and Methods: Manufactured zirconia blocks used in this study were yttrium partially stabilized zirconia (YTZ®), and veneering materials were NobelRondo Zirconia Dentin A2 High Value (NZR) and Estenia C&B (ES). Total 24 zirconia blocks were fabricated (10 mm x 10 mm x 20 mm). The blocks of 12 each were treated by Rocatec and #600 paper, respectively. Surface treated zirconia blocks were divided into two groups, according to veneering materials of NZR ES. NZR were fired and ES were polymerized to zirconia. The fabricated specimen was fixed to mounting jig and applied shear force using the universal testing machine. All results were statistically analyzed by two-way ANOVA and Tukey test. EPMA analysis and SPM analysis of specimen interface were carried out.
Results: In veneering materials, mean shear bond strength of NZR was 22.79 (S.D. ± 3.46) MPa, and ES was 11.24 (S.D. ± 3.46) MPa. For surface treatments, mean shear bond strength of #600 was 15.77 (S.D. ± 6.37) MPa, and that of Rocatec was 18.27 (S.D. ± 7.84) MPa.
Conclusion: From the results of this study, shear bond strength of layering porcelain to zirconia was higher than that of restorative hybrid resin. The appropriate choice of materials became the guides to the expansion of the applied cases of metal-free prothesis.

P-088

Evaluation of bond strength of titanium-porcelain with different test methods

MA Aslan[1], E Yegin[1], YZ Akpınar[1], T Yavuz[1], C Ural[2]
[1]Department of Prosthodontics, Faculty of Dentistry, University of Abant Izzet Baysal, Bolu, Turkey
[2]Department of Prosthodontics, Faculty of Dentistry, University of Ondokuz Mayıs, Samsun, Turkey

Purpose: The purpose of the study was to evaluate the effect of different types of sandblasting on the bond strength of porcelain to titanium surfaces with two different test methods.
Materials and Methods: A total of ninety titanium specimens were prepared from commercially pure titanium (Grade 2): Forty five titanium specimens with dimension of 25×3x0.5 mm for three-point bending test and forty five titanium specimens with dimension of 10x10x0.5 mm for shear bond strength test. The specimens were divided into three groups of 15 in each test according to the surface treatment used: 50 µm Al_2O_3 sandblasting, 110 µm Al_2O_3 sandblasting, 110 µm silica coated alumina powder (Rocatec). After the surface treatment Noritake Ti-22 titanium porcelain was applied to each group. Three-point and shear bond strength of the porcelain to titanium was tested by a universal testing machine at 0.5 mm/min crosshead speed. The data were analyzed statistically using a One-Way ANOVA and Tukey's multiple comparisons test.
Results: The highest mean bond strength value was obtained for 110 µm Al_2O_3 (36.19±3.64 MPa) and lowest for 110 µm Rocatec (31.60±5.08 MPa) in three-point bending test. The highest mean shear bond strength value was obtained for 110 µm Al_2O_3 (27.8±4.78 MPa) and lowest for 110 µm Rocatec (22.33±5.31 MPa).
Conclusion: As a result of both test methods, airborne particle abrasion with silica coated alumina powder did not improve titanium–porcelain adhesion when compared to airborne particle abrasion with Al_2O_3 particles.

P-089

Thickness ratio effect on microshear and microtensile bond-strength of all-ceramics

E Sağırkaya[1], E Çömlekoğlu[2], M Dündar Çömlekoğlu[2], A Aladağ[2], C Artunç[2]
[1]Department of Prosthodontics, Faculty of Dentistry, Ordu University, Ordu, Turkey
[2]Department of Prosthodontics, Faculty of Dentistry, Ege University, İzmir, Turkey

Purpose: Interfacial bond strength was tested with microtensile(MTBS) and microshear (MSBS) bond strength test methods with differing core/veneer ratio (1 mm/3 mm; 2 mm/2 mm; 3 mm/1 mm) in ceramic systems.
Materials and Methods: Three different veneering ceramics and their corresponding cores; zirconium-dioxide (Zirkonzahn Ice) (Z), glass-infiltrated alumina (In-Ceram Alumina) (A) and lithium-disilicate (IPS e.max) (E) were used. Ceramic cores (MTBS:N=90, n=9/group, MSBS:N=90, n=9/group) were fabricated according to the manufacturers' instructions (three different core thicknesses for each group: 1 mm (Z1, E1, A1), 2 mm (Z2, E2, A2), 3 mm (Z3, E3, A3)) and ultrasonically cleaned. The veneering ceramics (3 mm, 2 mm and 1 mm thicknesses) were condensed in stainless steel moulds and fired. Bond strength tests (MPa±SD) were performed in an universal testing machine (cross-head speed: 1 mm/min) and statistically analyzed. The fracture sites were examined with SEM.
Results: Highest mean MTBS value was observed in E2 group (14.04±3.58) followed by E3

(11.91±3.04), A2 (9.59±1.81), E1 (9.14±1.21), Z2 (8.96±1.22), A1 (8.55±0.80), Z3 (8.23±1.31), Z1 (8.00±0.99) and A3 (7.80±1.14) respectively. The mean MSBS values for Z2 was significantly higher (64±8) than E2 (53±9), Z3 (52±10), E3 (48±6), Z1 (42±6), A2 (26±4), A3 (26±4), A1 (25±5) and E1 (25±4) ($P<0.05$). In both test methods the highest results was obtained in a 1:1 ratio of the thickness (core: 2mm, veneer: 2mm) in the group. SEM revealed predominantly adhesive failures in the core materials.
Conclusion: Thickness of the core and the veneering ceramic should be considered to prevent mechanical failure of the crown for clinical success.

P-090

Evaluation of the bond strength of resin cement to Y-TZP ceramic

M Arslan Malkoç[1], MG Subaşı[2], G Karaslan[1], S Aksakallı[3]
[1]İnönü University, Turkey
[2]İstanbul Aydın University, Turkey
[3]Bezmi Alem Vakıf University, Turkey

Purpose: The purpose of this study was to evaluate the effect of shear bond strength (SBS) of Y-TZP (Yttria-Tetragonal Zirconia Polycrystal) ceramics with three different resin cements.
Materials and Methods: 30 samples of presintered zirconia blocks (VITA In-Ceram YZ; VITA Zahnfabrik, Bad Sackingen, Germany) measuring 10 × 10 × 3 mm were made, sintered and polished. The specimens were embedded in a self-cure acrylic resin leaving one of the surfaces uncovered. The ceramic surfaces were then polished using a series of silicon carbide (SiC) abrasive papers in sequence (grit 120-2000) for 15 sec under water irrigation. Zirconia blocks were applied air abrasion with 110 μm Al_2O_3 particles. Then, they were randomly divided into 3 groups (n=10). Panavia F2.0,Super-Bond C&B and Duolink Universal resin cements placed inside a teflon mold (3x3 mm) was polymerized on the zirconia surface. SBS was tested with a universal testing machine. Kruskal Wallis One way ANOVA and Bonferonni adjusted Mann Whitney U tests were used and scanning electron microscope (SEM) images were taken.
Results: Panavia F2.0 and Duolink Universal cements significantly increased the SBS ($P<0.01$). Super-Bond C&B cement showed the lowest value for SBS. No significant differences were found between the shear bond strengths of Panavia F2.0 and Duolink Universal cements ($P>0.05$).
Conclusion: The chemical composition of primers affects bond mechanisms between Y-TZP and resin cements. Using phosphate monomer (MDP)-containing primers on air-abraded zirconia ceramic improves the highest SBS to zirconia ceramic.

P-091

Investigation of bond strength of resin cements to different dentin surfaces treated by dentin desensitizers at different preparation depth

F Sarı[1], AK Özdemir[2]
[1]Gaziantep University, Department of Prosthodontics, Gaziantep, Turkey
[2]Cumhuriyet University, Department of Prosthodontics, Sivas, Turkey

Postoperative dentin sensitivity is a common clinical situation. Desensitizing agents which have different chemical structures and applying procedures are used to eliminate the dentin sensitivity. However, these agents have different effects on the bond strength of the resin

cements to dentin.
Effects of five different desensitizing agents on the three dual polymerized resin cements' shear bond strength at two different preparation depth are investigated in-vitro in this study. 144 extracted human maxillary incisors teeth were used in this study. Labial surface of the teeth were prepared by pilot burs at 0.8 and 1 mm depth. Specimens were divided into three resin cement groups (RelyX ARC, Variolink II and Maxcem). Each resin cement group subdivided into Gluma, Vivasens, Admira Protect, BisBlock ve Nd:YAG laser desensitizer groups. Resin cements were luted to labial dentin surface with tygon tubes that have 0.7 mm. diameter and 1 mm. height. Specimens microshear bond strength was evaluated using universal testing device. Then specimens surface conditions were observed using a steromicroscop and SEM; and evaluated. Data were analyzed using Kruskall-Wallis, Mann-Whitney U and chi square (X2) tests.
Groups' mean bond strength values were compared. There is no statistically difference between the groups at 0.8 mm. preparation depth. RelyX ARC + Gluma groups' mean bond strength value (23.96 ± 6.66 MPa) was found statistically lower according to the other groups ($p<0.05$). RelyX ARC + Laser groups' mean bond strength value (37.33 ± 7.39 MPa) was found statistically higher according to the other groups ($p<0.05$).

P-092

Effects of ytterbium fiber laser and sandblasting to ceramics' roughness

Z Yeşil Duymuş[1], H Ciftci[2], M Alkurt[2]
[1]Prof. Dr. Recep Tayyip Erdogan University, Faculty of Dentistry, Rize, Turkey
[2]Res.Assist. Ataturk University, Faculty of Dentistry, Erzurum, Turkey

Purpose: This in vitro study aimed to evaluate the effects of laser (ytterbium fiber) and sandblasting on the surface roughness of monolithic lithium disilicate (LDS) and high-strength zirconium dioxide (Zircad).
Materials and Methods: Thirty two LDS and thirty two zircad rectangular blocks (5mm×5mm×2mm) were prepared. Both of them were divided into four groups (n = 8), and the following treatments were carried out: sandblasting with aluminum oxide (Al_2O_3) particles for 10 s (Group SB), laser irradiation 100 mj for 10 sn (Group 100), laser irradiation 250 mj for 10 sn (Group 250), Al_2O_3 + laser irradiation 100 mj for 10 sn (Group SB+100). Surface roughness was determined by profilometry and one specimen from each group was examined using scanning electron microscopy (SEM). Statistical analyses were performed using a 2-way ANOVA, Kruskal–Wallis and Mann–Whitney U-tests ($\alpha=0.05$).
Results: LDS had significantly rougher surfaces than Zircad in group SB, 250 and SB+100 ($p=0.01$). On the other hand, there was no statistically significant difference in group 100 ($p>0.05$). In the result of all examinations, there was significantly roughness in group 250, LDS($p=0.01$). In Zircad, group 250 showed the highest roughness and among the other groups, there was no significant difference ($p>0.05$). In the SEM analysis, cracks are seen on surface in laser group 250.
Conclusion: Group 250 had rougher surfaces than the groups subjected to the other surface treatment methods and might cause material defect.

P-093

Effect of different acidic agents on surface roughness of feldspathic porcelain

Z Yeşil Duymuş[1], A Özdoğan[2], H Ulu[2]
[1]Recep Tayyip Erdoğan University Faculty of Dentistry, Department of Prosthodontics, Rize, Turkey
[2]Atatürk University Faculty of Dentistry, Department of Prosthodontics, Erzurum, Turkey

Purpose: This study aimed to evaluate the effect of different acidic agents on surface roughness of the feldspathic porcelain.
Materials and Methods: In this study, totally 60 disc shaped samples which 2 mm thickness and 10 mm diameter of two different porcelains (Ceramco, Noritake) were prepared. The samples were over glazed and then baseline data of surface roughness were recorded by profilometer. The samples were then immersed in five different acidic agents (Coke, orange juice, lemonade, black-carrot juice, mineral water) for 168 hours. Then, the samples were evaluated surface roughness with profilometer. The statistical analysis of obtained data were performed with use two-way analysis of variance test.
Results: The results showed that the highest surface roughness value (4.46±2.9 μm) was identified in lemonade, the lowest surface roughness value (1.06±0.56 μm) was identified in mineral water. The result two-way analysis of variance test showed that there were statistically significant differences between acidic agents on surface roughness of feldspathic porcelain ($p<0.05$). There were not statistically significant differences between acidic agents ($p>0.05$).
Conclusion: The obtained data presented that the type of porcelain was not effective on surface roughness of porcelain; although the acidic agents were effective on surface roughness of porcelain.

P-094

Effect of different surface treatments of indirect composite on the repair bond strength to composite resin

Ö Kırmalı[1], K Barutçiğil[1], Ç Barutçıgil[2], A Kapdan[3], OT Harorlı[2]
[1]Akdeniz University, Department of Prosthodontics
[2]Akdeniz University, Department of Restorative Dentistry
[3]Cumhuriyet University, Department of Restorative Dentistry

Abstract: The aim of this study was to evalute the effect of different Er;Cr:YSGG laser intensities on repair bond strength of an indirect composite resin.
Materials and Methods: Seventy cylindrical samples of indirect composite resin (Gradia GC, Japan) were prepared and randomly divided into seven groups (n=10). Group 1 was the control group, untreated surface, groups 2-7; irradiated with Er;Cr:YSGG laser (1W to 6W). Firstly, all the treated surfaces were subject to the application of a silane and a bonding agent after surface treatments. Then, composite resin (Grandio DC; VOCO, Cuxhaven, Germany) was placed on the indirect composite samples using cylindrical teflon mold and cured once again for 40 s using the Astralis 7 light-curing unit. The bond strength tests were carried out using a universal testing machine at cross-head speed of 1 mm/min and one sample of each group was observed under scanning electronic microscope (SEM). Failure modes were evaluted under a stereomicroscope at ×32. All values were measuered and data was analyzed with one-way ANOVA and Tukey test at a significance level of p= 0.05.
Results: All surface treatments resulted in increased repair bond strength. But, according to

the Tukey test, there were no statistically significant differences within all groups (p>0.05). Fractured surfaces showed mostly cohesive failures.
Conclusion: Er;Cr:YSGG laser irradiation of different intensities are an effective surface treatments for repair bond strength of indirect composite resin.

P-095

Current materials for chairside CAD/CAM procedures

Ü Ordu, S Cengiz
Prosthodontics Department, Faculty of Dentistry, Bülent Ecevit University, Zonguldak, Turkey

The use of chairside CAD/CAM technology in the dentistry provides many advantages for both the dentist and the patient. Number of visits and dependence on laboratory decrease and also esthetic expectations can be met easily compared to conventional methods. However, initially dentists had concerns about using CAD/CAM materials because of the inadequate physical properties. But with the introduction of new materials which have high qualities, the blocks are started to prefer for restorations which extends to posterior region. There is a lot of material having different ingredients such as zirconium with layering technique, monolithic zirconium, lithium disilicate, zirconia-reinforced lithium silicate, composite, leucite-reinforced glass-ceramic, monolithic leucite ceramic, hybrid ceramic and acrylate polymer which used for the fabrication of long term temporaries.
Since most of the block materials are monochromatic, there are concerns about harmony of the restoration and the remaining natural dentition. But polychromatic multiblocks are also present. In addition there are precrystallized blocks that must be crystallized after milling process and fully crystallized blocks.
These materials are processed in different milling units of systems for chairside applications. This guide includes the properties and the indications of chairside block materials and also intends to be a guide about current blocks for whom want to take advantage of CAD/CAM technologies.

P-096

Retention force on SynCone system whit 5º cone

M Stanojevic[1], I Stancic[2], I Balac[3]
[1]University in East Sarajevo, Prosthodontic, Bosnia and Herzegovina
[2]University in Belgrade, Prosthodontic, Serbia
[3]University in Belgrade, Civil Engenering, Serbia

Purpose: SynCone system is a double conical crown system fixed on implants. Until now widely in use have been cones with 4º i 6º. Recently, on the demand from practitioners, it has been introduced a cone with 5º. Aim of this study was to determine the retention force on double conical crown with 5º, in the Ankylos SynCone concept, at the begining of the use, during and after 10.000 cycles.
Materials and Methods: In this study we have used a SynCone conical abutment made of titan with 5° angle and 1.5 mm gingival height, inserted on the implant, as the inner part of the conical pair. For the outer part of the conical pair we have used a:
1. Prefabricated SynCone cap made of titanium.
2. Prefabricate SynCone cap made of gold
3. CAD/CAM made cap of titanium

4. Casted cap made of gold
5. Casted cap made of semiprecious metal.
For this study we have used a dynamometer Shimadzu for cycles. The conical pairs have been submitted to 1.000 separation cycles
Results: The results we have acquired show a big discrepancy depending on the material used, and depending on the manufacturing type for caps.
Conclusion: Since this is a pilot study with 1.000 cycles it is essential to do the full range of the study with 10.000 cycles to determine the full value and quality of the double conical crowns on implants.

P-097

CAD/CAM Ceramic onlay restoration: A case report

S Ongun, G Meriç, S Taşar
Near East University Faculty of Dentistry, Prosthodontics, Turkish Republic of Northern Cyprus

Inlay and onlay restorations offer the opportunity to conserve tooth structure while taking advantage of the mechanical benefits of modern adhesive technology, which can strengthen the compromised tooth.
Ceramic onlays can be manufactured indirectly in the dental laboratory or in the dental office using chair-side computer-aided design/computer-aided manufacturing (CAD/CAM) systems.
A 20-year-old female patient was referred to the clinic because of deep crack in composite filling lingual wall of her left endodontically treated mandibular second molar. Clinical examination revealed that the tooth had a deep composite restoration and was not tender to percussion. A preoperative radiograph showed no periapical radiolucency, and the periapical tissues were normal. The composite filling was removed from the cavity and the tooth was prepared for the restoration. Retraction procedure was carried out by passing laser optic fiber in contact mode along the gingival sulcus to exposure of sub-gingival finish line. After completing retraction, impressions were made by using addition silicon impression material (Optosil P Confort and Xantopren VL Plus, Heraeus Kulzer, Hanau, Germany) and models were obtained from type IV stone (Kalrock, Kalabhai Karson Pvt. Ltd., India). An inlay was designed with software Dental Wings. The inlay was milled in the milling unit Yenadent DC40 and afterwards sintered. The final restoration was cemented with dual-cure resin cement (Panavia F, Kuraray Co., Osaka, Japan). The restoration was followed up for five years.

P-098

Clinical evaluation of implant-supported single-tooth restorations

H Shimpo[1], M Tsumita[2], Y Kokubo[2], C Ohkubo[1]
[1]Tsurumi University, Department of Removable Prosthodontics
[2]Tsurumi University, Department of fixed Prosthodontics

Purpose: In this study, implant-supported single-tooth restorations were clinically evaluated after five years of use.
Materials and Methods: Implant-supported single-tooth restorations (285) delivered by prosthodontists during a three-year period at Tsurumi University Dental Hospital

(Yokohama, Japan) were evaluated according to the type of implant, type of prosthesis, type of prosthetic malfunction and the survival rate of implants during recent five years.
Results: The ages of the patients using an implant prosthesis in this study ranged from 17 years to 77 years. The location of the implant placement was generally the first molars on the mandibular jaw, and the incisal teeth on the maxillary jaw. As for the retention of the prosthesis, cementation methods accounted for 86.3% of the retention. There were 128 (43.5%) porcelain-fused-to-crown restorations, followed by 106 (37.2%) full-covered resin-faced crowns and 43 (15.1%) all-ceramic crowns. The loss of the abutment screw was the most frequent problem (15), followed by porcelain tips (7), aesthetic problems (6) and detachment of the prosthesis (temporary cementation) (5). Four implants were lost, and the mean function period was 62.1 months.
Conclusion: Implant treatment for single missing teeth has tended to increase over a wide age group from 10 to 70 years. The types of trouble were generally the loss of abutment screws, as in the previous study. However, the number of abutment screws lost tended to decrease because torque wrenches are used more often, and the screws have been improved.

P-099

Effect of aging on reparability of resin nano ceramic

SH Altıntaş[1], B Yılmaz[2], R Seghi[2]
[1]Department of Prosthodontics, Faculty of Dentistry, Karadeniz Technical University, Trabzon, Turkey
[2]Department of Restorative and Prosthetic Dentistry, College of Dentistry, Ohio State University, Columbus, USA

Purpose: To compare the repair potential of a resin nano ceramic composite to the nanocomposite and lithium disilicate ceramic after aging.
Materials and Methods: 15 specimens were fabricated for each materials and stored in saline solution (24 h/37°C). Their surface was polished with grinding papers of four grits; 600, 800, 1200 and 2400. and followed by thermal cycling (5000 times between 5°C and 55°C). Resin nano ceramic and nanocomposite groups included surface roughening with 50µ AlO_2. Lithium disilicate specimens were etched with hydrofluoric asit by 20 sec. After roughening, the adhesive system (Scotchbond Universal, 3M ESPE) were applied to all specimens' surface. The specimens were repaired with nanocomposite (Filtek Spreme, 3M ESPE). Microshear bond strength (MSB) tests were performed (1 mm/min) and failure modes were identified using an optical microscope, and scanning electron microscope images were obtained. Data were statistically analyzed using 1-way ANOVA and Tukey's post-hoc test ($p = 0.05$).
Results: Lava Ultimate demonstrated significantly higher values (MPa) (30,19±9,60) than those of the other groups. There were no significant differences among Lava Ultimate and Filtek Supreme ($p=0.05$), IPS e.max CAD showed less microshear strength values significantly from other two groups ($p<0.05$), while the incidence of adhesive failure was highest in IPS e.max CAD, Filtek Supreme demonstrated highest cohesive failure compared to the other groups.
Conclusion: Lava Ultimate repairs were considered successful when compared with conventional Filtek Spreme and IPS e.max CAD.

P-100

An influence of staining solutions and tooth brush abrasion on appearance changes of laboratory composite

A Shinya, S Shimizu, H Gomi, A Shinya
Department of Crown and Bridge, School of Life Dentistry at Tokyo, The Nippon Dental University, Japan

The aim of this study is to evaluate the influence of staining solutions and tooth brush abrasion on appearance changes of laboratory composite. The lab composite of shade A2, 1) SR Nexco (Ivoclar vivadent), 2) SR Adoro (Ivoclar vivadent), 3) Estenia (Kuraray Noritake Dental), 4) Ceramage (Shofu), 5) Gradia forte (GC), 6) Twiny (Yamamoto precious metal), 7) Signum ceramis (Heraeus Kulzer), 8) Signum sirius (Heraeus Kulzer) were used. For discoloration test, four different beverages, i.e.) coffee, tea, red wine and Coca-Cola were used. Distal water was used as control group. All specimens were immersed for five weeks in 100 ml of different beverages and incubated at 37°C. Color of each specimen was measured after five weeks of immersion according to the NBS value. For gloss change after tooth brush abrasion, the testing condition of tooth brush abrasion was according to ISO standard (ISO/TR 14569-1). For gloss changes, each after 1000 times brushing, gloss was measured until 5000 times brushing. For long term gloss changes, each after 5000 times blushing was measured until 50000 times brushing. Estenia, Ceramage, Gradia forte and Twiny are in the NBS between 6.0 and 12.0. Signum ceramis and signum sirius are in the NBS between 3.0 and 6.0. SR Nexco and SR Adoro are in the NBS value between 1.5 and 3.0. The result of early stage gloss changes was decreased and the average was 63.7%, and average of long term gloss changes was 26.25%.

P-101

Flexural strength evaluation of laboratory-processed composite with fiber reinforcement

S Cengiz[1], Ş Külünk[2], B Bağış[3], G Sevimli[1], S Oruç[1]
[1]Department of Prosthodontics, Faculty of Dentistry, Bülent Ecevit University, Zonguldak, Turkey
[2]Department of Prosthodontics, Faculty of Dentistry, 19 Mayis University, Samsun, Turkey
[3]Department of Prosthodontics, Faculty of Dentistry, Katip Çelebi University, İzmir, Turkey

Purpose: The purpose of this study was to compare the effects of pre- or postpolymerization of preimpregnated and non-impregnated fibers on the flexural strength of laboratory-processed composite with fiber reinforcement.
Materials and Methods: Bar specimens in 3x3x25mm dimensions were divided into 5 groups (n=20), according to type of reinforcement and its pre- or postpolymerization. Impregnated glass fibers Everstick Crown and Bridge (Stick Tech Ltd.) and unimpregnated poliethylene fibers Ribbond THM (Ribbond Inc.) were used as reinforcements for the indirect resin composite restorations. An indirect resin composite (Tescera, Bisco) was used as control group and the superstructure of the fiber reinforced samples. The reinforcements were light polymerized either before or after polymerization of fibers. All the groups were divided into two subgroups with the thermal cycle and water storage. Specimens were tested in 3-point load and the data were analyzed using one-way ANOVA and Tukey post hoc test (α=0.05).
Results: Flexural strength was significantly higher for experimental groups than for control group ($P<0.05$); however, there was not any significant difference between the experimental

groups (P>0.05).
Conclusion: With the limitations of this study, it was concluded that reinforcement with fiber increased the flexure strength of indirect composite resin specimens. But, prepolymerized fibers did not improve the flexure strength of fiber reinforced composite resins.

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Efficacy of mouth rinses on bacterial adhesion to indirect composite - A pilot study

N Velioğlu[1], S Cengiz[1], F Cömert[2], E Yüzbaşıoğlu[3]
[1]Department of Prosthodontics, Faculty of Dentistry, Bulent Ecevit University, Zonguldak, Turkey
[2]Department of Microbiology, Faculty of Medicine, Bulent Ecevit University, Zonguldak, Turkey
[3]Department of Prosthodontics, Faculty of Dentistry, Medipol University, İstanbul,Turkey

Purpose: The aim of this pilot study is to evaluate the efficacy of mouth rinses on Enterococcus faecalis adhesion to the surface of indirect composit resin discs.
Materials and Methods: Specimens were prepared from indirect resin composite (GC Gradia, GC Europe, Leuven, Belgium). After coating with saliva, each specimen was incubated with Enterococcus faecalis ATCC29212. The specimens then immersed in five different mouth rinses (Colgate, Oral-B anti-plaque alcohol-free mouth rinse, Listerine, Curasept ADS 205 Oral-Rinse, Pharmol Zn) and distilled water was used as control group. Bacterial colonies (observed after incubation) were counted, multiplied with 100 and cfu numbers were calculated. The procedure repeated 3 times.
Results: Differences in bacterial adhesion were found among the groups. Colgate, Oral-B anti-plaque alcohol-free mouth rinse and Listerine significantly impaired the viability of bacteria nonetheless Curacept ADS 205 Oral-Rinse and Pharmol Zn had no effect on reducing the bacteria.
Conclusion: In this study results indicate that a group of mouth rinses have great effect on impairing the viability of bacteria.

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Effects of different polishing kits on surface roughness and color stability of different composite resins

HH Kocaağaoğlu[1], T Aslan[2], A Gürbulak[3], HÖ Gümüş[3], H Albayrak[3]
[1]Department of Prosthodontics, The School of Dentistry, Pamukkale University, Denizli, Turkey
[2]Department of Endodontics, The School of Dentistry, Erciyes University, Kayseri, Turkey
[3]Department of Prosthodontics, The School of Dentistry, Erciyes University, Kayseri, Turkey

Purpose: To evaluate the surface roughness and color stability of four different composites which was applied different polishing technique.
Materials and Methods: Thirty specimens were made for each composite resin group (GrandioSo-***GS***; Clearfil Majesty Esthetic-***CL***; Valux plus-***VP***; Ruby Comp-***RC***) in a special mold (15 mm in diameter and 2 mm height), with the different monomer composition and particle size for a total of 120 specimens and divided into 12 groups of 10. Each composite groups were divided into 3 sub-groups. The first sub-group of the each composite sub-groups served as Control (***C***) and had no surface treatment. The second sub-group had

polished with finishing discs [Bisco Inc., Schaumburg, USA, (***BFD***)]. The third sub-group had polished with polishing wheel [Enhance&Pogo, Konstanz, Germany, (***EP***)]. The surface roughness measurement of the specimens was made and recorded. Following, the color measurement was made using a colorimeter (Konica Minolta Chroma Meter CR-400, Osaka, Japan) before and after applying coffee solution and color differences (ΔE) of the groups were record. Data was compared using Kruskal-Wallis test and regression analysis was used in order to examine the correlation between surface roughness and color differences of the specimens (α=0.05).
Results: Kruskal Wallis test indicated significant difference among the composite resins in terms of ΔE ($p<0.05$), and there was no statistically significant difference among composite resins in terms of surface roughness ($p>0.05$). The regression analysis indicated statistically significant correlation between Ra and ΔE values ($p<0.05$, $r2 =0.74$).
Conclusion: BFD groups presented more smoother surfaces than the EP system.

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Indirect fiber-reinforced resin composite restorations for mandibular anterior dentition

F Bayındır, EV Dikeç
Atatürk University Prosthodontics, Turkey

The mandibular anterior tooth loss because of trauma or periodontal problems are frequent. In some cases, the presence of a diastema between teeth is a common feature found in the mandibular anterior dentition. Many forms of therapy can be used for diastema closure. A carefully developed diagnosis and advanced planning allows the most appropriate treatment to be determined for each individual case to address the patient's needs. Among the suggested options for diastema closure such as orthodontic, restorative and prosthodontic treatment. The specific goals of treating diastema are: creating a tooth form in harmony with adjacent teeth, arch, and facial form; maintaining an environment for excellent gingival health; and attainment of a stable and functional occlusion. The combination of fiber-reinforced resin composite (FRC) technology and adhesive techniques can provide minimally invasive and cost-effective treatment options for the closure of dieastema and replacement of missing teeth of mandibular anterior dentition. This clinical report describes two indirect cases where fiber-reinforced fixed partial denture was succesfully used in terms of esthetic, phonetic and functionally.

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Fracture resistance of different post systems on thin-walled teeth

S Polat[1], M Tunçdemir[2], F Gönüldaş[3], C Öztürk[3]
[1]Gazi University Prosthodontics, Turkey
[2]Necmettin Erbakan University Prosthodontics, Turkey
[3]Ankara University Prosthodontics, Turkey

Purpose: The purpose of this study was to compare the fracture resistance of the I-TFC post system with different post-core systems.
Materials and Methods: The crowns of 80 human maxillary canines were removed at the cemento-enamel junction, and the roots were endodontically treated. The specimens from the experimental group were assigned to 4 groups (n = 20), and the thickness of the

radicular dentin walls was reduced. Each root was embedded in an auto polymerizing resin with a 0.25-mm layer of silicone impression material to simulate the periodontal ligament. The subgroups were restored with one of the following post systems: only composite resin, cast post, glass fiber post, and I-TFC post. Standard cores were constructed using composite resin in the 4 groups. The samples were subjected to a gradually increasing force (0.5 mm/min). The force required to fracture was recorded, and the data was analysed with ANOVA and Tukey test (P = 0.05).
Results: The lowest fracture resistance was recorded with the I-TFC post system. The fracture type with the fiber posts (Radix and I-TFC posts) would permit repair of the tooth.
Conclusion: I-TFC post systems were the least fracture resistant among all the other post systems. Additional in vitro and in vivo studies are required to obtain long-term results on the I-TFC post systems.

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Effect of surface treatments on bond strength of fiber posts

S Kurtulmuş Yılmaz[1], E Cengiz[2], O Ozan[1], S Ramoğlu[1], HG Yılmaz[3]
[1]Department of Prosthodontics, School of Dentistry, Near East University, Nicosia-Mersin, Turkey
[2]Department of Restorative Dentistry, School of Dentistry, Near East University, Nicosia-Mersin, Turkey
[3]Department of Periodontology, School of Dentistry, Near East University, Nicosia-Mersin, Turkey

Purpose: The aim of this study was to compare the effects of different surface treatments including Er,Cr:YSGG laser application on the micropush-out bond strengths between glass and quartz fiber posts and composite resin core material.
Materials and Methods: Ninety-six quartz and 96 glass fiber posts with a coronal diameter of 1.8 mm were randomly divided into 8 groups according the surface treatments applied; Gr 1 (control; no surface treatment), Gr 2 (24% H_2O_2 for 1 min), Gr 3(CH_2Cl_2 for 1 min), Gr 4 (9% hydrofluoric acid for 1 min), Gr 5 (sandblasting with 50µm Al_2O_3),Gr 6 (1W), Gr 7 (1.5W) and Gr 8 (2W) Er,Cr:YSGG laser irradiation. The resin core material was applied to each group and then 1 mm thick discs (n=12) were obtained for the micropush-out test. Data were statistically analyzed.
Results: For quartz fiber post group, all surface treatments showed significantly higher bond strengths in comparison to control group ($p<0.05$), except for 2W laser group. For glass fiber post group, H_2O_2, CH_2Cl_2, Al_2O_3, and laser application (1W, 1.5W) ($p<0.05$) enhanced the bond strength between the post and core material however, hydroflouric acid group showed the lowest bond strength values.
Conclusion: The type of post and surface treatment might affect the bond strength between fiber posts and resin core material. 1W and 1.5W Er,Cr:YSGG laser application improved adhesion at post/core interface.

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Mechanical properties and microstructure of seven fiber reinforced posts

T González Veiga, V Alonso De La Peña, E Hernández Pérez, L Lago González, IL. Darriba, R Pérez García, JL Da Silva Domínguez, B Rilo Pousa, C García Álvarez, U Santana Mora, MJ Mora Bermúdez, U Santana Penín
Department of Stomatology, Faculty of Medicine and Odontology, University of Santiago de Compostela. Santiago de Compostela, Spain

Purpose: The aim of this study was to compare the mechanical properties and microstructure of seven fiber reinforced posts.
Materials and Methods: The posts studied were: Rebilda Post, ParaPost Taper Lux, ParaPost Fiber Lux, ParaPost Fiber White, D.T. Light-Post, Snowpost and the Carbopost. Three-point bending, shear and Knoop hardness tests were performed on these posts. Samples from the shear tests were examined under a scanning electron microscope (SEM).
Results: ParaPost Taper Lux and ParaPost Fiber Lux posts showed the highest resistance during bending tests (1181±118 and 1622±371 MPa respectively). In the shear test, the Carbopost and D.T. Light-Post showed the most resistance (271±39 and 248±80 MPa respectively). The Snowpost and D.T. Light-Post obtained the highest hardness values.
Conclusion: In conclusion, the Carbopost had the lowest bending strength but the highest shear value. The ParaPost Fiber Lux achieved the highest values for flexural strength. The Snowpost was the hardest.

P-108

Evaluation the vickers hardness of different denture base materials

Z Yeşil Duymuş[1], A Özdoğan[2], H Ulu[2], Ö Özbayram[2]
[1]Recep Tayyip Erdoğan University Faculty of Dentistry, Department of Prosthodontics, Rize, Turkey
[2]Atatürk University Faculty of Dentistry, Department of Prosthodontics, Erzurum, Turkey

Purpose: The aim of this study was to evaluate the Vickers hardness of four different denture base materials.
Materials and Methods: Four different denture base materials were used in this study: Heat-cured pink acrylic resin, self-cured acrylic resin, heat-cured clear acrylic resin and polyamide denture base materials. Totally 80 disc shaped samples which 2 mm thickness and 40 mm diameter were prepared. The samples were stored in distilled water after polished. Then, Vickers Hardness test was performed with TMTeck HV-1000B (200 gram at 15 second) The statistically analysis of obtained data were performed with use one-way analysis of variance test.
Results: The results showed that the highest Vickers Hardness value (19.2028 HV) was identified in self-cured acrylic resin, the lowest Vickers Hardness value (8.9398 HV) was identified in polyamide denture base materials. The result of one-way analysis of variance test showed that there were statistically very highly significant differences between four denture base materials of Vickers Hardness ($p<0.001$).
Conclusion: The obtained data presented that the self-cured denture base acrylic resin was the hardest denture base materials.

P-109

Effect of heat treatment of PMMA powder on mechanical properties

T Kawaguchi[1], L Lassila[2], H Sasaki[1], Y Takahashi[1], P Vallittu[2]
[1]Division of Removable Prosthodontics, Department of Oral Rehabilitation, Fukuoka Dental College, Fukuoka, Japan
[2]Department of Biomaterials Science, Institute of Dentistry, University of Turku, and BioCity Turku Biomaterials Research Program, Turku, Finland

Purpose: The aim of this research is to investigate the influence of heat treatment of polymethyl methacrylate powder on mechanical properties of denture base resin.
Materials and Methods: PMMA powder was applied after heat treatment at 100°C for 2 hours (code: HT100) or 130°C for 2 hours (code: HT130) in heating oven. Non-heat treatment group was treated as control (code: control). The specimens were autopolymerized and then stored in 37°C water for 24 hours. Half of specimens were further immersed in 37°C water for 6 months (water storage period: 24h and 6M) and measured the flexural strength and flexural modulus with three point bending test, the surface microhardness testing on randomly selected portion of PMMA beads area, and the thickness of a swollen layer on PMMA beads (n=10/group). Statistical analysis was done using ANOVA and Newman-Keuls test at a significance level of 0.05.
Results: On flexural strength, heat treatment and water storage period had a significant effect. The flexural strength of HT130 showed significantly higher values than other groups. On flexural modulus, heat treatment and water storage time were not significantly different. The surface microhardness of PMMA beads of HT130 showed a significantly greater microhardness than other groups. The thickness of a swollen layer of PMMA beads of HT100 and HT130 showed a significantly decreased thickness.
Conclusion: The flexural strength and the surface microhardness were increased after heat treatment at 130°C. The thickness of a swollen layer of PMMA beads was decreased after heat treatment.

P-110

Evaluation of hardness and elastic modulus of ormocer-coated polymethylmethacrylate with nanoindentation method

IH Uzun[1], EB Gül[1], B Eşer[1], A Gültek[2], N Başman[3]
[1]Department of Prosthodontics, Faculty of Dentistry, Inonu University, Malatya, Turkey
[2]Department of Chemistry, Faculty of Art and Science, Inonu University, Malatya, Turkey
[3]Department of Electronic, Faculty of Electric and Electronic Engineering, Bulent Ecevit University, Zonguldak, Turkey

Purpose: The aim of this study was to evaluate the hardness and elastic modulus of ormocer coated polymethylmethacrylate (PMMA).
Materials and Methods: PMMA specimens (5´5´2 mm) were polymerized with conventional heat-pressure technique and polished. All specimens were divided into three groups (n=5) randomly. First group were left uncoated and used as Control. The second group (A174+TEOS) was coated with 3-Methacryloxypropyltrimethoxysilane (A174)-tetra ethoxy silane (TEOS). Third group (GLYMO+TEOS) was coated with Glycidoxypropyltrimethoxysilane (GLYMO)-tetra ethoxy silane (TEOS). All groups were tested for nanoindentation after aging in distilled water for 1 day, 1 week and 1 month.
Results: According to nanoindentation testing results, after 1 day, both of hardness and

elastic modulus of coated specimens was significantly higher than the uncoated Control group ($p<0.05$). 1 week later, while the elastic modulus of coated specimens were still higher than the Control group ($p<0.05$), no differences were detected in the hardness values among the groups. There were no differences among all groups in terms of hardness and elastic modulus after 1 month. Time depended elastic modulus and hardness changes of all materials were not statistically significantly different ($p<0.05$).
Conclusion: Ormocer coating of PMMA was successful in terms of hardness and elastic modulus at initial stage. However, durability and long term stability of coating must have been investigated.

P-111

Evaluation of the mechanical and physical properties of the denture base material reinforced with various additives

G Ceylan[1], F Ünalan[2], T Yalcınyuva[3], S Emik[3]
[1]Department of Prosthodontics, Faculty of Dentistry, Medipol University, Istanbul, Turkey.
[2]Department of Prosthodontics, Faculty of Dentistry, Istanbul University, Istanbul, Turkey.
[3]Chemical Engineering Department, Faculty of Engineering, Istanbul University, Istanbul, Turkey.
Purpose: In this study, four different cross-linking agents which provide a range of cross-linking chain lengths and flexibilities were added to monomer component of a dough-molded PMMA resin in various concentrations. Their effects on the flexural strength, the impact strength and the surface hardness of the cured polymer were investigated.
Materials and Methods: PMMA homopolymer powder and methyl metacrylate (MMA) monomer liquid were used for all specimens. The cross-linking agents used are EGDMA (ethylene glycol dimethacrylate), TEGDMA (tetraethylene glycol dimethacrylate), TEGDA (tetraethylene glycol diacrylate), PEGDMA (polyethylene glycol dimethacrylate). The cross-linking agents were added to the monomer in following concentrations %5,%10,%15,%20 of the volume and %10 of the mol number. 21 groups and totally 630 specimens were fabricated. The specimens were left in distillated water at 37ºC for 48 hours. The flexural strength, modulus of elasticity and maximum force were measured using 3-point bending test, the impact strength was measured using Charpy type test and the Vickers hardness of the surface was measured. Kolmogorov Smirnov Test, Kruskal-Wallis Test, Mann-Whitney U Test, ANOVA and PostHoc Tamhane Test were used for statistical analyses ($p<=0.05$).
Results: Increase in the chain lengths and percentage of cross-linking agents led to statistically insignificant decrease in the properties of transverse strength, modulus of elasticity, maximum forces and surface hardness and a statistically insignificant increase in impact strength.
Conclusion: This in vitro study confirmed that the cross-linking agents has little effect on mechanical and physical properties of PMMA polymer.

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Bond strength of soft lining material to polyamide denture material

A Özdoğan, F Bayındır, H Ulu
Atatürk University Faculty of Dentistry, Department of Prosthodontics, Erzurum, Turkey

Purpose: The aim of this study was to evaluate the bond strength of soft lining material to polyamide denture material.

Materials and Methods: Twenty five polyamide denture base material and soft denture lining material were used in this study. The samples were divided into five groups according to the surface treatments:
Group 1 (Control): No surface treatment
Group 2: Samples were sandblasted with 50 µm Al_2O_3 powder.
Group 3: Samples were grinded with a diamond bur.
Group 4: Samples were etched with % 37 Orthophosphoric acid.
Group 5: Retention holes were slotted with diamond bur to samples.
Then the samples were tested in tensile mode in a universal testing machine at cross-head speed of 0.5 mm/min. The statistical analysis of obtained data were performed with use one-way analysis of variance test.
Results: The results showed that the highest bond strength value (92.54 N) was identified in Group 3, the lowest bond strength value (31.56 N) in Group 4. The result of one-way analysis of variance test showed that there were not statistically significant differences between the groups ($p>0.05$).
Conclusion: As a result of this study, the surface treatments were not effected on bond strength of soft lining material to polyamide denture material.

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Bond strength between denture-base-materials and relining-materials after different surface treatment

B Yıldırım[1], O Kümbüloğlu[2], A Saraçoğlu[2]
[1]Şanlıurfa ADSM, Prosthodontics, Turkey
[2]Ege University, Prosthodontics, Turkey

Purpose: Aim of this study was to compare the bond strength between the treated denture base materials and various relining materials.
Materials and Methods: In present study (10x10x2,5 mm) polyamid and PMMA (polymethylmethacrylate) denture base specimens were prepared. Specimens were divided into four surface treatment groups; control, tribochemical silica coating with Rocatec, (3M Espe, Germany), applying V-Primer (Sun Medical, Japan), mechanical roughening (Blaudent, Hungary). Then divided into four subgroups according to relining materials. Heat cure PMMA-Self Cure PMMA, Heat cure PMMA-GC Hard Reline, Deflex-Self Cure PMMA, Deflex-GC Hard Reline. Specimens were thermocycled 5-55 °C 2500 times. Tensile bond test were performed in a universal testing machine with cross-head speed 0.5 mm/min (Autograph, Shimadzu, Japan). The bond strength values (MPa ± SD) were recorded and statistically analyzed (Shapiro-Wilk, Mann Whitney, $p<0.05$).
Results: The highest mean TBS (tensile bond strength) value in all groups were found in Rocatec group between Heat cure and Self cure PMMA (11.4±4.51 MPa). The lowest mean TBS (tensile bond strength) value in all groups were found in V-Pr group between Deflex-Self Cure PMMA (1.10±0.3 MPa).
Conclusion: Tribochemical coating with Rocatec might be an alternative method for obtain enough bond strength between denture base materials and relining materials.

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Bond strength of denture base materials to denture teeth

M Alkurt[1], M Gündoğdu[1], Z Yeşil Duymuş[2]
[1]Atatürk Universty Faculty of Dentistry, Department of Prosthodontics, Turkey
[2]Recep Tayyip Erdoğan Universty Faculty of Dentistry, Department of Prosthodontics, Turkey

Purpose: This study evaluated the bond strength between porcelain denture teeth with two different denture base (polyamide resin and heat-polymerized acrylic resin) and a repair material (autopolymerizing resin) after three different types of surface treatment (control, sandblasted and laser).
Materials and Methods: First molar porcelain denture teeth were divided into 9 groups of 7 each. Tensile bond strength (MPa) was determined using a testing machine at crosshead speed of 0.5 mm/min. Mean and standard deviations are listed. Data were analyzed by two-way ANOVA. Means were compared at 0.05 significance level.
Results: The polyamide denture base a significantly higher (P<.005) tensile bond strength than the other materials included in this study. The highest tensile bond strength was found with polyamide resin with laser porcelain surface (9.89 MPa). The lowest tensile bond strength were determined in autopolymerizing resin control group (6.38 MPa). And no significant differences were found surface treatment.
Conclusion: Superior tensile strength was found polyamide denture base and different surface treatments not affect the tensile strength of porcelain teeth to denture bases.

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Colonization of candida on the soft lining materials with nystatin

F Bayındır[1], E Kul[1], E Aktaş[2], A Baştopcu[2]
[1]Ataturk University, Prosthodontics, Turkey
[2]Ataturk University, Clinical Microbiology, Turkey

Purpose: The aim of this study was to evaluate the efficacy of antifungal agent (Nystatin) incorporated into with two common soft lining materials against Candida albicans
Materials and Methods: Ufi Gel P and Mollosil cold-curing, soft relining specimens with 5 mm diameter and 2 mm thickness were prepared with Nystatin powder for oral suspension in a concentration of 5, 10 and 15% by volume. Candida albicans inoculated on Sabouraud Dextrose Agar (SDA). Three discs were prepared and placed on SDA for each groups, and incubated aerobically at 37°C. Ufi gel p and Mollosil discs containing 10%v/v Nystatin were prepared and immersed in water for different time periods (1,7,14,16 days) to investigate antifungal activity over time.
Results: Discs with only soft lining materials acted as negative control and showed no significant inhibition activity. Immersion of the discs in water showed an inverse relationship between time of immersion and degree of inhibition (p<0.001).
Conclusion: The results of this study suggest that the addition of Nystatin in powder form into the soft liners have an inhibitory effect on the growth of C. albicans in vitro.

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Effect of different chemical disinfectants on the wettability of denture base material

B Pişkin
Gulhane Military Medical Academy, Turkey

It has been well known that dentures may become a big reservoir for many migrating microorganisms from oral tissues. This microorganisms could be transmitted from patients to dental staff easily if the correct disinfection methods may not be performed. However, disinfection methods may effect some physical properties of denture base materials such as color stability, surface roughness, and impact strength. However, there is a lack of in the literature about effect of different chemical disinfectants on the wettability of denture base materials. The aim of this study was to determinate wettability of denture base materials after immersion with different chemical disinfectants by using goniomety.

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The comparison of water sorption of polymethylmethacrylate and polyamid materials

H Ulu, N Yanıkoğlu, N Sağsöz
Department of prosthodontics, faculty of dentistry, Atatürk university, Erzurum, Turkey

Purpose: The aim of this study was to evaluate the water sorption values of Polymethylmethacrylate and Polyamide denture base materials.
Materials and Methods: Two denture base materials were fabricated according to the manufacturer's instructions (50 mm in length x 0,5 mm in thickness). Before the specimens were stored in solutions, it was measured as control mass and recorded. Afterwards the specimens were stored in distilled water and tea solutions. The mass of each specimen was measured by using an electronic balance. Dessications were repeated until mass changes decreased to the weight of 0.2 mg or less as constant weight. Then the specimens were immersed for 1,7,30 and 45 days. The water sorption values of each specimen were measured before and after dessication. Three different statistical analyses were used in this study; Kolmogorov-Smirnov, Wilcoxon Signed Ranks Test, Mann-Whitney U analysis.
Results: Different values were found for each type of samples and solutions than control values. The Polymethylmethacrylate samples showed the highest sorption values in distilled water at 7 days (0.30 ± 0.03 mg/mm^2); while Polyamide samples showed the highest sorption values in tea solution for 30 days (0.51 ± 0.06mg/mm^2) ($P<0.017$). After that, no significant difference was observed at 45th day (PMMA max=0.17 ± 0.02, PA max=0.10 ± 0.01).
Conclusion: The results of the study suggest that the water sorption value of Polymethylmethacrylate is higher than that Polyamide materials in distilled water. At the 30th day polyamide materials showed significantly important values. And it was suggested that there is a peak point for sorption ability of denture base materials.

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An alternative aesthetic clasp design for removable partial dentures

EO Olcay[1], O Çelik[1], DP Şenyılmaz[2], B Ersu[1]
[1]Hacettepe University, Prosthodontics, Turkey
[2]Private practice, Prosthodontıcs, Turkey
Purpose: Removable partial dentures (RPD) are an effective and affordable treatment option for partially edentulous patients. However, the retentive parts of the denture such as claps in the aesthetic zone may influence the appearance and self-esteem of an individual. The aim of the present study is to describe an alternative clap design to solve the restorative problems in the aesthetic zone without displaying metal components of the dentures for posterior partially edentulous patients.
Materials and Methods: 6 patients with partial posterior edentulism were presented in this study. The patients were complaining about their unaesthetic maxillary RPDs because of the clasps on the labial area. The patients had worn anterior bridges and crowns and abraded anterior teeth. Both anterior fixed prostheses and RPDs with alternative aesthetic clasp were planned to all patients. The patients were than followed up for five years for their satisfaction of function and aesthetics.
Results: All the patients who underwent this study described experienced significant functional and aesthetic improvement with their dentures at the period of insertion. None of the patients complained of retention or aesthetics even after the 5-year recall examination.
Conclusion: The proper use of this alternative clasp design can be a strong foundation upon which to enhance aestheticity of these low cost RPDs combined with fixed protheses in the esthetic zone.

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Antifungal effect of boricacid incorporated into a tissue conditioning material

MM Özarslan[1], R Felek[2], M Hatipoğlu[3], M Arslan[1], N Türker[1]
[1]Prosthodontics, Faculty of Dentistry, Akdeniz, Antalya, Turkey
[2]Microbiology, Faculty of Dentistry, Akdeniz, Antalya, Turkey
[3]Periodontology, Faculty of Dentistry, Akdeniz, Antalya, Turkey

Purpose: The aim of this study was to examine the effectiveness of Boric acid incorporated into a tissue conditioner (Viscogel) which inhibits the growth of Candida albicans (C. albicans) in vitro.
Materials and Methods: Forty cylinder shaped Visco-gel tissue conditioner specimens were prepared with Boric acid and assigned to 5 groups (n = 8) according to their percentage of boric acid (0%- control, 2.5%, 5.0%, 7.5% and 10%). Sample discs were prepared and placed on Sabouraud Dextrose Agar (SDA) plates which had been previously inoculated with C. albicans. All the plates were placed back into the incubator within 15 min of placing the discs. The plates were incubated at 35 ± 2°C for 24 hrs. Inhibition diameters were noted. Data were analysed statistically by one-way anova and Tukey's test at 5% significance level.
Results: Boric acid mixed tissue conditioner had no inhibition effect on the growth of C. albicans and there were no statistically differences between all groups.
Conclusion: Within the limits of this study, it can be demonstrated that boric acid mixed tissue conditioner did not effect the growth of candida albicans.

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The behavior of bone marrow stromal cells on thin hydroxyapatite coating using chemical coating process

T Ito[1], N Ohtsu[2], M Hirano[2], H Takita[3], A Yokoyama[1]
[1]Department of Oral Functional Prosthodontics Graduate School of Dental Medicine Hokkaido University, Sapporo, Japan
[2]Instrumental Analysis Center Kitami Institute of Technology, Kitami, Japan
[3]Support Section for Education and Research of Dental Medicine Hokkaido University, Sapporo, Japan

Purpose: Thin hydroxyapatite (HAp) coating by chemical coating process is one of the surface treatments of titanium (Ti). Previously we reported that this coating was effective on bone formation in vivo. The aim of this study was to investigate effects of thin HAp coating on bone marrow stromal cells (BMSC) behavior in vitro.
Materials and Methods: Ti discs (21.5mm in diameter) were buried in calcium-phosphate slurry, and subsequently heated at 973 K in air (CP-coated Ti). Ti discs, heating without the slurry, were used as control (Anneal Ti). Rat BMSC were cultivated on these specimens. At first, the cells were cultured for 2 and 3 weeks, and ALP activity, osteopontin (OP), osteocalcin (OC) and calcium contents were measured biochemically. Then, the cells were cultured for 1, 3 days, 1 and 2 weeks, integrin beta1, cbfa1 and GAPDH mRNA expression were analyzed by RT-PCR.
Results: At 3 weeks, all parameters of CP-coated Ti were significantly higher than those of Anneal Ti. Gene expressions of integrin beta1 at 1day and cbfa1 at 1 week on CP-coated Ti were higher than those on Anneal Ti.
Conclusion: It was suggested that thin HAp coating could promote the initial adhesion of BMSC and the differentiation to the osteoblasts.

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Effects of post reinforcement method, cement type and thickness on the bond strength of fiber posts

E Pak Tunç[1], B Akkayan Kesmezacar[1], H Alkumru[2]
[1]Department of Prosthodontics, Faculty of Dentistry, İstanbul University, Turkey
[2]Department of Prosthodontics, Faculty of Dentistry, Toronto University, Canada

Purpose: To assess the treatment outcome of post reinforcement with/without accessory posts cemented with two different cements of various thicknesses.
Materials and Methods: The crowns of sixty mandibular canine teeth were sectioned at the cement-enamel junction and the roots were randomly divided into 2 main groups (n=30). The roots in the two main groups were further divided into three subgroups (n=10) and reinforced with posts as follows: G1-A, #2 size glass fiber post (G2Fib); G1-B, #3 size glass fiber post (G3Fib); G1-C, #3 size glass fiber post + two accessory quartz fiber posts (G3FibAccess). The posts of the first main group were cemented with a resin cement manufactured for luting, a core buildup & luting resin cement was used for cementation in the second group. Push-out tests were performed until the post segment was dislodged from the root section and converted into MPa. Data were analyzed using ANOVA. Multiple comparisons were performed using Tukey's test. Dislodged specimens were examined under a stereomicroscope.
Results: G3FibAccess group showed the highest bond strength whereas G2Fib group was statistically different than the other groups and showed the lowest bond strength ($p<0.05$).

No significant differences were found between the bond strengths of the two cements tested (P>0.05).
Conclusion: It can be speculated that when restoring with posts, especially in wide oval-shaped canals, the use of accessory posts reduces the cement thickness around the posts and increases the bond strength values. Cementation of posts with a core build up & luting cement is an effective alternative.

P-122

Corrosion behaviour of Ni-Cr alloys at various pH levels

G Alp, Y Burgaz, PG Tütüncü
Department of Prosthodontics, Faculty of Dentistry, Gazi University, Ankara, Turkey

The purpose of this study is to evaluate the effects of changes in salivary pH on ion release from the base-metal alloys Ni–Cr, and calculate the degree of corrosion in different environments. For this purpose thirty six specimens were prepared in rectangular shape with the dimension of 32×15×1.2 mm^3 and casted in accordance with the manufacturers' recommendations. Nickel–chromium (Ni–Cr) alloy samples were created and the elemental release of samples was determined by using the static immersion test method. Each sample was placed in a plastic vessel containing 10 ml of artificial saliva at one of three different pH values (NaCl/Lactic acid solution, pH 2,3; Fusayama and Meyer's solution, pH 5,3; and Ringer's solution, pH 7). The specimens in the solution were stored upright in an incubator at 37 ºC for 7, 14, 21 and 28 days and then removed from the test tubes. The residual solution was analyzed with inductively coupled plasma-optic emission spectrometry (ICP-OES) for the elemental release of Ni, Cr and Mo. The results of our study showed that Ni exhibited the highest level of ion release. Both pH and alloy–pH interaction affected the degree of release of one of the ions and/or total ion release. We conclude that a reduction in pH will increase elemental release from dental alloys and to prevent the release of metal particles, the alloys used for dental restorations should, whenever possible, be made from corrosion-resistant alloys.

P-123

Efficiency of Er: YAG laser on removal of fiber posts

N Özcan, AK Culhaoğlu, H Akça, M Aslan
Department of Prosthodontics, school of Dentistry, Kirikkale University, Kirikkale, Turkey

Purpose: Solving complication is always making sense in dentistry. When there is a problem about endodontic canal and teeth already have post restoration, post problem must be removed with less iatrogenic demage to teeth. The aim of the present study was to investigate the effect of laser irradiation on the pushout bond strength of translucent and opaque fiber posts surface to dentin.
Materials and Methods: A total of one hundred and twenty human single rooted teeth will be used for this study, with 12 groups of 10 teeth. Specimens will be separated from cemento-enamel junction and conventionally hand prepared for endodontic treatment. Post space was prepared using drills for each post system. Prefabricated post systems (transparent and opaque fiber posts with 3 different sizes) will be cemented with resin cements (self-adhesive resin cement). Er:YAG laser will be used for post removal for test groups and for control group there will be no interventional procedures. Micro push out test will be done for removal

evaluation. Fracture types will be observed with SEM (scanning electron microscope) and results will be assessed with Two Way Anova Analysis in SPSS 16.0 programme. Results: Results will be achieved approximately in June 2014 before the congress beginning time.
Conclusion: Conclusion will be created with the data portion.

P-124

Frequency analysis of temporomandibular joint sound's in patients with bruxism

M Erdoğan, D Kaymak, D Karakış, A Doğan
Department of Prosthodontics, Faculty of Dentistry, Gazi University, Ankara, Turkey

Temporomandibular joint (TMJ) sounds have received increasing attention as an important physical sign of temporomandibular joint dysfunction and/or pathology. Although TMJ sounds are of the most commonly recognized signs of temporomandibular disorders (TMDs) that are frequently also present in otherwise asymptomatic individuals. In the present study, differences of TMJ sounds on bruxism patients before and after splint therapy were examined. Study group was consisted of 12 individuals, and a control group included 6 individuals. The clinical examination was performed to all participants. Study groups were randomly assigned to two splint groups: they received a splint therapy with either canine protected hard stabilization splint or prefabricated Bruxogard-soft splint (Myofunctional Research Co., Waalwijk, Netherlands) (n=6). With the specially developed sound recording system personal computer-linked (PClinked) EKG machine's signal recording unit (Tepa, Kardiosis, Ankara, Turkey) was used in order to record TMJ sounds. Sound signals are recorded and after that evaluation of these sounds spectral analysis was made by Fourier analysis on the program MATLAB. Each sound from left and/or right TMJ was examined by dividing it to subbands of freguency, which is also called 'Subband Energy Method'. Mean values and standard deviations of data were calculated by using a SPSS statistical software program (15.0 version, SPSS Inc., Chicago, USA). The energy values of the TMJ sounds recorded in symptomatic and healthy groups had no any difference after splint therapy. There was no statistically significant difference in comparison of the right and left sounds.

P-125

Reliability of quantitative analysis of the mandibular condyle with MRI

K Kohi[1], C Igarashi[2], T Osano[2], Y Sato[1], K Kobayashi[2], C Ohkubo[1]
[1]Department of Removable Prosthodontics, Tsurumi University School of Dental Medicine, Yokohama, Japan
[2]Department of Oral and Maxillofacial Radiology and Diagnosis, Tsurumi University School of Dental Medicine, Yokohama, Japan

Purpose: Regarding degenerative joint disease, few methods have been developed for objectively estimating deformation of the mandibular condyle. If the anterior functional area of the mandibular condyle, from the most frontal point of the mandibular condyle parietal area, could be quantitatively evaluated, it would be beneficial for diagnosing. The aim of this study is to evaluate the reliability of quantitative analysis of the anterior functional surface of the mandibular condyle with MRI.
Materials and methods: In this study, 15 patients, 2 men and 13 women from 10 to 70 years of age, were selected. The anterior functional area of the mandibular condyle was examined

using MRI. Using Aze Win (AZE, Tokyo), a total of 30 joints were measured by three examiners. Each measurement was carried out two times at an interval of more than one week. Statistical analysis was performed using Spearman's correlation ($p<0.01$) between the first and second functional areas of the mandibular condyle levels, and intraclass and interclass correlations (ICCs) were confirmed at a significance level of $p<0.05$.
Results: Using Spearman's rank test, strong correlations were found between the first and second areas at 0.981, 0.915, and 0.921 ($p<0.001$). Excellent ICCs were observed between 0.974 and 0.985 (interclass: first and second measurements) and among 0.993, 0.968, and 0.955 (intraclass: three examiners).
Conclusion: Both intraclass and interclass measurements would be reliable as objective estimation methods.

P-126

Sociodemographic and psychological variables in possible bruxism patients

W Ali, A Gürel, O Şakar, F Ünalan, T Sülün
Department of Prosthodontics, School of Dentistry, University of Istanbul, Istanbul,Turkey

Purpose: Bruxism is an umbrella term grouping together different motor and psychological activities. It can have a significant effect on the patient's quality of life. The aim of the study was to evaluate the relationship between awake and sleep bruxism, and sociodemographic parameters. And to examine the relationship between depression and somatization in patients with bruxism.
Materials and Methods: The study group consisted of male and female patients with signs and symptoms of Temporomandibular Disorders (TMD) from different social backgrounds seeking treatment at temporomandibular joint clinic, School of Dentistry, University of Istanbul, Turkey, between 2006 and 2013. The sample comprised 830 individuals with ages ranging from 9 to 84 years, 78% of whom were females and 22% males. Research Diagnostic Criteria for Temporomandibular Disorders (RDC/TMD) and SCL-90-R were collected at the TMD Clinic.
Results: The data showed significant differences between males and females regarding sleep and awake bruxism (chi-square, $p=0.015$ and $p<0.001$, respectively). Significant differences was found between marital status regarding sleep bruxism ($p=0.036$). The Chi-square test indicated an association between age and awake bruxism ($p=0.034$). Significant association was found between depression and somatization scores and burxism in the overall sample (chi-square, $p=0.004$ and $p<0.001$ "sleep bruxism" and $p=0.001$ and $p<0.001$ "awake bruxism" respectively).
Conclusion: Bruxism seems to be associated with psychosocial and somatization factors.

P-127

Treatment approaches of temporomandibular joint "closed lock"

M Meindani, V Psarras, M Tzakis
Orofacial Pain Clinic, National and Kapodistrian University, Athens, Greece

Purpose: Disc displacement without reduction is an intra-articular disorder involving the condyle-disc complex and is associated with persistent limitation of jaw opening, severe enough to interfere with the ability of the patient to function. The purpose of this presentation is to describe the management of "closed lock" patients.

Materials and Methods: Two female patients complaining of limited opening and pain referred to the Orofacial Pain Clinic of Dental School of University of Athens. After the clinical evaluation and diaforodiagnosis, the final diagnosis set as disc displacement without reduction with limited opening. The “unlock mandibular manipulation” used as first means of management of “closed lock” resulted in significant, but temporal, increased mouth opening. The patients were advised to self control their heavy parafunctional habits and their excessive stress and implemented with physiotherapy (mouth opening manipulation exercise) and a stabilization splint.
Results: Both patients responded positively to the therapy. The maximum assisted opening increased over 40mm and their function returned to normal. After six months of following up, both patients reported no symptoms and no “closed locked” episodes.
Conclusion: It is significant to manage a “closed lock” as early and as efficiently as possible in order to prevent disease progress. It is vital for the temporomandibular joint tissues to recover and to avoid installation of irreversible histological changes.

P-128

Treatment of CMD-patients – a retrospective treatment comparison

M Schmid Schwap[1], M Bristela[1], M Kundi[2], E Piehslinger[1]
[1]University Clinic of Dentistry, Prosthodontics, Austria
[2]Medical University Vienna, Center for Public Health, Austria

Purpose: This retrospective study was intended to compare effectiveness of splint therapy or exercise therapy alone with a combination of both methods.
Materials and Methods: 97 patients with craniomandibular dysfunction were evaluated. Pain sensation, muscle pain on palpation, mouth opening and subjective symptoms before and after therapy were compared. 37 patients received splint therapy, 29 patients exercise therapy and 31 patients a combination of the two therapies.
Results: Patients of all groups showed significant reduction of pain ($p<0.001$) and muscle pain on palpation ($p<0.001$) with no significant differences between the groups. Mouth opening improved significantly in patients of the exercise therapy and the combination group, but not in patients of the splint group, who had already shown normal mouth opening in the baseline assessment. Patient assessments of the subjective symptoms showed a significant improvement in all groups ($p<0.001$).
Conclusion: All treatments for craniomandibular dysfunction evaluated in this study were shown to be effective with no statistically significant differences between the groups. However, it must be considered that the patients of the combination group showed inferior baseline findings.

P-129

Relationship between oral function and food preferences among elderly Japanese

M Matsuyama[1], R Kobayashi[2], S Maeda[3], A Watanabe[1]
[1]Department of Oral Health Care and Rehabilitation; Institute of Health Biosciences; The University of Tokushima Graduate School; Tokushima, Japan
[2]School of Oral Sciences; The University of Tokushima Graduate School; Tokushima, Japan
[3]Division of Dental Hygiene; Kawashima Hospital; Kawashima Hospital Group; Tokushima, Japan

Purpose: Aging affects the sense of taste, and consequently food preferences change in the elderly. However, preferences might be influenced not only by oral sensory function but also by chewing and swallowing function. This study aimed to clarify the relationship between oral function and food preferences among elderly Japanese.
Materials and Methods: Sixteen patients (mean age, 73.8 years) of the Tokushima University Hospital were enrolled in the elderly group. Sixteen university students (mean age, 21.3 years) were enrolled in the young group.
Food preference were assessed using a questionnaire number of favorite foods among 35 items, based on mastication score (MS). Chewing function was assessed using a xylitol gum-chewing test and MS. Swallowing function was assessed using repetitive saliva swallow test (RSST), water swallow test, maximum voluntary tongue pressure and subjective evaluation. The Mann-Whitney U test and Spearman's rank correlation coefficient were applied for statistical analyses using SPSS ver.21. This study was conducted with the approval of the Ethics Committee of Tokushima University Hospital (Approval number: 1378).
Results and Discussion: The score of gum-chewing, MS, RSST, and SES of the elderly group were significantly lower than that of the young group ($p<0.001$, $p<0.001$, $p<0.001$, $p<0.05$). There was a significant correlation between RSST and food preference scores in the elderly group ($r=0.586$, $p<0.05$), but not in the young group. It was considered that change of swallowing function by aging would affect change of food preference among elderly.
Conclusion: Our results indicate that swallowing function influences food preferences among elderly Japanese.

P-130

Effect of sealer coating on roughness of soft liners

İ Usta Kutlu[1], N Dinçkal Yanıkoğlu[1], E Kul[1], Z Yeşil Duymuş[2], N Polat Sağsöz[1]
[1]Department of Prosthodontics, Faculty of Dentistry, Atatürk University, Erzurum, Turkey
[2]Department of Prosthodontics, Faculty of Dentistry, Recep Tayyip Erdoğan University, Rize, Turkey

Purpose: The purpose of this study is to evaluate the effect of sealer coating on surface roughness of soft lining materials in four different solutions and air.
Materials and Methods: 125 specimens were prepared for this study. Two types of room temperature (one silicon and one methacrylate based) and one high temperature (silicon based) soft lining materials were used. 25 of each room temperature soft lining specimens were coated two layers of surface sealer. Five specimens of each materials were stored in distilled water, coke, denture cleanser, saliva and air. Surface roughness was measured at baseline (T0), at the period of one day (T1), seven days (T7), fourteen days (T14) and twentyeight days (T28). Surface roughness values analysed using an Univariate Analysis of Variance. Repeated measure and Bonferonni analysis were performed on time-dependent groups and storage methods.
Results: In time-dependent groups only methacrylate based soft liner exhibited an increase on roughness (1.74 to 2.09 µm) and sealer coating had no significant effect. In time-dependent storage methods denture cleanser exhibited a marginally significant increase (1.83 to 1.99 µm, $P=0.054$). As coke and artifical saliva showed non significant difference ($P>0.05$), distilled water and air exhibited a decrease on surface roughness values (respectively $P=0.02$, $P=0.00$).
Conclusion: There were statistically significant differences between surface roughness of different types of soft liners. Sealer coating had no significant effect.

P-131

Soft-tissue changes after implant supported complete denture treatment using 3dMD

İH Uzun, MA Malkoç, Ü Yolcu, G Yıldırım, O Geçör, S Altındiş, S Malkoç
İnönü University, Turkey

Purpose: The purpose of this study was to analyze the soft tissue changes after implant supported complete denture treatment in three dimensions.
Materials and Methods: This study was carry out in a group of ten implant-supported complete denture wearer patients aged between 60-70 years from East-Anatolian region. Totally twenty images were obtained by a three-dimensional imaging device, '3dMD Face' (3dMD Ltd., London, UK) in rest position with and without denture. Linear dislocation and differences of selected landmarks and labial surfaces were quantified and calculated using Vultus III software (3dMD Ltd., London, UK). Wilcoxon signed rank tests were used for comparison.
Results: According to the results; Subnasale (1.45±0.87 mm), A point (2.58±1.09 mm), Labiale Superius (3.32±1.59 mm), Labiale Inferius (3.71±2.27 mm), Cheilion Right (4.05±2.55 mm), Cheilion Left (3.93±2.18 mm), B point (2.88±1.63 mm) and Pogonion (1.71±1.30 mm) points moved forward positions ($P<0.05$). In addition, total upper lip volume (4.33±1.81 mm3) and lower lip volume (2.98±2.23 mm3) were increased significantly ($P<0.01$).
Conclusion: The three dimensional photographic method was suitable for defining the soft-tissue changes in patients wearing of complete denture. Moreover, in edentulous patients, the determination of complete denture position is a critical step that should be performed considering all possible factors, including the soft-tissue responses.

P-132

Anti-infection capability of antioxidant N-acetyl-L-cysteine for prevention of aspiration pneumonia

C Koizumi, M Yamada, T Ueda, K Ishizaki, K Sakurai
Removable Prosthodontics & Gerodontology, Tokyo Dental College, Japan

Purpose: Inflammatory overproduction of gel-forming mucus via oxidative stress from airway epithelium is associated with the onset and progress of aspiration pneumonia. Antioxidant N-acetyl-L-cysteine (NAC) might reinforce cellular resistance to oxidative stress as an aerosolized agent for prevention of aspiration pneumonia. The purpose of this in vitro study was to examine whether cellular uptake of NAC prevented bacteria-induced inflammatory overproduction of gel-forming mucus via oxidative stress on human small airway epithelial cells.
Materials and Methods: Human small airway epithelial cells pre-incubated with or without 20mM NAC for 3 hours were cultured in small airway epithelial cell growth medium with or without exposure to Streptococcus pneumonia for 6 hours. Intracellular redox status, inflammatory response and mucus production were evaluated in day 1 culture. Data was treated with Bonferroni multiple comparison after one-way analysis of variance ($\alpha=0.05$).
Results: Pre-incubation with NAC protected the epithelial cells from intracellular redox imbalance caused by bacteria, such as increase of cellular reactive oxygen spices and reduction of cellular total glutathione. Bacteria increased release of pro-inflammatory cytokines such as interleukin-1beta, -6 and -8, from the cells, which was prevented by pre-incubation with NAC. Pre-incubation with NAC prevented up-regulation of cyclooxygenase 2

and gel-forming mucus 5AC genes caused by bacteria.
Conclusion: Cellular uptake of NAC prevented bacteria-induced inflammatory overproduction of gel-forming mucus on human small airway epithelial cells.

P-133

A method of making two-pieces impression tray for microstomia patient

TY Manav, A Şener, HO Gümüş, B Kesim
Erciyes University Faculty of Dentistry Prosthodontics, Turkey

A 37 year old woman was consulted to our department after maxillectomy operation for basosquamous carcinoma. She had severe scar tissue and microstomia due to previous surgeries. The interim obturator was planned because of the patient couldn't provide oral feeding. None of available stock trays could insert into oral cavity during preliminary impression trials. The tray had to be inserted and removed in sections. The problem at this method was matching the fragments of tray in accurate position after removal. Consequently, a stock tray was modified for preliminary impression. Tray was cut into two pieces from midline axis and a stabilizer mechanism was added on their handles.

P-134

The effect of finish line preparation on periodontium

M Arslan[1], N Özcan[1], A Çulhaoğlu[1], S Üçtaşlı[2]
[1]Department of Prosthodontics, Faculty of Dentistry, Kirikkale University, Kirikkale, Turkey
[2]Department of Prosthodontics, Faculty of Dentistry, Ankara University, Ankara, Turkey

Purpose: All ceramic restorations are good treatment options in anterior region as they seem so natural. But for a succesful prosthodontic treatment environmental tissues are needed to be stable and healthy. Before, during and after the treatment behaving carefully to soft tissues will increase the probability of getting success. An inadequate restoration may injure periodontium and tooth structure.
Materials and Methods: A 21 year old female patient applied our clinic because of gingival tissue problems and reported that she wasn't pleased with her restorations. In clinical examination we saw restorations which were integrated (from 15 to 25) had knife edge preparation and were pressing surrounding soft tissues. The restorations were taken out and preparations were converted to rounded shoulder, after periodontal treatment and delivering provisional restorations, for healing process we waited for two weeks. Following the retraction, impression was taken and zirconia restorations were completed individually.
Conclusion: Chamfer or shoulder preparation types are recommended for full ceramic restorations. Clinical failures which occur because of crackings or fractures are reported to be decreased by preparation types. So that in all ceramic studies taking care of preparation design is so important.

P-135

Communication errors in digital tooth shade selection

A Spaveras, S Grous, P Galanopoulos
Grous Dental Clinic, Greece

The purpose of this poster is to illustrate the most representative communication errors in digital tooth shade selection among the dental team members in daily clinical practice. Tooth color can be matched or measured by visual comparison or by utilizing shade matching instruments. Although visual shade matching is the most common method for tooth color designation, it is inconsistent and subjective as it depends on ambient light conditions, color perception, clinical experience as well as the background and the shade guides used.
Digital color measuring devices provide detailed data on shades in different tooth surface zones offering an objective and repeatable map of hue, value and chroma. These colorimetric findings can be later digitally processed and shared with the dental laboratory technician, minimizing the chances of communication errors. These errors can be avoided upon compliance with the manufacturer's guidelines and meticulously kept records. To conclude, the issues raised need to be taken into consideration during digital shade selection, towards the establishment of a predictable and esthetic outcome.

P-136

Replacement of two adjacent mandibular central teeth using FRC bridge

A Keski, Ö Çölgeçen
Department of Prosthodontics, Faculty of Dentistry, İzmir Katip Celebi University, İzmir, Turkey

The development of the strong fiber materials in adhesive dentistry have provided that more conservative and aesthetic prosthetic restorations could be done much more easier. The present study describes a clinical case in which a fiber reinforced composite (FRC) bridge was fabricated using the two natural deciduous teeth as a pontics for replacement of two central teeth. A 33-year-old man patient with unaesthetic appearance of lower central incisors associated with deciduous teeth, was referred to Prosthodontic Department. In clinical examination, excessive tooth mobility was observed and periapical radiography revealed root resorption of the deciduous teeth. Therefore extraction of the deciduous teeth were indicated obtaining the informed consent from the patient. Then, they were immersed in % 0.1 thymol solution until the healing was completed. Their roots were filled with flowable resin composite material after root canal treatment. A high smooth natural teeth pontic were achieved with diamond finishing instruments and polishing rubber points. A tunnel was prepared across the pontics on middle third of the lingual side and adjacent lateral teeth with round diamond burs. These two teeth were connected to each other and permanent lateral teeth with glass fiber and resin composite filling material. After this step restorations was polished. The patient was instructed to keep his restoration clean and free from plaque. After 1 year follow up, there was not any clinical problem.
Thanks to this conservative approach, natural teeth structures were preserved.

P-137

Esthetic modification of the FRC adhesive bridge pontic with opaque composite

G Amansız, D Enhoş, Ö Çölgeçen
Department of Prosthodontics, Faculty of Dentistry, Izmir Katip Celebi University, Izmir, Turkey

The loss of anterior teeth can be psychologically and socially damaging to the patient. To minimize this traumatic condition immediate replacement of the teeth preferably using a fixed prosthesis could be useful. When implant treatment could not been chosen, fiber-reinforced composites (FRC) are considered as alternative therapy options to implants by the way that no need to make preparation or minimal preparation. On the other hand patient's esthetic desires are getting popular and especially enamel defects and hypoplasia make a challenge for dentists. The aim of this study is providing noninvasive and reversible also esthetic therapy to patient who suffers from enamel hypoplasia and has missing maxillary lateral incisor teeth. 15 years old male patient had missing maxillary laterals and had orthodontic treatment. Also existing teeth have enamel hypoplasia. Because of waiting his 18 years old for implant therapy we chose noninvasive fixed FRC. Minimal preparations were made on palatal side of maxillary anterior teeth. By indirect technique FRC adhesive bridge has been made with prefabricated composite pontic lateral teeth and adapted in mouth. For providing esthetics, pitting areas were made on pontics similarly adjacent teeth and opaque flowable composites were applied. At the end of this clinic trial patient had an esthetic and functional treatment. After 6 months and 1 year, patient was called for control and it is noted that he is still using FRC bridges with minor coloration in esthetic limits.

P-138

Provisional anterior tooth replacement using fiber reinforced artificial tooth

M Gündoğdu, F Bayındır
Atatürk University, Prosthodontics, Turkey

The loss of anterior teeth can be distressing for patients, both socially and psychologically. Conservative solutions for the restoration of a single edentulous space in the anterior maxilla and mandibula present an esthetic challenge to the clinician. In recent years, reinforcing resin–based fixed partial denture (FPD) frameworks have achieved increasing acceptance in prosthodontics as applicable alternatives to metal–based restorations. Chairside tooth replacement is an application of fiber reinforced restorations. Immediate chairside replacement of an anterior tooth may present to the patient's esthetic, comfort, treatment acceptance, expectancies of treatment and use when the patient needs a short–term solution. Several approaches have been described for the immediate replacement. This clinical report presents 3 cases where fiber reinforced artificial tooth was successfully used to provisionally restore anterior edentulous area in terms of esthetic–cosmetic values and functionality.

P-139

Prosthetic rehabilitation of edentulous space with the natural tooth and fiber reinforced composite

H Kılınç[1], M Uğur[1], S Turgut[1], FM Korkmaz[1], B Bağış[2]
[1]Karadeniz Technical Univercity, Faculty of Dentistry, Department of Prosthodontics, Turkey
[2]Izmir Katip Celebi Univercity, Faculty of Dentistry, Department of Prosthodontics, Turkey

Purpose: Restoration of missing tooth space with conservative and esthetic treatment is a challenge for the clinician especially when it is in the anterior region. This study involves two different cases of rehabilition of edentolous space using the patients' extracted natural tooth with fiber reinforced composite (FRC).

Materials and Methods: A 36-year-old man whose right mandibular lateral tooth and a 19-year-old woman whose maxillary lateral tooth was planned to be extracted was referred to our clinic. After radiographic and clinical examinations, it was planned that the tooth which was to be extracted could be used for the rehabilition of its own extracted area to address the esthetics issue immediately. The extracted tooth was splinted to adjacent teeth with the aid of the cavities which were prepared at the lingual or palatinal surfaces using FRC (Interlig, Angelus, Brazil).
Results: The results were evaluated clinically at 3 months and the restorations were monitored for 2 years. During this time, there were no problems in terms of function, fractures or esthetics, and both patients were satisfied with the treatment.
Conclusion: Rehabilition of the edentolous tooth area with the patient's natural tooth is a conservative, rapid, esthetic and economic treatment when combined with modern adhesive techniques.

P-140

18-month survival of fiber-reinforced-composite restoration prepared and etched with Er,Cr:YSGG

S Kılıç, SH Altıntaş
Karadeniz Technical University, Department of Prosthodontics, Faculty of Dentistry, Trabzon, Turkey

Introduction: Laser irradiation is painless and does not involve either heat or vibration, making this treatment preferable for cavity preparation and etching of the tooth. Laser etching of enamel or dentin has been reported to provide an anfractuous surface and open dentin tubules, both apparently ideal for adhesion. Irradiation of surface leads to the formation of less acid-soluble compounds, thus reducing susceptibility to caries and acid attack. Fiber-Reinforced-Composite (FRC) restorations represent an appropriate option with many advantages including bondability, reparability, ease of fabrication, lowcost, noninvasive procedures and relative longevity.
Clinical Evaluation: A 53-year-old man with missing mandibular central incisors as a result of periodontal problems was referred to the Department of Prosthodontics of Karadeniz Technical University due to complaints of aesthetic, functional and phonetic dysfunctions. Intraoral examination revealed gingival recessions, missing mandibular central insisors, immobile and generally healthy dentition. After discussing all treatment options with the patient, it had been decided to place a polyethylene-fiber-reinforced composite restoration which can be a valid treatment option including low cost, noninvasive procedures, clinically efficient and easy splinting of adjacent incisors. After cavity preparation and etching of teeth with Er,Cr:YSGG laser, restoration was fabricated on lased-teeth surfaces according to the direct technique for the replacement of two missing mandibular central incisors.
Conclusion: Satisfying aesthetic results have been achieved with painless and non-invasive procedures and no problem has been detected related with FRC restoration within the 18-month follow-up period. The Er,Cr:YSGG laser system may be an alternative option for etching and cavity preparation procedures in anterior FRC restorations.

P-141

Resin-bonded bridges: Are they still in service?

GD Kalantzopoulou, L Aggeliki, K Stefanos
Department of Prosthodontics; Postgraduate Clinic; Dental School; University of Athens, Greece

Since the introduction of the 'Rochette' bridge in the 1970s, resin-bonded bridges (RBBs) have undergone a number of developments to become a commonly used technique in dental practice, serving as a solution of choice in certain clinical aspects. Providing considerable longevity, capable of being reliably bonded to tooth structure when used appropriately and improved aesthetic outcomes, they have the potential to offer a minimally invasive, fixed-prosthetic approach to one or more teeth replacement in several cases. The aspects of RBBs' clinical use include provisional restoration, in implant therapy for instance, interim restoration and permanent restoration, in patients when implant therapy is either not indicated nor desired. Since their initial introduction, they have undergone a number of changes to their method of retention, and the materials used in their construction, such as metal polymer, metal porcelain or all ceramic bridges can be fabricated. The purpose of this poster is to present, through case reports the indications, the limitations and the expectations of RBBs in daily clinical practice.

P-142

The prosthetic management of gingival aesthetics with composite: Case series

E Kahramanoğlu[1], YU Aslan[1], Y Özkan[2], Y Kulak Özkan[1]
[1]Department of Prosthodontics, University of Marmara, Istanbul, Turkey
[2]Department of Oral Surgery, University of Marmara, Istanbul, Turkey

The preservation or reproduction of optimal mucogingival aesthetics can be difficult to achieve from both a surgical and prosthetic perspective. An increasing patient and clinician awareness of the importance of gingival and smile aesthetics has resulted in the development of both surgical and prosthetic techniques aimed at improving or maintaining these aesthetic characteristics. In this study, a case series suffering from severe alveolar bone loss, who had undergone crown and bridge restorations with dental implants will be presented. The implant site was evaluated with Cone Beam Computed Tomography. The implant placement was performed and after healing period, a screw retained provisional restoration was fabricated with using the temporary abutments for soft tissue remodeling. All-ceramic and zirconia crowns were fabricated after three weeks. Then, light-curing pink composite was used in cervical part of all-ceramic restorations to compensate for implant-supported crowns with horizontal bone deficiency and lack of keratinized tissue. This clinical procedure was able to mask the horizontal defect and create a symmetrical and esthetic effect. The availability of pink materials has increased significantly and provides the restorative clinician with a new armamentarium for improving esthetics when presented with a difficult and compromised surgical result.

P-143

Restoration of cross bite lateral incisors with dental glass fiber and composite: A case report

G Üngör, FM Korkmaz
Department of Prosthodontics, Faculty of Dentistry, Karadeniz Technical University, Trabzon, Turkey

Developments in adhesive dentistry have provided the dental profession new restorative materials and techniques to restore esthetics and function of the anterior maxillary teeth. A new-developed bondable fiber-reinforced composite resin (FRC) post has been reported to be an alternative to conventional post materials because of esthetic quality, flexibility and rebuilding properties. This clinical report describes esthetic restoration of bilateral cross bite lateral incisors with a dental glass fiber post and composite resin. FRC posts and composite resin may provide satisfying esthetic results increasing retention, and improving mechanical properties.

P-144

All-ceramic rehabilitation of discolored teeth: Case reports

E Coşkun, UY Aslan, C Yıldız, Y Kulak Özkan
Prosthodontics Department, Marmara University Dentistry Faculty, Istanbul, Turkey

Esthetic treatment of discolored teeth with all-ceramic systems represents a great challenge to the dental practitioner. Due to superior biocompatibility, chemical stability, color stability, minimum surface roughness, resistance against oral liquids and abrasion, all-ceramic materials are the best solution for high esthetic requirement. The color of all ceramic system is the result of interaction between core and veneer ceramics.
In the first case, custom made gold-based post was restored with IPS e.max crown. Low translucent A1 ingot was used to mask the gold custom made post. A step-by-step protocol is proposed for the laser treatment, tooth preparation and laboratory stages. In the second case, full arch of discolored teeth were restored with IPS e.max crowns. Medium opacity A1 ingot was preferred.
After the treatment, successful results are obtained in terms of pink and white esthetics and function, patient satisfaction was achieved. Even for the discolored teeth, all-ceramic restoration materials provide highly satisfactory esthetic outcomes.

P-145

Prosthetic treatment of an anorexia nervosa patient

DÇ Ayvalıoğlu[1], S Yıldırımtürk[2], N Sarı[1], B Gökçen Röhlig[1]
[1]Department of Prosthodontics, Faculty of Dentistry, Istanbul University, Istanbul, Turkey
[2]Department of Oral Surgery, Faculty of Dentistry, Istanbul University, Istanbul, Turkey

Anorexia Nervosa (AN) and Bulimia Nervosa (BN) are defined as pyschosocial pathological eating disorders, comprising persistent disturbance of eating nature and morbid fear of becoming obese and characterized by purging, fasting or vomiting which causes extreme weight loss and oral complications. Presence of stomach acids in the mouth causes dental

erosion, caries and parotid gland hyperthropy. Dehydration due to inaccurate performance of the salivary glands impacts the health of the periodontal tissues and oral mucosa. The aim of this report is to describe a 29 year old female patient presenting with binge/purge type AN who had severe loss of functional teeth and alveolar supporting structures. The Cone Beam Computed Tomography (CBCT) revealed inadequate bone thickness in both anterior and posterior segments of the mandible. Intraoral examination showed that despite her young age, the patient had a decreased vertical dimension, very thin alveolar bone and extensive tooth loss in the mandible. Also two clinical examination scales, the (D)ecayed,(M)issing,(F)illed Teeth Index (DMFT) and the Community Periodontal Index of Treatment Needs (CPITN) were used respectively to determine oral and periodontal status in the patient. Stimulated and unstimulated salivary samples were also collected and analysed for flow rates, buffering capacity, streptococcus mutans (MS), lactobacillus (LB) species and salivary yeast counts (YC).
Treatment plan included a maxillary fixed partial denture and an implant retained removable prosthesis in mandible.
At her 3 months follow-up, she expressed satisfaction with the function and esthetics of her restorations.

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Minimal invasive approach to erosion: A case study

R Tüzünsoy Aktaş[1], B Yerci Kosor[1], A Erdem[2]
[1]Ege University, Faculty of Dentistry, Departments of Prosthodontics, Izmir, Turkey
[2]Sifa University, Faculty of Dentistry, Departments of Prosthodontics, Izmir, Turkey

The loss of tooth structure as abrasion or erosion may occur by mechanical forces, parafunctional activity or chemical factors. Erosion is the progressive loss of tooth substance by chemical or acid dissolution mostly occur by inappropriate use of carbonated drinks with high levels of acidity. Erosion is also a problem in individuals who suffer from gastroesophageal reflux disease (GORD).
Hypersensitivity, TMJ disorders, disocclusion, open-bite, mastication problems and speech disorders may also be seen besides tooth wear. Minimal invasive restoration techniques are currently most common and protective treatment procedures in such cases.
A 60 year old male patient suffering from orofacial pain and speech disorder consulted to our clinic. In the intraoral examination, wide erosion and abrasion areas on tooth surfaces especially in the mandible related with GORD and excessive fruit juice (lemon, orange, grapefruit) consumption were observed. It was also seen that only posterior teeth (1st and 2nd molars) were in occlusal contact
Fixed partial restorations with IPS e.max material were planned after minimal invasive preparation in optimum intermaxillary relationship. For the rehabilitation of the orofacial pain and the protection of the newly delivered partial crowns, a 1.5 mm bioplast occlusal splint was prepared after cementation.
The patient was examined in the 1st week, 1st month and the 3rd month; no complications like decementation or chipping were observed. The orofacial pain was reduced and phonation was developed.

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Management of complicated crown fracture with reattachment technique

B Gökdeniz[1], G Demirel[2], MA Kılıçarslan[3]
[1]75. Years Dental Hospital, 13.Clinic, Turkey
[2]Ankara University, Faculty of Dentistry Restorative Dentistry, Turkey
[3]Ankara University, Faculty of Dentistry Department of Prosthetic Dentistry, Turkey

Anterior crown fractures area common form of traumatic dental injuries that mainly affect the maxillary incisors. Since the development of the adhesive dentistry, many case reports of crown fractures restored using adhesive reattachment techniques were published. This report describes the clinical procedures involved in the treatment of a complicated crown fracture in the maxillary right lateral with reattachment technique, which had been treaded with porcelain laminate veneer six years ago.
Case Report: A healthy 47-year-old woman presented with fractured crown maxillary right lateral incisor. She has six porcelain laminate veneers had been provided 6 years previously in a private practice to correct esthetic problems. The intraoral examination reveals that pulp exposure on maxillary right lateral incisor, which was tender on percussion. No soft tissue injury was noticed. A horizontal fracture line was 2 mm supragingival area. The bought broken fragment of teeth and porcelain laminate veneer were intact. After intraoral and radiographic examination, the treatment plan comprised of endodontic treatment and reattachment of broken fragment. Endodontic treatment was completed, under local anesthesia. Than root canal was prepared for pre-fabricated endodontic fiber post and post was cemented with dual-cure resin cement. Broken fragment was reattached adhesively and final finishing and polishing were performed. The patient was asked to report after 24 hours, 1 month and six months. At the follow-up appointments, the restoration was intact, no adverse effects were noted, and the resultant appearance was highly satisfactory for the patient.

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Esthetic rehabilitation of amelogenesis imperfecta: A case report

E Talay[1], E Çavdar[2], I Yöndem[1]
[1]Department of Prosthodontics, Faculty of Dentistry, Selcuk University, Konya, Turkey
[2]Department of Periodontology, Faculty of Dentistry, Selcuk University, Konya, Turkey

Genetic defects of the enamel are the most common congenital anomalies of dental hard tissues. Amelogenesis imperfecta (AI) is an inherited disease that disturbs the formation of the enamel. AI represents a group of conditions that affect the structure and clinical appearance of the enamel of all or nearly all the teeth; it might also be associated with morphological or biochemical changes elsewhere in the body. This clinical report describes the treatment for a young adult patient with amelogenesis imperfecta using zirconia all-ceramic fixed dental prosthesis. A 21-year-old man who was self-conscious about tooth appearance presented for treatment. The patient was referred to the Department of Prosthodontic Dentistry in Selcuk University for evaluation and treatment. Prior to treatment, a detailed dental, medical, and social history was obtained. Clinical examination of the patient revealed some carious lesions, and needs to root filling. After restorative and endodontic treatments finished, all teeth were prepared with chamfer margins under local anesthetics. Restorations were fabricated with zirconia-ceramic materials in a licensed dental laboratory. Zirconia cores were fabricated by CAD/CAM technique. Restorations were

cemented with an adhesive system RelyX Unicem using the manufacturer's recommendations. Definitive treatment outcomes in terms of function, unaesthetic appearance of the patient disappeared completely. The patient's esthetic and functional expectations were also satisfied.

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Esthetic rehabilitation of maxillar anterior teeth with full porcelain restorations: A case report

N Baysal, S Ayyıldız, OC Sipahi, H Yeşil, Ö Öztürk
Department of Prosthodontics, Gulhane Military Medical Academy, Ankara, Turkey

Purpose: The aim of this case report was to restore anterior teeth with full porcelain fixed partial dentures to provide an esthetic outlook for patient.
Case: A 36 year old woman reported with a chief complaint about poor esthetic restorations of maxillary anterior teeth due to the congenital absence of lateral incisors. The patient had a metal ceramic crown on the right canine tooth, a three unit fixed partial denture from the left canine to the first premolar teeth, and a big amalgam restoration on the second premolar tooth. Both of the crowns on canine teeth were very large due to the diastemas between central and canine teeth. The patient's previous metal ceramic restorations were removed. It was decided to restore all incisors and left premolars in maxilla with full porcelain restorations to gain a better esthetic.
Conclusion: The patient was very satisfied with the result and had no complaints at the following control after six months.

P-150

A three-unit lithium-disilicate glass–ceramic partial coverage restoration of anterior teeth: A case report

P Imirzalıoglu, D Çınar
Baskent University Faculty of Dentistry Prosthodontic Department Ankara, Turkey

Full crown preparation always presents a risk to pulp vitality and may lead to pulp reactions in the long term. Approximately 63–73% of the coronal tooth structure is removed when teeth are prepared for all-ceramic crowns. Therefore it seemed desirable to adapt the type of abutment preparation to avoid loss of sound tooth structure, not only for single tooth restorations, but also for fixed dental prostheses in the anterior teeth region. In subsequent years, progress in adhesive bonding techniques and improved luting composites as well as the development of ceramic materials with improved mechanical properties lead to a broader range of partial coverage restorations.
A 21-year-old woman was self-referred to Baskent University, Faculty of Dentistry, Ankara. The chief complaint was the lost of right maxillary central tooth. Orthodontic therapy was made to provide a place for implant placement. As the bone volume was not suitable for implant placement after the orthodontic therapy it was decided to make a partial coverage restoration. For the abutment teeth, a labial reduction of at least 1.5 mm was prepared, followed by a circular 1.2 mm wide rounded shoulder preparation. Lithium-disilicate glass ceramic material was used to make a fixed partial denture with partially covered abutment teeth. Palatal sides of the teeth were not touched. Incisogingival lengths of the anterior teeth were not change. In this way anterior guidance of the natural dentition did not effect from the restoration. The patient was satisfied both esthetically and functionally.

P-151

Aesthetic restorations of multiple missing maxillary anterior teeth: A two-case report

M Tuzlalı[1], E Kale[1], I Damlar[2], F Bilgiç[3]
[1]Mustafa Kemal University Faculty of Dentistry Department of Prosthodontics, Hatay, Turkey
[2]Mustafa Kemal University Faculty of Dentistry Department of Oral Surgery, Hatay, Turkey
[3]Mustafa Kemal University Faculty of Dentistry Department of Orthodontics, Hatay, Turkey

The aesthetic and functional demands in the replacement of missing anterior teeth have always been a major focus of modern dentistry. Conventional fixed partial dentures comprising cantilever units; resin-bonded ("adhesive") bridges; conventional removable partial dentures; tooth supported overdentures; orthodontic therapy (closure of edentulous spaces) and implant-supported prostheses (fixed, retrievable or removable suprastructures) are the therapeutic modalities for tooth replacement in the aesthetic zone. The purpose of this study was to present two different clinical cases of teeth replaced by implant-supported prostheses fabricated using different techniques that enhance maximum esthetics in the anterior region.
This report presents the prosthetic rehabilitation of two middle-aged patients with missing anterior upper teeth, alveolar and gingival defects owing to periodontal problems or traffic accident. Compromised anterior region of both patients was restored using tooth and gingiva coloured porcelain over metal framework on screw retained titanium implant abutments or lithium disilicate framework on cement retained zirconium implant abutments. The prostheses provided sufficient lip support and natural look for the lost papillae and the patients were pleased with the achieved aesthetic and functional results.
In conclusion, the concepts and therapeutic modalities to treat patients with compromised anterior aesthetics exist nowadays and solving the problems by means of implant supported prosthetic approach is reliable and predictable issue. Many of the clinical situations requiring replacement of missing teeth in the aesthetic zone can be treated using similar prosthetic planning.

P-152

Prosthodontic rehabilitation of severely damaged endodontically treated teeth with zirconia based restorations: Case reports

I Sarıkaya
Gaziosmanpaşa University, Faculty Of Dentistry, Department Of Prosthodontics, Tokat, Turkey

Clinical data suggested that zirconia-based fixed partial dentures (FPD) may serve as an alternative to metal ceramic FPDs in the anterior and posterior dentition. Zirconia has been used to fabricate ceramic FPDs with relatively high flexural strength and fracture resistance, besides good aesthetics. Zirconia core allows concealing of dischromatic tooth. In this case report, prosthodontic rehabilitation of severely damaged endodontically treated teeth with zirconia-based FPDs was presented in two cases. Case 1; Women, 30, has Angle Class III malocclusion and complained about the appearance of her maxillary anterior teeth, which were endodontically treated and have excessive crown damage. Based on her demand four porcelain-veneered zirconia-based crown restorations were designed for her maxillary anterior teeth. Case 2; Man, 39, has Angle Class I occlusion with deep bite. His maxillary left first premolar has a bulk composite restoration with endodontic treatment. Vertical space between dental arches was poor for metal fused to porcelain restoration. Due to esthetic

considerations a zirconia-based porcelain crown restoration was planned for him. The CAD/CAM technique (Tizian Cut 5 Smart, Schütz, Germany) was used for handling of zirconia frameworks (Tizian Blank, Schütz, Germany) in all cases. Porcelain was veneered (Noritake Co, Japan) to zirconia copings with conventional techniques. And the restorations were cemented to the prepared teeth with glass-ionomer cement. After 6 months in service no major complications observed in all restorations.

P-153

Rehabilitation of dentition with full mouth porcelain fused to zirconium: Two case report

A Doğan, İ Karadağ
Doctorate student, Gazi University, Faculty of Dentistry, Department of Prosthodontics, Ankara, Turkey

Purpose: Since the existence of the metallic substructure prevents of the transmitting light, it is very hard to obtain the natural appearance. Hence, different types of ceramic materials are developed to provide esthetically appearance close to natural dentition.
Case 1: A 27 years old male patient attended our clinic because of the discoloration at his teeth and his complaint about aesthetics appearance. Teeth were prepared as a chamfer margin line. Gingival retraction was made by using retraction cord. (Ultrapack No.0.1,Ultradent, Utah, USA)
Case 2: A 65 years old male patient presented to our clinic due to the complaints of ineffectiveness in the upper and lower dentures. Application of implant supported fixed prosthesis to the maxilla and mandibula was determined. 8 implants to the maxilla and 8 implants to mandible were placed with surgery. After osseointegration, it was decided to make porcelain fused to zirconium fixed prosthesis because of his esthetics desire.
Materials and Methods: For both patient, impressions of the mandible and maxilla were taken by using condensing silicon impression material (Zhermack Zetaplus, Italy). Crowns of teeth were prepared from semi-sintered zirconium block. After try in of the zirconium substructure, ceramic veneering of crowns were prepared in the laboratory. it was cemented with Multilink.
Results: Esthetical and high functional fixed prosthesis were achieved by this cases. Patients were very satisfied after follow up sessions. There were no discomfort obtained with patients.
Conclusion: In these cases presented here, a CNC unit and porcelain veneering were used together to achieve satisfactory function and esthetics, and patients were recalled for periodical control to extend the longevity of their restorations.

P-154

Full mouth rehabilitation in a patient with mandibular prognathism

H Ahn[1], H Hwang[1], C Kim[2], B Kim[2], J Heo[1], K Yoon[1], H Yoon[1], J Han[2]
[1]Department of Prosthodontic Dentistry, Department of Dentistry, Dong-A University Medical Center, Korea
[2]Department of Oral and Maxillofacial surgery, Department of Dentistry, Dong-A University Medical Center, Korea

When losing teeth, there is a need for oral cavity reconstruction through fixed and removable prosthetic restoration. To provide stable occlusion to prostheses based on the intermaxillary relation produces functionally and aesthetically good results. However, when patients do not have normal intermaxillary relations, it is difficult to establish ideal occlusal relationships only by prosthetic treatment. In particular, force is not properly distributed because anterior guidance cannot be provided when there is a severe anterior crossbite. Therefore, posterior teeth are subject to non-functional force. For these patients with mandibular prognathism, it is necessary to have a normal anterior overlap by providing them with orthodontic treatment or orthognathic surgery.
The 39-year-old male patient visited the hospital with a complaint of pain caused by multiple dental caries. We planned oral cavity reconstruction using dental implant prostheses after tooth extraction. However, because the patient had skeletal Class III malocclusion and the vertical dimension was lost. In this state, it was required to perform orthognathic surgery because it was feared that crossbite would occur on the maxillary or mandibular anterior teeth and there would be an excessive labial inclination of the maxillary anterior teeth when restoring to normal maxillary and mandibular anterior overlap. First, BSSRO was performed after implant placement on maxilla. Two months later, implant placement was performed on mandible, and then was completed with metal-ceramic crown using the customized abutment. We report that we have obtained functionally and aesthetically satisfactory results through continuous oral hygiene control and periodic maintenance.

P-155

Rehabilitation of a patient with reduced occlusal vertical dimension

A Vayısoğlu, D Kaymak, L Nalbant
Department of Prosthodontics, Faculty of Dentistry, Gazi University, Ankara, Turkey

Increasing vertical dimension with a full mouth fixed restoration is a complex procedure that several factors such as maxillo-mandibular relationships, number of the remaining teeth and patients' expectations affect the treatment outcomes. This clinical report presents the full mouth rehabilitation of a 54 year old man with Angle Class III malocclusion and severe deep bite. Extraoral examination revealed reduction of the lower facial height caused by reduced occlusal vertical dimension. In intraoral assessments Angle Class III malocclusion, anterior cross bite and negative horizontal overjet in centric relation, missed teeth number of 14, 26, 31, 32, 41, 42 and 46 were examined. Furthermore, reduced occlusal vertical dimension was determined without any temporomandibular disorders. The appropriate occlusal vertical dimension was measured using Niswonger method and it was decided to be increased approximately 10 mm. To this aim an occlusal splint was made at new occlusal vertical dimension to evaluate the adaptation of the patient. This splint was used for 6 weeks. In clinical examinations no muscle tenderness or temporomandibular disorders was found. Patient was asymptomatic and comfortable with new occlusal vertical dimension. Then teeth preparations were completed. Full mouth metal ceramic restorations were cemented at the altered occlusal vertical dimension. After 6 months follow up period mechanical or biological complications were not observed.

P-156

Smile design with photoshop computer programme: A case report

MB Güncü, YE Özden, G Aktaş
Hacettepe University Department of Prosthodontics, Turkey

With the advances in modern restorative techniques, digital dentistry and orthodontics, it is possible to create optimal smile esthetics. Diagnosis and treatment planning of esthetic cases requires the use of photographs and some computer programs that are specifically designed to give the practitioner the information required to make that diagnosis and develop the treatment plan. Clinicians can predictably plan smile design and communicate anticipated results to patients and dental technician. Smile design includes an evaluation and analysis of both the hard and soft tissues of the face and smile. The aim of this case report was to demonstrate the use of photoshop program to obtain smile design. A 19-year-old girl was referred to the private clinic after her two-year orthodontic treatment with unpleasant smile. Radiographic-dental examinations were made and digital photographs were taken. Treatment planning was made with the aid of photographs. The photographs were inserted to photoshop computer program and final tooth shapes were determined. The designs of the restorations were defined and effective communication was achieved with the patient. Consequently following to gingival alveoloplastic surgery two all ceramic crown and two veneer restorations were made. Photoshop computer program can be used to create smile design.

P-157

Long term CAD/CAM provisional restorations in young patients

N Telemes, G Kouveliotis, G Papavasiliou
National and Kapodestrian university of Athens, Prosthodontics, Greece

Recently introduced CAD/CAM technology has enabled us to manufacture provisional restorations from prefabricated highly filled acrylic blocks. These polymer materials have a highly homogenous structure which increases resistance to wear. Also the lack of residual monomer improves biocompatibility. Furthermore marginal adaptation is favoured as these materials do not present volumetric changes, as the milled blocks are prepolymerized. The high flexural strength (180-200MPa) contributes to low fracture rates under fracture loads. With CAD/CAM technology the diagnostic wax-up can be scanned and accurately replicated in the milled provisional restoration in short time.
Provisional restorations can serve as a great functional and esthetic mean, for the fabrication of final prostheses. The facial vertical growth in ages of 5-18 years old, has been measured at 1.5-3.5 mm per year. It is very important that provisional restorations follow this dynamic relation in young patients.
In this case series two young patients were prosthetically treated after orthodontic treatment was completed: A 13y.o boy with a history of radiation therapy and large interdental spaces and a 16 y.o. girl with a surgically fixed cleft palate and several missing teeth. Long term CAD/CAM provisional restorations were provided to establish function, phonetics and an esthetic appearance until growth is completed.

P-158

Chairside multidisciplinary approach for molar teeth after trauma: Two case reports

E Akan[1], M Kan[1], S Köseoğlu[2]
[1]İzmir Katip Çelebi University, School of Dentistry, Department of Prosthodontics, Izmir, Turkey
[2]İzmir Katip Çelebi University, School of Dentistry, Department of Periodontology, Izmir, Turkey

Tooth fracture is a common complication after root canal treatment. Devitaled teeth become more suspicious against occlusal forces during functional activities. The type of fracture could involve enamel and/or dentin.
This poster presentation two case with molar teeth fracture after endodontic treatment was reported. Fracture was confirmed to enamel and dentin, but fracture line was ended at subgingival area for both cases. After the clinical and radiological examination, performing chairside CAD/CAM restoration that reaches the fracture line at the subgingival areas was decided. Residual filling materials were removed. Fracture line surgically exposed by removing flap and deep chamfer finish line were prepared. Digital impression were taken, restorations were designed and fabricated. Restorations were adhesively cemented excessive cement was removed. Flap was sutured at the same appointment. CAD/CAM technology enables the use of prefabricated polymer materials, which are fabricated under industrial conditions to form a highly homogeneous structure compared. This increases long-term stability, biocompatibility, and resistance to wear. Furthermore, they offer more suitable CAD/CAM processing characteristics and can be used in thinner thicknesses than ceramic restorative materials.
These two case reports present how a chairside CAD/CAM system can be used to provide such a restoration in the posterior region in a single-visit with multidisciplinary approach.

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Chairside CAD/CAM solutions in prosthodontics: Sirona CEREC Omnicam system

Ç Ural[1], İ Duran[1], N Tatar[1], B Yılmaz[1], MA Aslan[2]
[1]Ondokuz Mayıs University, Turkey
[2]Abant İzzet Baysal University, Turkey

In recent years the patient's aesthetic demands are increased. As a result of this point, there has been growing interest in the use of all-ceramic restorations as replacements for traditional porcelain fused to metal (PFM) restorations. The esthetic disadvantages of PFM restorations, can be solved by all ceramic restorations. Developments in ceramic material science have resulted in improvements in the physical properties of modern ceramics, leading to a substantial increase in the clinical use of all-ceramic restorations. Also, by the development of technology, computer aided design/computer aided manufacturing (CAD/CAM) fabrication procedures are presented. CAD/CAM technology presents to the patients more aesthetic restorations in much less time. The continuous evolution of digital dentistry and the CAD/CAM process has allowed significantly different clinical and laboratory procedures. The use of chair side systems provide a lot of advantages to the patient and the dentist. In our study we present some case series of single crowns and inlays-onlays fabricated by chairside CAD/CAM technology. And the present cases reports demonstrate the effective usage of CEREC Omnicam System for designing and fabricating restoration in one visit. We prefer, feldspathic ceramic blocks for fabricating these restorations,

fundamental principles of the chair-side CAD/CAM system are presented along with a variety of clinical cases.

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The use Of CAD/CAM technology to fabricate a custom ceramic implant abutment and crown: A case report

A Doğan[1], E Tamam[2], MS Ataç[3]
[1]Doctorate student, Gazi University, Faculty of Dentistry, Department of Prosthodontics, Ankara, Turkey
[2]Research associate, Gazi University, Faculty of Dentistry, Department of Prosthodontics, Ankara, Turkey
[3]Associate professor, University, Faculty of Dentistry, Department of Oral and Maxillofacial Surgery Ankara, Turkey

Purpose: Technological advances at CAD/CAM systems created an alternative to conventional laboratory manufactured ceramic restorations. CEREC system is a chairside 3D system and it become more popular day by day by its advantages.
Materials and Methods: After making an implant, a 60 years old female patient attended our clinic. It is decided to make a denture prosthesis without metal backed because of her esthetics desire. Intraoral optical imaging was made with Cerec Omnicam and for abutment screening, Straumann 4.1L Scan Post and Ti base was used. The abutment was designed with Cerec In-Lab system and we decided to use Cerec ZI zirconia block. First, custom abutment was milled at milling unit for the first layer of restoration and sintered for 6 hours. Then, it was cemented with Ti base Panavia F. After the Zirconia Abutment was implanted, Intraoral optical imaging was taken again with Omnicam for crown. The bioreference made was used for gingival use and the symmetrical lateral tooth of the patient was used in the course of dental design. CEREC feldspatic block (SM3) was used for the color of the crown, and it was obtained at CEREC milling unit (CAM).The process of the glaze and odontograph of the restoration was made at the IVOCLAR P 300 furnace. The completed crown of tooth was cemented with Multilink.
Results: Patient satisfaction was attained with shortened treatment duration and restoration yielded a satisfactory result.
Conclusion: Ceramic abutment has the strength and precise fit of a titanium interface and also the esthetic advantages of shaded custom-milled zirconia, with no visible metal. Restoration materials provide esthetic advantages with regard to high color stability.

P-161

The multidisciplinary treatment of a patient with dental trauma

Ö Tak[1], Z Güder[1], B Kan[2]
[1]Department of Prosthodontics, Faculty of Dentistry, University of Kocaeli; Kocaeli, Turkey
[2]Department of Oral&Maxillofacial Surgery, Faculty of Dentistry, University of Kocaeli; Kocaeli, Turkey

Purpose: The cases requiring esthetic and functional reconstruction at the site of trauma are usually challenging in terms of implant placement and prosthetic restoration because of the lack of bone and soft tissue support. To be successful, an implant-supported restoration should meet biological, mechanical, and esthetic goals. The aim of this clinical report is to

describe a multidisciplinary treatment of a patient with the complaint of tooth loss caused by trauma.
Materials and Methods: A 47-year-old male patient was referred to our clinic with the complaint of tooth, bone and soft tissue loss caused by trauma. There was a fracture at the left mandibular region and stabilized by surgical plates. After healing, 5 dental implants were placed in each jaw. Metal frameworks, which supported by custom abutments were fabricated, tried in and refined until they seated passively. The definitive metal-ceramic restorations were inserted by 35 N/cm^2 torque after the verification of occlusion.
Results: The patient's aesthetic and functional expectations were achieved immediately. At 6 months follow-up no aesthetic, biological, functional and biomechanical complications were observed.
Conclusion: Due to the presence of different treatment approaches for such complicated cases, multidisciplinary treatment including implant-supported fixed restoration can be always recommended to achieve greater masticatory function and higher patient satisfactions compared with removable dentures especially for patients with dental trauma.

P-162

Chair-side fabrication of custom-zirconia-abutment and porcelain veneer: A case report

IT Mese[1], E Akan[1], M Ulu[2]
[1]Izmir Katip Celebi University, Faculty Of Dentistry, Department Of Prosthodontics, Izmir, Turkey
[2]Izmir Katip Celebi University, Faculty Of Dentistry, Department Of Oral and Maxillofacial Surgery, Izmir, Turkey

Purpose: The purpose of this case report was to present the fabrication stage of a custom zirconia implant abutment and porcelain restoration in the anterior esthetic zone with computer-aided design and computer-aided manufacturing (CAD/CAM) technology.
Materials and Methods: A 36-year old male patient was referred to the Izmir Katip Celebi University, Faculty of Dentistry, Department of Prosthodontics with an implant at the right central incisor region without immediate load. After healing process, the implant impression was made with an impression coping by intraoral digital scanner. Digital impressions were then used to design the definitive CAD/CAM-fabricated fixed dental prosthesis. A custom-milled zirconia framework was designed and after that, feldspathic veneer restoration for esthetics and final shape were then digitally designed. The designed zirconia framework and feldspathic porcelain veneer were milled with chairside milling unit. The finished zirconia framework was cemented to the Ti-base and then zirconia framework was screwed to the implant. The feldspathic veneer restoration was cemented to the zirconia framework with composite resin cement at the same appointment.
Conclusion: Using CAD/CAM technology, chair-side implant restorations can be fabricated easily and obtained more predictable results in the esthetic zone.

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3D implant planning in immediate implant rehabilitation: A case report

O Ozan[1], S Kurtulmuş Yılmaz[1], LO Uyanık[2], AO Hamiş[1], S Ramoğlu[1]
[1]Department of Prosthodontics, School of Dentistry, Near East University, Nicosia-Mersin, Turkey.
[2]Department of Oral and Maxillofacial Surgery, School of Dentistry, Near East University, Nicosia-Mersin, Turkey.

The success of implant-supported restorations depends on the treatment planning and the transfer of planning through the surgical field. Recently, new CAD/CAM techniques such as stereolithographic (SLA) rapid prototyping have been developed to fabricate flapless surgical guides to improve the precision of implant placement and therefore they enable immediate loading with their minimal invasive manner. The objective of the present case is to represent a patient that was treated with an immediately loaded implant-supported fixed prosthesis with the help of computer-assisted 3D planning.
A 62-year-old edentulous man underwent computerized tomographic (CT) scanning, and the cross sections were reformatted. The cross sections were used to construct a flapless SLA surgical guide. Eight implants were placed using a handpiece guided SLA surgical guide with flapless surgery. Within 48 hours after surgery implants were immediately loaded with 12-unit metal fused to ceramic fixed partial restorations. 2 months after surgery new contemporary metal fused to ceramic restorations were fabricated with the aid of CAD/CAM technology. Osseointegration of the implants, peri-implant mucosa health, and prosthesis function were assessed every 6 months for two years. In the clinical follow-ups; patient was satisfied with the esthetic, function and phonation of his restoration.
Computer-guided implant surgery with a flapless approach and application of the immediately loading protocols can be very effective treatment option in implant dentistry.

P-164

Guided implantation of a patient with an impacted maxillary canine

S Ramoğlu[1], O Ozan[1], HG Yılmaz[2], S Kurtulmuş Yılmaz[1]
[1]Near East University Prosthodontics, Turkey
[2]Near East University Periodontology, Turkey

Purpose: Treatment of patients with impacted maxillary canine teeth has always been a challenge for the implantologists. Various treatment alternatives can be considered for successful clinical results with/without the extraction of the impacted canine. The purpose of this presentation is to achieve a successful implant treatment without the extraction of the canine in order to obtain more atraumatic surgery.
Case presentation: A 53 year-old male with an impacted maxillary left canine was attended to our clinic with a complaint of the restoration of his edentulism in the impacted canine area. The principle of radiographic parallax was employed to determine whether there were enough space in the buccal or palatal of the impacted canine and desired space was obtained in the buccal area for implant treatment. Surgical planning was performed by means of a computerized tomography (CT) based 3D implant planning system. Two implants were inserted with the use of stereolithographic surgical stent and immediately afterwards an additional Cone Beam CT (CBCT) was obtained in order to check the localization of the implant with the impacted canine.
Results: A safe space of 2 mm was achieved with the impacted canine and it was concluded

that CAD/CAM stereolithographic surgical guides, along with CBCT images and scanning data, might help clinicians in the anatomically limited areas.

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Complications in implant restoration following orthodontic extrusion in the anterior maxilla

V Kofina[1], D Kolovos[1], I Kormas[1], S Sivestros[2], V Chronopoulos[3]
[1]DDS, Private Practice, Athens, Greece
[2]Assistant Professor, Department of Prosthodontics, National and Kapodistrian University of Athens, Greece
[3]Professor of Restorative Dentistry, School of Dentistry and Oral Health, Griffith University, Gold Coast, Australia

Purpose: A well-documented approach for ridge preservation of bone and soft tissues of severely compromised, periodontally involved teeth is orthodontic extrusion. Although, some complications may occur. The aim of this poster presentation is to address a clinical case, in which the above described method was applied.
Materials and Methods: A 44-year-old female patient was referred to our dental clinic for extraction of teeth #21, #22 due to severe periodontal disease. After clinical and radiographical evaluation, orthodontic extrusion of these teeth was decided. After 8 months of extrusion and 2 months of stabilization in their final position, the teeth were extracted, and the implants were placed simultaneously. A provisional fixed prosthesis extending from tooth #11 to #23 was fabricated. The implants were loaded with provisional restorations after 4 months. At a two month-follow-up appointment bone resorption and gingival recessions were observed. Therefore, periodontal surgery was performed, using a subepithelial connective tissue graft for the improvement of implant exposure. Still the final crowns were fabricated with gingiva-colored margins for better aesthetic results.
Results: This treatment option created the aforementioned postsurgical complications due to the insufficient time (two months) that we allowed for the stabilization of the orthodontic result.
Conclusion: The use of orthodontic extrusion, in periodontally compromised teeth, promotes the formation of a new bone and soft-tissue in a coronal direction, enabling an esthetic, and functional implant-supported restoration. Care must be given to strictly follow the current protocols.

P-167

Early implant failure associated with oral bisphosphonates: A case report

M Sevimay[1], G Yıldırım[2], C Akın[1]
[1]Selcuk University Faculty of Dentistry Department of Prosthodontics Campus Konya, Turkey
[2]Selcuk University Faculty of Dentistry Department of Maxillofacial Surgery Campus Konya, Turkey

Oral bisphosphonates are routinely prescribed to post menopausal women. These have shown to increase the osteonecrosis. However, this action may be augmented by local factors. This case report presents an early implant failure in a 60-year old woman taking oral bisphosphonates. In the first appointment of the patient according to treatment planning, 10

implants were placed in upper and lower jaws for a full-mouth fixed partial restoration. After implant surgery, the patient was began to take oral bisphosphonates for osteoporosis and continued bisphosphonate treatment during implant healing phase. When she came back for prosthetic treatment after 1 year, she had lost 5 implants. After implant failure thetreatment plan was changed and in maxilla tooth and implant supported fixed partial denture and in mandibula implant and tooth supported removable partial denture with precious attachments were planned and restored. This case report emphasizes on the incidence and an increased risk of implant failure in patients taking oral bisphosphonates. Altough the adverse effect of oral bisphosphonates in bone the prosthetic restorations were succesfully done with the rest of the implants and the patients esthetic and functional requirements were provided.

P-168

A different approach to screw retained implant supported crowns; case report

S Mutluay Ünal[1], S Emre Özkır[1], Y Atalay[2], Ö Çakmak[3]
[1]Afyon Kocatepe University, Faculty of Dentistry, Department of Prosthodontics, Turkey
[2]Afyon Kocatepe University, Faculty of Dentistry, Department of Oral and Maxillofacial Surgery, Turkey
[3]Afyon Kocatepe University, Faculty of Dentistry, Department Periodontology, Turkey

The patient attended to prosthodontics clinic with a single implant supported crown restoration in the left first molar region. The complaint was the frequent decementation of the crown. After the oral examination it was observed that short abutment height was the major cause of the complaint. Although the first treatment plan was a standard occlusal screw retained single crown, the implant was old and only a standard abutment could be achieved. Since a standard occlusal screw retained crown could not be manufactured, an alternative solution should be found to prevent frequent decementation while a short standard abutment was used. At first stage the abutment was shortened to provide enough space for the superstructure materials such as porcelain. Than a wax mock-up was prepared over the abutment and metal casting was manufactured with the abutment inside. After metal casting, the metal infrastructure was observed and it was seen that there was some melting and rounding on the apexes of sharp V type connection parts. The metal was tried intraoral and was seen that there were not any problems such as adaptation or screwing. At the second stage the porcelain superstructure was formed and the crown was screwed as an abutment and the screw hole is restored with composite resin.
Dealing with old implants sometimes become unpleasant as achievement of the spare parts is getting harder. At this point configurations of the standard parts can be a solution in these unpleasant situations.

P-169

Prosthetic management of an extensive maxillary alveolar resorption with an implant-supported restoration: A technical report

R Mosharraf[1], F Saadat[2], B Movahedian Attar[3]
[1]Associate Professor, Dental Material Research Center, Department of Prosthodontics, School of Dentistry, Isfahan University of Medical Sciences, Isfahan, Iran
[2]Prosthodontist, Dental Implant Research Center, Department of Prosthodontics, School of Dentistry, Isfahan University of Medical Sciences, Isfahan, Iran

[3]Associate Professor, Dental Implant Research Center, Department of Oral and Maxillofacial Surgery, School of Dentistry, Isfahan University of Medical Sciences, Isfahan, Iran

In spite of the recent developments in peri-implant surgical regenerative procedures, re-establishing the hard and soft tissue contours is still a challenge in cases with severe ridge deficiency. It becomes more difficult when incorrectly placed implants cause screw connections to come out onto the labial surfaces of the teeth. In this case we constructed a two part maxillary implant supported fixed restoration. The first part was consisted of a screw retained sub-structure that replaced gingival portions of deficient maxilla and the second part was a cement retained super-structure that reconstructed the anatomical crowns of lost teeth. In this way awkwardly placed implants did not interfere with desired aesthetic result. Another great advantage is that alterations or repairs on cemented crowns can easily be carried out without compromising the entire construction.

P-170

Oral rehabilitation of severely worn dentition using implants and fixed prosthesis

D Çınar, P Ergir
Department of Prosthodontics, Baskent University, Faculty of Dentistry, Ankara

Background: Excessive wear of the occlusal surfaces of teeth results in unacceptable damage to the occluding surfaces and alteration of the functional path of masticatory movement. The possible cause of worn dentition may be due to loss of posterior teeth, eating habit, possibility of dental negligence. Aim was to describe a therapeutic modality used in an elderly patient presenting with severe bruxism in association with dental erosion, good bone support and gingival health, but with a decrease in occlusal vertical dimension and posterior occlusal collapse.
Materials and Methods: A 70-year-old woman was self-referred to Baskent University, Faculty of Dentistry. Clinical examination of patient showed that there was a decrease in occlusal vertical dimension with posterior occlusal collapse, excessive wear of anterior teeth and there were six implants in posterior maxillary and mandibulary arch which were applied in a private clinic.
The interocclusal records were taken as she was edentulous. Following the 6 week occlusal splint therapy, aiming an increase in the occlusal vertical dimension, composite restorations were done to the lower anterior teeth. All mandibulary teeth and implants were restored with porcelain-fused-to metal crowns taken in order to maintain the occlusal vertical dimension previously obtained during the inter-occlusal records stage.
Results: It is very important to have continuous follow up for achieving successful occlusal adjustments, muscular evaluation through masticatory comfort and phonation.
Conclusion: This case report describes management of severe anterior attrition resulting due to loss of posterior teeth in a patient by posterior implants and mandibulary fixed prosthesis.

P-171

Custom cast post treatments on implant platform: Two case reports

E Dilber[1], EN Baytaroğlu[1], HB Kara[2], Ö Kara[3]
[1]Sifa University School of Dentistry Prosthodontics, Turkey
[2]Istanbul Medipol University School of Dentistry Prosthodontics, Turkey
[3]Bezmialem Vakif University School of Dentistry Prosthodontics, Turkey

For a long time developing dental implant technology offers a good treatment option for prosthesis of complete edentulous or partial edentulous patients. Despite developing implant treatments, several mechanic complications as screw loosening, screw or fixture fractures challenges prosthodontics after restoration of implant supported fixed or removable prosthesis. This paper reports two cases in which a patient had two unknown brand name of implants with deformed screw thread and in the other case in which a patient had a stuck healing cap that cannot be removed from implant platform. Prosthetic rehabilitation of these implants were solved with custom cast posts that used as an abutment and restored with fixed prosthesis.

P-172

Inaccuracies generated during conventional impression making in implant prosthodontics cases

P Galanopoulos, S Grous, A Grous, A Spaveras
Grous Dental Clinic, Athens, Greece

The purpose of this poster presentation is to demonstrate the various wrong decisions made during conventional impression making procedures in implant prosthodontics and their clinical implications resulting in generating working casts of questionable accuracy. Generating accurate working casts depends on various decisions related upon the proper selection of the impression material, upon the case to be restored, the proper selection of the type of the impression tray to be used for the impression procedure, implementing the most suitable impression technique related to the case.
The splinting of the impression copings, the implant analogues and finally the instructions given to the dental laboratory as to the type of stone to be used are of great importance. Emphasis also should be given on the careful handling by the dental technician during the positioning and tightening of the implant laboratory analogues.

P-173

Implant impression for full-banded orthodontic patient

N Fernández Formoso, B Rilo Pousa, L Lago González, L Dasilva Domínguez, C García Álvarez, MJ Mora Bermúdez, T González Veiga, E Hernández Pérez, I López Darriba, R Pérez García, U Santana Mora, U Santana Penín
Department of Prosthodontics and Occlusion, Faculty of Medicine and Dentistry, University of Santiago de Compostela, Santiago de Compostela, A Coruña, Spain

This article proposes a simple impression implant technique in orthodontic patient without the brackets remotion. Combining two types of materials of impression it is possible to

obtain an exact reproduction of the position of the implant and the impression material can easily be removed from the mouth.
Technique: A 60 year-old man in the course of full-banded orthodontic therapy needs reposition upper right canine through osseointegrated implant.
With the next procedure, take the impression:
- Manufacture a custom impression tray using light-polymerizing tray material.
- Perforate the tray for retention of impression material and access to the implant impression coping.
- After arch-wire remotion, the undercuts around the brackets must be blocked by modeling wax.
- Place Light-Bodied consistency vinyl polysiloxane impression material around implant impression coping.
- Mix irreversible hydrocolloid material according to the manufacturer's instructions and load the alginate into the tray.
- After setting remove the tray impression.
- Check the impression looking for presence of voids or pits and other inexactitudes.

P-174

Implant placement in the esthetic zone: A case report

T Genç[1], Ö Acar[2]
[1]Department of Periodontology, Faculty of Dentistry, Hacettepe University, Ankara, Turkey
[2]Department of Prosthodontics, Faculty of Dentistry, Baskent Univesity, Ankara, Turkey

Among the different techniques, the use of xenogenic particulate bone grafts and collagen membranes for socket augmentation before the implant placement represents predictable results. The aim of this case report was to present the treatment of a compromised extraction socket in the esthetic zone by soft and hard tissue augmentation prior to implant placement. Case: A 34 years-old male patient referred to our clinic with the main complain of pain at his left maxillary first incisor. Periodontal pathologic pocket formation, miller type 2 gingival recession and mobility were denoted. At the time of extraction no buccal bone was present and connective tissue graft+laterally positioning flap procedure were performed to augment the soft tissue prior to bone grafting. After 6 weeks for soft tissue healing, mucoperiosteal flap was elevated, particulate xenogenic bone graft and a collagen membrane was placed to the socket and flap was sutured without tension. After another 4 months for hard tissue healing mucoperiosteal flap was elevated and implant was inserted to area. Following 5 month of implant placement, zirconia cement retained abutment was used, and prosthetic rehabilitation was completed with zirconia single unit crown with the advantages of improved biocompatibility, high mechanical and esthetic properties of the material.
Conclusion: Bone augmentation procedures to reconstruct compromised extraction sockets, may enhance the esthetic and functional results of implant therapy. Prosthetic rehabilitation with biocompatible esthetic zirconium material may improve esthetic results.

P-175

Providing anterior esthetics with single implant and direct composite restorations

D Yılmaz[1], ME Başol[1], Ş Kurgan[2], L Karaağaçlıoğlu[1]
[1]Department of prosthodontics, faculty of dentistry, Ankara university, Ankara, Turkey
[2]Department of periodontics, faculty of dentistry, Ankara university, Ankara, Turkey

34 year aged female patient who was non smoker and did not show any systemic disease, during intraoral examination, necrosis and mobility at the right of central teeth because of trauma were observed. After the right central teeth extraction, the socket was grafted and the barrier was build with the use of titan membrane. After the healing period, Xive (Dentsply) implant was placed and the width of mesio distal located in the right central restorative space was 1.5 times larger than left central teeth. Maryland bridge was used as the provisional restoration. Then, the esthetic expectations of patient were considered. After the healing cap placed, conventional impression transfer procedures were followed. Next, diagnostic cast was acquired and mock up was build by the technician. The confirmation of patient was taken with showing this restoration. Zhermack C-Silicone was used as index material. With the help of this silicone index, the composite laminate restoration were build on the top of both right central and left lateral teeth, midline was arranged as harmonic to the face. The metal ceramic crown was cemented.

P-176

Reconstruction of single tooth loss with titanium or zirconia implants and abutments

M Kurt, M Bankoğlu Güngör, B Turhan Bal, S Karakoca Nemli, H Yılmaz
Department of Prosthodontics, Gazi University Faculty of Dentistry, Ankara, Turkey

Single-tooth replacement with dental implants has become a common treatment option. In anterior regions it is difficult to achieve esthetic outcomes. Dental implants and abutments are usually fabricated from titanium because of its high survival rates and mechanical properties. However their gray metallic color can cause gray or blue discolorations and an unnatural appearance of the surrounding soft tissues. In addition metal allergy may limit their use. Zirconia implants and abutments have been used as an alternative to titanium, due to its superior physical properties, biocompatibility, and esthetics. In this report, the reconstructions of 4 cases with single tooth loss in the anterior region were presented. The first case was treated by one-piece zirconia implant, and the other cases were treated by two piece zirconia implant, titanium implant - prefabricated zirconia abutment, and titanium implant- custom titanium abutment, respectively. All-ceramic crowns with zirconia substructure were fabricated for all patients. All patients were satisfied with the esthetic results of implant-supported restorations and did not have any problems regarding their implants and restorations in a year of service.

P-177

Recovery case of single-tooth implant restoration with CTG

Y Sato[1], K Ihara[2], E Muraishi[1], J Kojima[1], S Shimizu[1], C Ohkubo[1]
[1]Department of Removable Prosthodontics, Tsurumi University School of Dental Medicine, Japan
[2]Dental Technician Training Institute, Tsurumi University School of Dental Medicine, Japan

Outline: The patient, a 23-year-old man, lost his maxillary left central incisor; an implant had been placed by a previous dentist. However, the esthetics of the anterior tooth were inharmonious. In our diagnosis, the implant crown length was too long by the lost volume of labial tissue of the left central incisor. There was also a difference in the tooth crown width as compared to the adjacent central incisor.
Treatment policy: The horizontal and vertical tissue defect was augmented with connective tissue graft (CTG). The tooth crown's width difference from the adjacent central incisor was improved by placing a porcelain laminate veneer on the right central incisor.
Treatment process: The CTG was performed with a 2-stage approach. The horizontal volume of the soft tissue was augmented and the vertical height was provided as the first and second stages, respectively. The reduction amount for the porcelain laminate veneer was determined from diagnosis using the mock-up in preparation. Therefore, invasive reduction for the porcelain laminate veneer was hardly needed. The final restoration was able to achieve a PES/WES score of 19 and satisfied the patient very much when it was delivered.
Conclusion: Using CTG for augmentation of the soft tissue around the implant, esthetic tooth length could be recovered. The porcelain laminate veneer could improve the crown width by a smaller tooth reduction than a conventional full coverage crown.

P-178

Prosthetic management of ridge deficiency in the esthetic zone: A case report

H Öztürk[1], B Gökçe[2], M Sonugelen[3], H Koca[4], T Seçkin[4]
[1]PhD Student, Ege University School of Dentistry Department of Prosthodontics, Izmir, Turkey
[2]Assistant Professor, Ege University School of Dentistry Department of Prosthodontics, Izmir, Turkey
[3]Professor, Ege University School of Dentistry Department of Prosthodontics, Izmir, Turkey
[4]Professor, Ege University School of Dentistry Department of Oral and Maxillofacial Surgery, Izmir, Turkey

Contour and height of the facial gingival margins should be in harmony with adjacent ones, the papillae should completely fill the interproximal areas, and the prosthesis should reproduce the anatomy and color of the natural teeth. Rehabilitation of partially edentulous patient using a milled framework and cemented crowns approach significantly offsets ridge deficiency and tooth loss.
A 28-year-old partially edentulous female reported to our clinic with missing upper and lower anterior teeth seeking fixed prosthesis. Subsequent to clinical and radiologic examination, upper and lower removable restorations were fabricated for implant planning and to restore function and esthetics until the definitive treatment. 3 implant-supported screw retained hbyrid denture for the lower jaw and tooth supported fixed partial denture for the upper jaw was planned.

After a period of 6 months, maxillary and mandibular teeth were prepared and impressions were made for both jaws. Master casts were poured, screw retained framework for implants were milled from solid pieces of titanium with CAD/CAM. Metal-ceramic restorations were fabricated and framework was veneered with gingival pink porcelain to resemble soft tissue in gingival areas. The screw-retained framework then was secured to the implants. The crowns were cemented over the framework in a conventional manner. The patient was placed on an oral hygiene and periodontal maintenance protocol. The rehabilitation restored function and provided the necessary esthetics; the patient was seen at follow up maintenance with no complaints.

P-179

Staged treatment planning for implant rehabilitation in the esthetic zone

G Pozidi, G Kalantzopoulou, A Lamprinoudi, H Gousias
Department of Prosthodontics, Dental School, University of Athens, Athens, Greece

Optimal white esthetics and a natural-looking soft tissue architecture are a prerequisite for successful implant rehabilitation of the anterior region. The aim of this poster is to outline, through the presentation of two clinical cases, the sequence of treatment planning for achieving an esthetic result. Following implantation, the fabrication of an implant provisional (early or immediate loading) offers immediate function, enables tissue shaping for optimal esthetics and enhances the evaluation of the anticipated final result. Screw-retained provisionals exclude cement-inflicted gingival inflammation, have a highly polished intra-mucosal surface and provide easy removal for recontouring of the provisional crown. Approximately six months post-insertion, the achieved emergence profile is duplicated either by means of a customized impression post or by intraoral scanning of the abutment. The latter, enables the computer assisted design and fabrication of a highly esthetic, custom-made abutment. Taking everything into consideration, one can conclude that a staged approach of such cases in conjunction with careful application of each treatment step are prerequisites in order to successfully restore the esthetic zone with implants.

P-180

Complete edentulous rehabilitation with immediate function and 'all-on-4' concept

P Karasu[1], F Uğurlu[2], A Sertgöz[1]
[1]Prosthetic Dentistry, Marmara University, Istanbul, Turkey
[2]Oral and Maxillofacial Surgery, Marmara Univerisity, Istanbul, Turkey

Because of maximum usage of residual bone, reduced cantilever length and larger interimplant distance ‘all-on-four’ concept, together usage of straight and tilted implants, is a good treatment alternative in fixed prostehetic rehabilitation of complete edentulous jaws. In this case report immediate fixed prosthetic rehabilitation of 56-years-old female patient’s edentulous jaws are proved by ‘all-on-four’ concept. Implant placements are determined by initial volumetric tomography and implant planning program. Guta-perka marked base plate placed on jaws when imaging volumetric tomography is used as a template for indicating exact implant positions and inclinations during surgery. Also a specially designed surgical guide is used to facilitate correct implant tilting and precise positioning of the implants in relation to the opposing jaw. Diameter of 3.45mm and length of 12.5mm four implants (ICX, Germany) were placed in mandible, 3.45mm – 12.5mm two and 3.75mm – 12.5 mm two

implants were placed in maxilla. Two of implants in anterior were straight, last two implants in posterior had 30-40°angulation. To meet the inclination of posterior implants 30-40° abutments are used. Immediate prosthetic rehabilitation after surgery is supplied by modification of existing total dentures and temporary screw retained abutments. Implant stabilities are measured weekly by ostell mentor device until eighth week. Marginal bone loss is measured on periapical radyographies taken in operation, sixth and twelfth month. Permanent metal-fused-porcelain restoration is performed at third month. When implant stability and marginal bone loss are assessed, this method seems successful enough.

P-181

Full arch fixed partial dentures with all-on-4 concept: A Case Report

K Değirmenci[1], A Koçak Büyükdere[1], B Kan[2]
[1]Kocaeli University, Faculty of Dentistry, Prosthodontic Department, Kocaeli, Turkey
[2]Kocaeli University, Faculty of Dentistry, Oral and Maksillofacial Surgery Department, Kocaeli, Turkey

Purpose: Immediate loading is good choice for the esthetic outcomes of placed implants. Patient with health problem or patient with sinus lifting needs long surgical procedure for implant treatment and also sometimes patient does not want complicated procedure. All-on-4 concept started to be the good alternative for this kind of cases.
Materials and Methods: A 58-year-old male was presented to Kocaeli University Department of Prosthodontics with functional and esthetic problem. Clinically and radiographic examination were done. Because of severe bone loss 33, 35, 43, 44 and 45 teeth were decided to extract. Complete denture were the treatment options but patient stated that he wants to use fixed dentures. And also he wanted to have provisional prosthesis. Anatomic landmarks and remain bone volume were evaluated, all-on-four implant treatment was planned and applied. Before the surgery complete denture were done for the perfect centric relation. Provisional prosthesis were done in the same day of the surgery. Prosthesis were finished after 4 months the surgery, patient was satisfied with dentures biomechanically and esthetically.
Results: All-on-4 treatment concept can be a good alternative for edentulous cases, especially to avoid surgical procedures like bone graft and sinus lifting.
Conclusion: Edentulous jaws with severe bone loss and anatomic landmarks complicates implant treatment surgery and also prosthodonthic treatment. All-on-4 concept can overcome these adversities.

P-182

The rehabilitation of an edentulous cleft palate patient with implant retained overdenture: A case report

E Sancaklı[1], M Özdemir Karataş[1], ED Çifter[1], A Balık[1], Y Emes[2], G Evlioğlu[1]
[1]Department of Prosthodontics, Faculty of Dentistry, Istanbul University, Istanbul, Turkey
[2]Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, Istanbul University, Istanbul, Turkey

Cleft lip or palate is one of the most common congenital malformations, and treatment of this malformation needs a multidisciplinary approach. Orthodontic and surgical treatments are needed in the early age followed by prosthodontic treatment. The prosthetic rehabilitation

aims to obturate the palate, and separate the nasal and oral cavities, to improve chewing, swallowing and the speech. For prosthetic rehabilitation adequate hard- and soft-tissue support are required. In edentulous patients support and stability become a challenge for the prosthodontist. With the presentation of osseointegrated implants, speech, chewing, swallowing, and aesthetics together with retention and stability are improved. The aim of this case report is to describe the rehabilitation of an edentulous cleft palate patient with dental implant retained overdenture.

P-183

Mandibular overdenture on two implants: ball attachments VS locators

A Lamprinoudi, G Pozidi, G Papavasiliou
Department of Prosthodontics, Postgraduate Clinic, University of Athens, Greece

The number of totally edentulous patients is increasing as life expectancy is getting higher. As a result, the demand for dentures in every day dental practice is also getting higher. A common complaint from such patients concerns the instability of the lower denture due to lack of retention and support from a resorbed mandibular residual ridge.
The optimum therapeutic approach is the construction of a mandibular overdenture on two implants placed at the lower anterior residual ridge. The increase in retention of the overdenture is accomplished through a wide range of attachment systems such as bar, clip and stud type attachments. Recent consensus demonstarte that the "Locator" system is reliable for replacing previously used ball attachments. The purpose of this poster is to evaluate the advantages, disadvantages and indications of ball attachments versus Locator attachments, through a series of cases.

P-184

Maintenance of implant supported overdentures

B Acar[1], G Ceylan[1], G Ergun Kunt[1], N Yılmaz[2]
[1]Ondokuz Mayıs University Faculty of Dentistry, Department of Prosthodontics, Turkey
[2]Ondokuz Mayıs University Faculty of Dentistry, Department of Oral and Maxillofacial Surgery, Turkey

Dentists shoud suggest the treatments that would fullfill the expectations of the edentulous patients. Implant supported overdenture prothesis are alternative treatments to the complete dentures. The retention is provided by bar, ball, magnetic, locater and telescopic attachments.
Attachment selection is a crucial factor as well as implant location for the success of prosthetic treatment. Retention, flexibility mechanism, oral hygiene, prosthetic expectations, inter-implanter distance, residual bone quantity, arch form, inter arch distance and economic reasons are vital factors that should be considered in selection of attachment systems. The success of these dentures are related to proper biomechanic design and the health of peri-implant tissues. Dentist should inform and motivate the patient about prosthetic care. Patients should be informed about how to use dental brushes (manual-automatic), dental floss, dental toothpicks and oral irrigators. In regular control sessions, peri-implant tissues and prosthetic attachments should be examinated carefully. Plaque accumulations around the implants should be scaled and, if necessary attachment should be replaced. In this case report, we observed the edentulous patients who has implant supported

overdenture prosthesis with different attachments and their oral hygiene. After the clinical radiographic examination, the patient were found to be inadequate about prosthetic care.

P-185

Restoring the edentulous maxilla with implant supported fixed hybrid prosthesis

E Andrikopoulou, C Chatzinikolaou, N Tsagkari, F Kamposiora
Department of Prosthodontics, Dental School, University of Athens, Athens, Greece

The objective of this case is to present the management of a patient with broken upper arch using fixed hybrid implant prosthesis. Patient was in need of lip support and increase of vertical dimension. The aim of this prosthesis was to restore the patient both functionally and aesthetically.
The 60 years old female patient was presented with metal ceramic fixed partial dentures on teeth and implants. Most teeth were broken and her prosthesis showed mobility. Implants were immediately placed on sockets of extracted teeth and a year later the patient was given a hybrid prosthesis on implants #15, 13, 21, 24, 25, having a short arch natural opposing dentition.
Very good aesthetics was achieved using NanoHybrid Composite Teeth. Occlusion was restored on a pattern of group function with incisal guidance. The patient was provided with a night guard. Prosthesis presented good long term survival on a recall period of two years. Hybrid fixed implant restorations are an up to date prosthesis of low cost with excellent results on aesthetics and function. They are ideal when restoring extreme resorption of maxilla due to long term edentulism or skeletal problems, helping patients avoid tissue augmentation. They are a good alternative to overdentures providing patients with fixed prosthetic solution.

P-186

Stabilization splint therapy for a patient with myogenous temporomandibular disorder

PG Tütüncü, Y Burgaz, G Alp
Department of Prosthodontics, Faculty of Dentistry, Gazi University, Ankara, Turkey

The aim of this study was to give objective evidence to the assessment of treatment effect of stabilization splint for a myogenous TMD patient with clinical assessment and surface electromyography measurement of masseter and anterior temporal muscles. The clinical data and EMG results of patient with myogenous TMD before and after using the stabilization splint for six weeks were compared.
A canine guided stabilization splint was made of acrylic resin with a thickness of 2 mm. So simultaneous and even contact between the splint and all opposing teeth in the centric relation jaw position was provided. All interfering structures were identified by lateral and protrusive mandibular excursions and was systematically removed.
EMG signals were measured using Biopac 2.03 (BioResearch INC. Milwaukee, Wisconsin). EMG registrations were made during the two sessions; at the beginning of the treatment and after six weeks of splint use. This procedure was performed at mandibular rest position and maximum intercuspal contacted position.
In the current report, the stabilization splint gave an immediate, significant decrease of the total value of the electrical activity of the masseter and anterior temporalis muscles. The splint therapy had a correlation with the electromyographic changes in the masticatory

muscles. Stabilization splint could eliminate or improve the signs and symptoms of myogenous TMD. Based on the results, it may be proposed that wearing of stabilization splint might reduce the degree of fatigue of the masticatory muscles.

P-187

Diagnosis and prosthodontic rehabilitation in patients with severe bruxism

M Bristela, A Skolka, M Schmid Schwap, E Piehslinger
University Clinic of Dentistry, Prosthodontics, Austria

Zirconia crowns proved to be an adequate means in prosthodontic rehabilitation to restore function and aesthetics satisfying patients' expectations as well as prosthodontic requirements.
Introduction: Bruxism is a major cause for severe destruction of tooth structures. Excessive bruxing activity destroys the aesthetic appearance of patients by abrasion and abfraction and interferes with physiologic function by altering the occlusal relief.
Patient and Method: The standardized diagnostic and therapeutic procedure as utilized in the Prosthodontic Department of the Dental School in Vienna will be presented using a patient case. Verticalisation, wax-up and transfer of occlusal morphology into the prosthodontic restoration will be demonstrated.
Results and Conclusion: Zirconia crowns proved to be an adequate means in prosthodontic rehabilitation to restore function and aesthetics satisfying patients' expectations as well as prosthodontic requirements.

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Prosthetically correcting class III malocclusion

C Chatzinikolaou[1], E Andrikopoulou[1], N Tsagari[1], A Kotsani[2], V Chronopoulos[1]
[1]National and Kapodistrian University of Athens, Dental School, Department of Prosthodontics, Greece
[2]National and Kapodistrian University of Athens, Dental School, Department of Periodontology, Greece

A 50 years old female presented to the Postgraduate Clinic of the Prosthodontics Department seeking aesthetic and functional reconstruction. A comprehensive clinical and radiographic examination of the patient's maxillofacial structure revealed skeletal class III malocclusion, partial edentulism and high lip line. The vertical dimension was considered satisfactory.
An occlusal splint was administered to the patient for three months. Centric relation was recorded and casts were mounted in a semi-adjustable articulator using a face-bow. Detailed diagnostic wax up was performed, integrating all the desired changes. Existing restorations were removed and periodontal treatment was completed. Root canal therapies and teeth preparations were performed. Provisional restorations from the diagnostic wax were constructed. Duplicated provisionals were used as CT and surgical guides. Osseointegrated implants (Astra Tech, Molndal, Sweden) were placed at the sites of #15, 16, 24, 26, 36, 46. Provisionalisation was completed with a tooth and tissue supported restoration in the upper jaw and metal acrylic fixed denture prostheses with cantilevers in the lower jaw.
Final impressions of teeth and implants were taken separately using polyvinyl siloxane with

the closed tray technique. All ceramic Lithium disilicate (IPS e.max Press) restorations were utilized for the rehabilitation of the natural dentition on the lower jaw and metal-ceramic restorations for the implants at the posterior area. Zirconia crowns, with IPS e.max veneering were fabricated on the upper jaw. Dual-curing resin cement was used for the luting procedure (Variolink Veneer, Ivoclar Vivadent). A night guard was constructed for the patient to protect the restorations and periodontal maintenance was scheduled every four months.

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A solution for rehabilitation of angle-class2 patient: A case report

A Furuhashi, Y Ayukawa, I Atsuta, K Koyano
Section of Implant & Rehabilitative Dentistry, Division of Oral Rehabilitation, Faculty of Dental Science, Kyushu University, Fukuoka, Japan

Introduction: Prosthodontic rehabilitation for the severe angle-class2 patients with partial edentulism, problems with anterior guidance, occlusal support, and phonetic difficulties would occur. The aim of this presentation is to discuss the solution through our case. Patient: A 47-year-old man presented with a chief complaint of difficulty of chewing. In his lower jaw, most of the posterior teeth had been lost and the anterior teeth had no occlusal contact to the upper anterior teeth because the arch size of the mandible was smaller than the maxilla. After previous treatment of periodontal and endodontic tissue including extraction of hopeless teeth, anterior guidance was achieved with anterior palatal bar and lower anterior teeth by provisional crowns and dentures. Final prostheses were fabricated utilizing the provisional ones. After wearing the final prostheses, the patient received continual maintenance over four years without any major troubles.
Discussion: When the anterior palatal bar was applied with provisional denture, the patient felt the difficulty of speaking. Using palatogram assessment, shape of upper denture was carefully adjusted. The shape of anterior palatal bar was transferred to the final prosthesis with customized incisal table. This procedure might contribute to the patient's satisfaction.
Conclusion: Concerning the maxillomandibular relationship, high patient satisfaction was achieved with the prostheses.

P-190

Occlusal rehabilitation of class III malocclusion: A case report

M Bektaş Kömürcüoğlu, E Sağırkaya
University of Ordu, Department of Prosthodontics, Turkey

Class III malocclusion characterized by an anterior crossbite exhibits potential problems associated with esthetics and decreased occlusal vertical dimension. Due to the long time of orthodontic treatment or avoiding surgical procedures, prosthodontic treatments might be an option to provide acceptable functional occlusion and esthetic. Neuromuscular adaptation of patients to changes in occlusal vertical dimension is usually confirmed by the use of occlusal splint or provisional prosthesis.
This clinical report describes the use of occlusal splint to restore occlusal vertical dimension and then prosthodontic treatment of a patient with Class III malocclusion. As a result of tooth loss, decreased occlusal vertical dimension, anterior deep-bite and habitual occlusal relationship located in front of the centric relation has determined in the patient.

In first place, the determined adequate occlusal vertical dimension was redefined with an occlusal splint made out from acrylic resin. This procedure ensured a controlled adaptation to the newly obtained occlusal vertical dimension and broke the habituel occlusal relationship. At the end of a 2 months adaptation period, final maxillary and mandibulary fixed partial dentures were fabricated and placed in mouth. Following periodic clinical controls, not any complaint nor complication was determined.

P-191

Prosthetic rehabilitation of skeletal class-III patient

S Ok[1], R Gözneli[2], Y Kulak Özkan[3]
[1]Research Assistant, Department of Prosthodontics, Faculty of Dentistry, Marmara University, Istanbul, Turkey
[2]Assistant Professor, Department of Prosthodontics, Faculty of Dentistry, Marmara University, Istanbul, Turkey
[3]Professor, Department of Prosthodontics, Faculty of Dentistry, Marmara University, Istanbul, Turkey

Skeletal Class-III malocclusion is characterized by deviation in the development of the mandible and maxilla in the sagittal plane that the mandible is dominant in relation to the maxilla. In patients with Class-III malocclusion, anomalies in the vertical dimension of occlusion (VDO) and esthetic discrepancies are also frequent. VDO is defined as the distance between the mandible and maxilla when the opposing teeth are in contact. Although a static relationship in principle, the VDO is initially determined by the interaction of the genetic growth potential of the craniofacial tissues, environmental factors, and the dynamics of neuromuscular function during growth. Rehabilitation and treatment of malocclusion is one of the major goals of modern dentistry.
A 43-year-old man who had Class-III malocclusion and poor esthetics, was referred to Department of Prosthodontics in Marmara University, Faculty of Dentistry. After the clinical and radiographic examination the patient's demand were evaluated. In accordance with cephalometric radiography, it was planned to treat Class-III malocclusion by increasing VDO. For the neuromuscular adaptation, an overlay removable partial denture (ORPD) in increased VDO had been used for 6 weeks before prosthetic treatment. The ORPD was made according to the optimum facial height, closest speaking space and free way space of the patient. After the adaptation period, the patient's aesthetic and functional expectations were met with fixed and removable partial dentures by preserving the new VDO.

P-192

The development of prosthetic rehabilitation using intramucosal zirconia inserts: A case report

B Yılmaz[1], İ Duran[1], M Sümer[2], Ö Akbelen[2]
[1]Department of Prosthodontics, Faculty of Dentistry, Ondokuz Mayıs University, Samsun, Turkey
[2]Department of Oral and Maxillofacial Surgey, Faculty of Dentistry, Ondokuz Mayıs University, Samsun, Turkey

The rehabilitation of edentulous patients continues to be a major challenge to dentistry. A number of techniques and materials have been investigated in order to improve retention

and stability of complete dentures. After the 1990s, there was a significant decrease in the number of reports on the use of intramucosal inserts, probably due to the advent of osseointegrated implants and their use in dentistry. However, oral rehabilitation using implants is not appropriate for a large number of patients due to restrictions, such as local or systemic conditions that contraindicate implant placement, high-cost procedures and patient refusal.
This case report presents the use of intramucosal zirconia insert supported prosthesis in a 61 year old female patient with completely edentulous atrophic maxillary arch.
After 6 month of observation period it was seen that, patient's masticatory performance and oral functions has been improved and she was satisfied. Whereas oral rehabilitation by means of implant-retained maxiller prosthesis is known to improve oral function, intramucosal insert supported prosthesis is a treatment alternative when implant placement is contraindicated in the atrophic maxilla or the patient needs a simple and economical option.

P-193

Removable prosthodontics on zirconiumdioxide bar for complete edentulous patients

MA Picos[1], A Picos[1], H Rotaru[2]
[1]Department of Prosthetic Dentistry,"Iuliu Hatieganu" University of Medicine and Pharmacy, Cluj Napoca, Romania
[2]Department of Maxillofacial Surgery, "Iuliu Hatieganu" University of Medicine and Pharmacy Cluj Napoca, Romania

Periodontal disease generally leads to advanced edentulous crests atrophy, affecting functional stability of the conventional acrylic dentures. In these difficult cases, modern prosthodontics makes possible the gain of masticatory and psychological comfort using implant supported complete prosthodontics. Esthetic problems due to important bone loss can be resolved with a simple acrylic denture, but implants supported overdenture substantial improve life quality and self-confidence of the patient. Masticatory function can be improved using implant supported overdenture and, a normal diet is possible according to the good functional stability of the prosthesis. Favorable local and general health condition make possible the new therapy by an overdenture on implants supported zirconium dioxide bar. The conclusions of the interview and demands of the patient correlated with the clinical examination and radiological investigation, will make possible the correct indication of this modern alternative of prosthetic treatment. This relative new technique, using zirconiumdioxid bar instead of metal bar, has advantages but also risks.

P-194

A new titanium extracoronal precision attachment: A case report

O Acar[1], S Toprak[2], B Fırat[1], S Erkut[1]
[1]Department of Prosthodontics, Faculty of Dentistry, Baskent University, Ankara, Turkey
[2]Private Practice, Ankara, Turkey

Satisfactory restoration in a partially edentulous patient can be challenging especially when unilateral or bilateral posterior segment of teeth is missing. Successful restoration can be done with various conventional and contemporary treatment options. One such treatment modality is attachment-retained removable partial dentures (RPD). This kind of design is more acceptable for patients compare to clasp retained partial denture because of better retention, having less food retention, cosmetically enhanced profile, stability in addition

occupying less space. This case report describes rehabilitation of five patients with maxillary and/or mandibulary bilateral distal extension edentulous span restored with a RPD having an extracoronal castable precision attachment (ST attachments system). This new attachment system has different dimension of attachment height and its titanium female part (housing) generates some advantages on wear resistance. Parallelism has been easily obtained with the help of specially designed slotted tool. Every patient has unique oral health needs, and also has psychological and financial acceptance, therefore RPDs with precision attachment are still one of the well accepted treatment options by the patients. This new attachment design improves the fabrication and use of attachment-retained RPD for clinicians, technician and patient.

P-195

Rehabilitation of partial edentulism by modified hollow-type denture: Case report

Ş Şentürk, S Cengiz, G Sevimli
Department of Prosthodontics, Faculty of Dentistry, Bulent Ecevit University, Zonguldak, Turkey

The success of complete dentures, is based on fundamental principles such as retention, stability and alveolar ridge support. Nowadays, conventional approaches in dentistry is very popular. Therefore, protection of existing teeth is important in achieving an optimum function, aesthetic, phonation and to provide the proprioceptive ability of periodontium, while rehabilitating partially edentulous patients. The success or failure of a removable partial denture is dependent on many factors, which include the condition of the patient's mouth, the management of periodontally compromised teeth, and the long-term prognoses of such teeth. The treatment options for patients having periodontal damaged teeth includes overdentures, transitional dentures or immediate dentures following complete extractions. Overdentures cannot serve a solution for all such cases because of contraindications, need for prerequisite treatment, poor positioning of remaining teeth, requirement of more patient visits and economic reasons.
Partially edentulous patients, whose abutment teeth are not suitable for clasp retained partial denture and have aesthetic considerations, can be treated by conventional prosthetic approaches such as modified partial hollow dentures. They serve as a solution for single standing or isolated teeth present in dental arc. They rest on the soft tissues while providing a snug fit over existing, healthy tooth structures. It promotes healthy stimulation to maintain alveolar bone. Retention is improved, attachment devices are avoided, vertical dimension and proprioception are maintained. This case report describes a conventional method for rehabilitating a partial edentulous patient with excessive gingival recession and alveolar bone loss on anterior teeth.

P-196

Economic and non-invasive long-term temporary prosthesis in an undecided patient on treatment option

E Kale[1], M Tuzlalı[1], OF Arpağ[2], M Çilli[1]
[1]Mustafa Kemal University Faculty of Dentistry Department of Prosthodontics, Hatay, Turkey
[2]Mustafa Kemal University Faculty of Dentistry Department of Periodontology, Hatay, Turkey

Choosing among treatment options can be difficult for the patient when a tooth is suddenly lost, posing a dilemma for the patient between choosing the best treatment option and having an immediate treatment. As mainly attributed to periodontally compromised patients providing artificial teeth and sufficient time to decide on the definitive prosthetic treatment is of great benefit for them.
This case report presents the long-term temporary prosthetic rehabilitation of a middle-aged male patient willing to gain time before deciding on treatment option for a suddenly lost upper left central incisor due to periodontal disease.
Patient's upper left central incisor was extracted, disinfected and separated slightly under the cemento-enamel junction. Crown pulp was drained and the pulp chamber was irrigated and filled with composite resin that was bulked convex at root portion. Extraction socket healed for a few days and the processed crown was fixed in mouth at its original location using silicon matrix. The crown served as pontic that was adhesively bonded to the adjacent teeth using fiber-reinforced-composite in conjunction with non-invasive methods. Only minimal preparations in enamel and acid etching were performed. The patient was pleased with the result of this long-term temporary prosthesis and still is trying to decide on the best treatment option.
Sudden tooth loss may be stressful for the patients in terms of immediate deciding among the valid treatment options. Providing the patient with economic reversible provisional treatment and time as an opportunity to choose the best final treatment option is a comfortable contribution.

P-197

Complete denture rehabilitation using fully adjustable articulator: A case report

İ Yöndem[1], E Talay[1], T Türkay[2]
[1]Department of Prosthodontics, Faculty of Dentistry, Selcuk University, Konya, Turkey
[2]Ozel Turkay Dis Agız ve Dis Sagligi Poliklinigi, Bursa, Turkey

Complete dentures have had a long and successful history, benefitting edentulous patients by giving many of them an aesthetic, functional and socially acceptable replacement for their lost teeth. Correct prosthodontic procedures enable both the dentist and the technician to produce restorations compatible with the physiology and anatomy of the patient by using reliable materials, devices, and adequate and precise instruments. Fully adjustable articulators represent a simple and efficient mechanism to help with the registration of maxillar-mandibular relationships, mounting casts, and subsequent perfection of the occlusal scheme for various types of prosthodontic restorations. The handling of this new articulator (KaVo Protar evo, KaVo Dental GmbH Biberach/Riß), the records of the mandibular positions and movements, and all the clinical and laboratory procedures follow a simple sequence.
The aim of this case report is to present complete denture rehabilitation by using fully adjustable articulator to a 64 year old edentulous patient.
A 64-year-old woman was referred to the Department of Prosthodontics, Selcuk University, Faculty of Dentistry, for dental rehabilitation. Her chief complaint was unaesthetic appearance and difficulty in masticating by reason of her own complete prosthesis. Detailed medical and dental anamnesis was obtained, complete dentures by using fully complete articulator was finished. This treatment perfected the occlusion and aesthetic, and met the patient's stability and retention expectations. Definitive treatment outcomes in terms of function and aesthetics satisfied the expectations of both the patient and the doctor. Patient was satisfied with the treatment outcome.

P-198

Use of silicone lining material for a bone torus with extraordinary growth

E Muraishi[1], N Harada[2], Y Sato[1], C Ohkubo[1]
[1]Department of Removable Prosthodontics, Tsurumi University School of Dental Medicine
[2]Dental Technician Training Institute, Tsurumi University School of Dental Medicine

Outline: A 64-year-old man had several extraordinary bone torus growths in his maxillar and mandibular edentulous jaws. Generally, the pain threshold is lowered because the mucosa is thinner on the bone torus. Without relief on the bone torus or surgical resection, great pain would be felt when placing a denture. However, relief to a wide area might make the denture unstable, and most patients do not agree to surgical resection.
Treatment policy: Silicone-based soft lining material affixed to the bone torus reduces pain. Retention and stability of the denture will be simultaneously obtained by adapting silicone-based soft lining materials to the undercut of the bone torus.
Treatment process: More careful impression making, registration of the occlusal relationship, and try-in wax dentures were utilized because adding or deleting the silicone-based soft lining material was difficult. After the dentures were completed, soft lining material (Molloplast® B, DETAX GmbH & Co. KG, Germany) was affixed under the denture bases until 0.5 mm undercut of the bone torus. Retention and stability of the maxillar and mandibular dentures were considerably improved without pain or decubitus ulcers, and patients indicated higher satisfaction. One year later, the dentures had changed little, and no abrasion or deterioration of the lining material was observed.
Conclusion: Using silicone-based soft lining materials on remarkable bone tori could contribute to pain relief and improved retention and stability of maxillar and mandibular dentures.

P-199

Rehabilitation of unilateral maxillar defect with removable prosthesis

MA Zeinalabdeen, F Sarı, A Seçilmiş, K Korucuoğlu, I Büyükhatipoğlu, İ Şimşek
Gaziantep University, Faculty of Dentistry, Department of Prosthodontics, Gaziantep, Turkey

Maxillofacial defects may be caused by congenital, acquired and developmental factors. These defects are prosthetically restored after being subjected to surgical reconstruction. Maxillofacial prosthesis are extremely essential and have different significance in all of other prosthesis due to restoration of all stomatognatic system components, related tissues and also gives patient more social relations, good life standarts and acceptable aesthatic results. The aesthetic result after production of prosthesis is the most important element in clinical success or failure.
In this case report rehabilitation of 58 years old male patient with unilateral maxillary segmental defect resulted by gunshot injury by upper partial denture is described. In this way, the patient's aesthetic, function and phonation aimed to regained again.

P-200

Prosthetic rehabilitation of hemimaxillary defect patient by poliamide material: A case report

NZ Aktaş, ŞB Türker
Prosthodontics Department of Marmara University, Istanbul, Turkey

Maxillectomy defects result in the formation of an opening between the oral cavity and the antrum and/or the nasopharynx. These defects are extremely irritating to the patient because of the loss of oronasal separation which substantially interferes with the important functions such as speech, swallowing, deglutition and mastication. A comfortable, cosmetically acceptable obturator prosthesis that restores the impaired physiologic activities is a basic objective of prosthodontic care. Deflex is a semi-flexible polyamide denture material. Advantages of these dentures are their flexibility and highly elastic nature, which decrease the stress on abutment teeth and its esthetics and weight abilities are very satisfying from the prosthetic aspect. The aim of this study was to describe the prosthetic treatment and one year recall results of a Class 2 maxillary defect patient (Aramany 1978) with a polyamide material (Deflex®, Buenos Aires, Argentina). Twenty-one years old male patient was referred to the University of Marmara, Department of Prosthodontic, at 2013. He had operated from his left sinus area due to the maxillary sinus carcinoma at 2009. He had had any prosthodontic care. The prosthetic rehabilitation of the patient was completed with a metal framework supported poliamide removable partial denture as the esthetics and preservation of tooth was important.

P-201

Rehabilitation of unilateral maxillectomy patient with an implant supported obturator

O Ozan[1], S Kurtulmuş Yılmaz[1], LO Uyanık[2], H Aktöre[1], S Ramoğlu[1]
[1]Department of Prosthodontics, School of Dentistry, Near East University, Nicosia-Mersin, Turkey
[2]Department of Oral and Maxillofacial Surgery, School of Dentistry, Near East University, Nicosia-Mersin, Turkey

Unilateral maxillectomy is known to have serious esthetic and functional consequences. The retention and support of maxillary obturator prosthesis in these patients is particularly challenging. This case report describes the maxillofacial rehabilitation of an elderly woman who underwent a unilateral maxillectomy due to squamous cell carcinoma of the hard palate.
In the clinical examination large oronasal communication and severe facial asymmetry, severe impairment of mastication, deglutition, phonetics, and speech intelligibility was observed. Due to insufficient bone support, 4 implants placed where available bone was detected. After 3 months of osseointegration period limited mouth opening was observed and therefore locator attachments were preferred to support the obturator. Using a modified impression technique, a maxillary hollow obturator and mandibular conventional complete denture was fabricated. It was observed that implant retainers significantly helped to retain a hollow maxillary obturator prosthesis that aided in improved swallowing, speech, and esthetics. Patient-reported functional and quality of life measure outcomes were dramatically improved after treatment and at the 6-month follow-up. These results suggest that a maxillary obturator supported by locater attachments is useful treatment option for oral rehabilitation of patients with partially resected edentulous maxilla.

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Rehabilitation of bilateral maxillectomy with an obturator prosthesis: Clinical report

Y Arslan, B Kökdoğan Boyacı, H Yazıcıoğlu, M Bankoğlu Güngör
Department of Prosthodonty, Faculty of Dentistry, Gazi University, Ankara, Turkey

Maxillary jaw resections can lead to significant facial deformity, impaired oral functions such as speech, swallowing, saliva retention, and phsycological problems. Moreover, the loss of teeth, alveolar and basal jawbone can lead to significant impairment of mastication. The reconstruction of such bilateral maxillary defects with obturator prosthesis has become valuable means for the rehabilitation of these patients. These prosthesis improves the ability of chewing function and phonation. The purpose of this clinical report is to present a bilateral complete maxillectomy patient rehabilitated with an obturator prosthesis. A 47 year-old total maxillectomy patient was referred to prosthetic department for prosthetic treatment. In intraoral examination it was observed that maxilla including hard plate was resected and bilateral concha nasalis inferior were in a relationship with oral cavity. The patient reported a medical history of squamous cell carcinoma of the maxillary arch which was surgically excised. The patient was treated with an hollow bulb obturator prosthesis and a removable prosthesis for mandible. It was aimed with the bulb, or part of prosthesis extending into the defect, is to reduce weight of the prosthesis. For achieving the bilaterally balanced occlusion, the stable simultaneous contact of opposing upper and lower teeth in centric relation position with smooth bilateral gliding was provided using a semi adjustable dental articulator. The patient stated that the prostheses provided that not only the appropriate support, stability, and retention but also the psychosocial well being. It was concluded a correctly designed obturator prosthesis helps to restore normal aesthetics, phonetics and function.

P-203

Prosthetic rehabilitation of patients with maxillofacial defect: Two case reports

S Ünver
Gazi University, Prosthodontics, Turkey

Lack or deformity of stomatognatic structures or related facial components is called maxillofacial defect. Oral rehabilitation of patients with intraoral maxillofacial defects can be ensured by means of fixed or removable prosthesis. The type and design of the intraoral maxillofacial prostheses depend on defect size, defect etiology, number and position of abutment teeth, health of oral tissues, and the patient's treatment needs. In this report, prosthetic treatment of two cases with maxillofacial defects is represented. In case 1, unilateral cleft lip-palate was treated with metal-ceramic fixed partial denture. In case 2, who had a mandibular defect as a result of a gunshot injury, reconstructed with implant-supported overdenture. After insertion of the prosthetic restorations, both patients were pleased with the esthetic and functional outcomes. Patients were recalled every 6 months. After 1 year function, in case 1, patient's oral hygene wasn't sufficient, slight oedema and gingivitis were obtained. In case 2, there were no complaints about the implant-supported overdenture.

P-204

Prosthetic rehabilitation of a sub-total maxillectomy patient: A case report

TB Çakır, ŞB Türker
Department of Prosthodontics, Marmara University, Istanbul, Turkey

The oromaxillary defects have significant physical and psychological effect on the patient. These defects cause transportation of the oral and nasal microflora. Without reconstruction or obturation of the defect, the patient will have some difficulties while talking and swallowing due to the opening of the ora-nasal cavity. Rehabilitation of the maxillary defects improves the quality of life of the patient. The aim of this study is to describe the prosthetic rehabilitation of a sub-total maxillectomy patient. A 59-year-old female patient diagnosed with adenoid cystic carcinoma seven years ago, was referred to the University of Marmara, Department of Prosthodontics with a complaint of speech, mastication and retention problems of her prosthesis. She had been using tooth retained obturator prosthesis after a sub-total maxillectomy surgery. Clinical and radiographic examination revealed that she had only left maxillary first molar tooth. Hemisection was planned to the mesial and palatinal roots of the related tooth, and distal root was kept to improve the retention of the maxillary obturator prosthesis. The prosthetic treatment was completed with telescope crown retained obturator prosthesis. The amount of favorable undercuts was also used for retention. The maxillary obturator was relined with Molloplast-B soft relining material. Six months follow-up recall revealed any complications. The patient was satisfied with her esthetic and functional rehabilitation of her maxillary obturator prosthesis.

P-205

Upper jaw rehabilitation in a patient with microstomia due to partial maxillectomy

E Kale[1], M Tuzlalı[1], HB Belgin[1], A Altan[2]
[1]Mustafa Kemal University Faculty of Dentistry, Department of Prosthodontics, Hatay, Turkey
[2]Mustafa Kemal University Faculty of Dentistry, Department of Oral Surgery, Hatay, Turkey

Oral carcinoma is a cancer with bad prognosis patients of which are treated with radical surgery and radiotherapy. After the treatment, restricted opening of the mouth depending on the radiation and cicatrization, and also risk of osteoradionecrosis occurs. Providing patients with decent prosthetic treatment becomes quite a difficulty.
This case report presents the prosthetic rehabilitation of a middle-aged female patient underwent an extensive maxillectomy followed by radiotherapy in head and neck region owing to squamous-cell carcinoma.
The impression of the upper jaw with missing pre-maxilla and complete left palate could hardly be taken using conventional methods. Defect margins relative to denture base could not be impressed properly due to restricted mouth opening. A dental model was poured and temporary removable partial denture was fabricated on it. Denture base margins were extended by gradually adding tissue conditioner executing long-term functional impression technique. Defect margins were imprinted on the impression after repeated relining procedures of the temporary denture. Patient's definitive prosthesis was fabricated on a cast obtained from the final impression and delivered to the patient. At the follow-ups, the patient expressed difficulty using the denture due to lack of retention, but the patient could eat more comfortably depending on the separation of oral and nasal cavities.
Life expectancy for patients with oral carcinoma is short and prosthetic rehabilitation

challenging owing to radical surgery and risk of osteoradionecrosis. Although, these patients could not receive ideal dental treatment, their life quality should be increased with non-invasive methods for the rest of their lives.

P-206

Multidisciplinary treatment of giant neglected multicystic ameloblastoma in the mandible

AE Şekerci[1], OA Etoz[2], H Albayrak[3], HO Gümüş[4], M Ulu[5], S Nazlım[6]
[1]Department of Oral and Maxillofacial Radiology, Faculty of Dentistry, Erciyes University, Kayseri, Turkey; Assistant Professor
[2]Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, Erciyes University, Kayseri Turkey; Associate Professor
[3]Department of Prosthodontics, Faculty of Dentistry, Erciyes University, Kayseri, Turkey; Research Assistant
[4]Department of Prosthodontics, Faculty of Dentistry, Erciyes University, Kayseri, Turkey; Assistant Professor
[5]Department of Oral and Maxillofacial Surgery, Faculty of Dentistry, IKCU University Izmir, Turkey; Assistant Professor
[6]Department of Medical Pathology, School of Medicine, Erciyes University, Kayseri, Turkey; Research Assistant

Ameloblastoma is a benign odontogenic tumor which has aggressive potential, a high recurrency rate and affects the bones of the maxillomandibular complex. Although it generally has an asymptomatic, slow-growing and locally invasive pattern, can cause swelling, dental malocclusion, loose teeth, or more rarely paresthesia and pain of the affected area, facial disfigurement and functional impairement. The tumor is thought to arise from sources that include the rest of the dental lamina, developing enamel organ, the basal cell of oral mucosa and the epithelium of odontogenic cysts.
Treatment of mandibular ameloblastoma continues to be controversial. Various treatment modalities such as enucleation, marsupialization, curettage, radiotherapy, chemotherapy, cryotherapy, resection or a combination of these techniques can be used to manage ameloblastoma. Due to its high capacity to infiltrate the bone trabeculae, multicystic ameloblastoma has a higher rate of recurrence and requires a more radical treatment than the other types.
In this poster presentation, we present a case of a woman affected by a giant mandibular ameloblastoma, treated by radical resection of the affected mandible and immediately reconstructed with a free fibula flap, prosthetic rehabilitation was done by placement of two implants in the anterior region.

P-207

Rehabilitation of irradiated patient with partially resected mandible: Clinical report

Y Arslan, H Yazıcıoğlu, M Bankoğlu Güngör
Department of Prosthodonty, Faculty of Dentistry, Gazi University, Ankara, Turkey

The goals in reconstruction of mandibular discontinuity defects are to provide architectural support to restore and preserve lower facial contour and occlusal relationships. The patients undergoing jaw resections with unrestored mandible have cosmetic disfigurement,

compromised function, and frustration with social functions. Implant supported prosthesis is an effective treatment option for functional and esthetical rehabilitation of these patients. Furthermore, it provides to improve the quality of life. However, these patients usually undergo radiotherapy, so implants may be failed. Because of the loss of osseointegration the clinician can have change the treatment planning. The purpose of this clinical report is to present an irradiated patient with a partially resected mandible by using implant supported prosthesis. A 51 year-old man with partially resected mandible was referred to prosthetic department for prosthetic treatment. The mandible was resected because of invasive squamos cell carsinoma of tongue. The prosthetic rehabilitation can be fixed, fixed with a removable component, or an overdenture retained by attachments. Firstly, it was decided to treat the patient with fixed prosthesis so five titanium implants were inserted into the mandible. However, two implants were lost during osseointegration period. For this reason the patient was treated with implant supported removable prosthesis with presicion attachments as locator and bar retained attachments. For improving the retantion; an extracoronal attachment was placed to remaining canine. And the maxilla was rehabilited with fixed partial dentures and presicion attachment prosthesis. The patient was satisfied with the final result of the prosthesis related with function and esthetic appearance.

P-208

Maxillary overdenture design for the mandibular resection patient

G Uzun, D Endam, F Keyf
Hacettepe University, Prosthodontics, Turkey

Purpose: This article presents treatment of a patient with mandibulectomy, including partial edentulism. The psychosocial aspects of these patients and rehabilitation with removable, fixed, and implant-supported prostheses are discussed. The factors to be considered are altered anatomy, lack of teeth or malformed teeth, teeth in abnormal positions. Success of the prosthesis after mandibular resection is related directly to the amount of the remaining bone and soft tissue present.
Materials and Method: This clinical report aims at utilizing the remaining natural teeth for a maxiller overdenture a patient with mandibular resection. Patient with a history of radiation therapy after segmental mandibulectomy, no teeth were removed, nor was root canal treatment provided, prior to maxillofacial prosthetic fabrication.
Result: There was wear on the teeth and inadequate chewing. Worn teeth were used to retention for maxillary prosthesis. Overdenture prosthesis was planned. Vertical dimension was increased. Occlusion was created. Chewing efficiency was increased. The patient satisfaction was achieved.
Conclusion: Prosthetic rehabilitation for such patients is a challenge for clinicians.
Overdentures are a modality of treatment. Maxillofacial prosthodontic treatment offers improvements in appearance, function, and health of patients with mandibulectomy.

P-209

Prosthetic rehabilitation planning in a patient with mandibular defect

E Kale[1], M Tuzlalı[1], OF Arpağ[2], M Adıgüzel[3]
[1]Mustafa Kemal University Faculty of Dentistry, Department of Prosthodontics, Hatay, Turkey
[2]Mustafa Kemal University Faculty of Dentistry, Department of Periodontology, Hatay, Turkey
[3]Mustafa Kemal University Faculty of Dentistry, Department of Endodontics, Hatay, Turkey

Rehabilitation of jaw defects often becomes challenging to the dental practitioner and difficult for the patient to adapt. Different defects require case-specific prosthetic planning and the success is sometimes much depended on the creativity of the treating dentist. This case report presents the prosthetic rehabilitation of a middle-aged female patient underwent a mandibular reconstruction owing to a large cyst enucleation in the right posterior lower jaw region.
The impression of the defected mandibula with a few anterior teeth among which an impacted one could be taken using a sectional impression method. Diagnostic casts were poured and a custom impression tray fitting the defect area was fabricated. The examinations revealed periodontally compromised mandibular incisors with poor prognosis for retention of a removable denture considering the existence of an alveolar defect and no indication for dental implants was viable. The crown portion of the impacted tooth was exposed and all existing lower teeth underwent root canal treatment and crown lengthening with osteoplasty. Clinical crowns were cut just over the gingival margins and all the teeth were splinted as one using metal cast frame with resilient precision attachments on it. The retention provided by the precision attachments rendered fabrication of an acceptable mandibular removable prosthesis distributing occlusal forces out of the defect area. Jaw defects are a complication for a satisfactory prosthetic rehabilitation and a challenge for the creativity limits of the dentist concerning treatment planning. Sometimes, multi-dimensional thinking is a necessity for the construction of functional and retentive defect prosthesis.

P-210

Maxillary and mandibulary prosthetic rehabilitation of a suicide patient

N Sarı, DÇ Ayvalıoğlu, E Sancaklı, B Gökçen Röhlig
Department of Prosthodontics, Faculty of Dentistry, Istanbul University, Istanbul, Turkey

Suicidal maxillofacial gunshot defects, comprising extensiv soft and hard tissue loss, are challenging for reconstruction. Tissue loss of the orofacial area may compromise function and often leads to patient's psychological disorders. Besides medical and psychological support dental function and esthetic need to be taken into account in order to complate the rehabilitation.
30 years old male patient, who comitted suicide in July 2012, was operated in Istanbul University Department of Plastic and Reconstructive Surgery and applied to the clinic of Istanbul University Faculty of Dentistry Department of Prosthodontics.
Maxillary defect was rehabilitated with a removable partial denture without cast metal framework that relined with temporary lining material for acceptable obturation. Mandibula has 2 independently moving segments which are conneted only by soft tissue. Lack of hard tissue connection contraindicated the rehabilitation with fixed partial prosthesis.

The lower jaw was rehabilitated with a removable partial denture without cast metal framework which was relined with temporary lining material to get maximum tissue support. It is difficult to treat patients with orofacial defects due to numerous factors. Our aim was to evaluate the outcome of the prosthetic rehabilitation of the suicide patient. In 3 months follow up, the patient expressed that he was satisfied with the function and esthetics. Combining both surgical and prosthetic treatments fullfills patient's demands.

P-211

Rehabilitation of an orbital defect: Case report

EB Gül[1], G Yıldırım[1], H Şiriner[1], M Kocacıklı[2], S Demirel[3], B Eşer[1]
[1]Department of Prosthodontics, Faculty of Dentistry, Inonu University, Malatya, Turkey
[2]Department of Prosthodontics, Faculty of Dentistry, Gazi University, Ankara, Turkey
[3]Department of Ophtalmology, Faculty of Medicine, Inonu University, Malatya, Turkey

Orbital defects occur after surgical procedures involving ligaments and soft tissues around eyeball such as upper and lower eyelids and eyeball. Several ocular and orbital diseases require surgical interventions that may result in ocular defects. Early intervention for the orbital prostheses provides preserving the required ophthalmic socket size and prevents the further scar tissue contractures that will result from the following surgery.
61 years old male patient diagnosed with basal cell carcinoma was referred to our clinic from ophthalmology clinic. According to surgical anamnesis, tumoral tissue had invaded from the lateral eyelid to the orbital, and was invasive to the fat tissue and the bone. Surgical approach was exenteration with upper eyelid shields conservation, and excision of the partial zygomatic bone and the upper wall of the maxillary sinus. Surgical margins were clean. However, additional radiotherapy was planned because neuronal and bone invasion was reported. Two months after the radiotherapy, an orbital prosthesis was constructed.

P-212

Prosthodontic treatment of a patient with gnathodiaphyseal dysplasia

T Otomaru, Y Aimaijiang, A Kanazaki, M Watanabe, S Yoshi, H Taniguchi
Tokyo Medical and Dental University, Maxillofacial Prosthetics, Japan

Patient: A 38-year-old woman was referred in 1986 before the resection of the exposured bone due to osteomyelitis (gnathodiaphyseal dysplasia, GDD). After the resection, the resin based removable partial dentures were delivered in the conventional way. Although the dentures were carefully adjusted to prevent osteomyelitis, the bone exposures were recurred several times. During the existence of the bone exposure and the healing period after dislodged spontaneously, the dentures were carefully adjusted with tissue conditioner. After wound was healed, the new dentures were fabricated several times. Over 30 years passed, the patient uses the maxillary overdenture with magnetic attachment and the mandibular complete denture. The results of an oral health related questionnaire showed that the patient was satisfied.
Discussion: It was thought that the careful adjustment would prevent the extended inflammation and bone fracture although it was not able to be prevented the bone exposure. It was thought that the appliance of the magnetic attachment to the patient with GDD would be a useful method to preserve the teeth because the magnetic attachments still exist.

Conclusion: She was satisfied with the dentures although the alveolar bone became severe bone resorption due to GDD

P-213

Prosthetic rehabilitation of an ocular defect

H Ağan[1], EU Altıparmak[2]
[1]Acıbadem Ankara Hospital, Department of Dentistry, Turkey
[2]Acıbadem Ankara Hospital, Department of Ophthalmology, Turkey

Purpose: Maxillofacial prosthetics involve rehabilitation of patients with defects or disabilities that were present due to disease or trauma. Loss of eye has a negative psychological effect, so ocular prosthesis should be provided for the psychological wellbeing of the patient. Maxillofacial prosthodontists should be accustomed to working cooperatively with ophthalmologist to construct ocular or orbital prosthesis.
Materials and Methods: This paper describes prosthetic rehabilitation of a female patient having a left ocular defect with custom porcelain ocular prosthesis. After the surgical operation due to lymphangioma, she had an facial asymmetry and was using a fabricated conformer. The patient's demand to have an acceptable esthetic appearance lead us to fabricate an ocular prosthesis.
After measurements of ocular defect, silicon impresion was taken. Digital photographs of the healthy eye were taken to be guide to restoration. After try-in session external staining was done to mimic the symetric one.
Results: The overall goal of all maxillofacial prosthetic treatment is to improve the quality of life. The patient was satisfied by aesthetically rehabilitation of missing eye with extraoral ocular prosthesis.
Conclusion: Prosthodontists are not only involved in the replacement of missing teeth but also facial structures such as eyes, ears, noses and jaws.

P-214

Prosthetic rehabilitation of the unilateral palatopharngeal obturator: Four year follow-up results

ŞB Türker
Department of Prosthodontics, Marmara University, Istanbul, Turkey

Obturator prosthesis for maxillary defects is frequently associated with problems that result from lack of retention and stability. However, when natural teeth remain, successful rehabilitation usually becomes more predictable. Post surgical obturator and definitive obturator design are related to main dentate area. The postsurgical obturator prosthesis is customarily fabricated of resin with wire retentive claps in strategic locations. Definitive obturator design is related to the size or location of the defect and also the number and position of the remaining teeth. One basic principle is maximum distribution of support for the obturator. The aim of this study was to describe the prosthodontics treatment of an acquired maxillary defect patient. 53 year old female patient was referred in 2008 to the University of Marmara, Department of Prosthodontics. She had a neoplastic lesion at right maxillary second molar region. Biopsy result indicated maxiller sinus adenocarcinoma. Postsurgical obturator was fabricated and placed immediately after the surgery. Definitive obturator was constructed after 3 months of healing period was achived. As she was a

dentate patient and as she want an esthetics rehabilitation, precision attachements maxillary palatopharngeal obturator with zirconia crowns were fabricated. The maxillary obturator was relined with Molloplast-B soft relining material. Four year recall follow-up revealed some complications as periodontal problem, but the patient was satisfied with her esthetics and functional rehabilitation of the maxillary palatopharngeal obturator prosthesis.

P-215

Treatment of hemifacial microsomia with osseointegrated auricular prosthesis: An alternative technique to surgery

M Özdemir Karataş, ED Çifter, A Balık, E Sancaklı, B Gökçen Röhlig
Department of Prosthodontics, Faculty of Dentistry, Istanbul University, Istanbul, Turkey

Hemifacial microsomia is the second most common developmental craniofacial malformation after cleft lip and palate. Hemifacial microsomia can be seen as a deformity in shape and size of the external ear. The rehabilitation of the hemifacial microsomia is surgical treatment and prosthetic treatment and recently by tissue engineering. If a surgical operation is contraindicated and severely compromised tissue and history of failed autogenous surgical ear reconstruction is present then prosthetic treatment is the alternative technique for these patients. For the prosthetic rehabilitation the stability and retention of the prosthesis is achieved by skin adhesives, anatomical undercuts and glasses and recently by osseointegrated implants. In this case report a hemifacial microsomia patient with auricular defect that rehabilitated with osseointegrated prosthesis is presented.

P-216

Rehabilitation of a patient with implant-retained prosthesis: A case report

A Koçak Büyükdere[1], A Sertgöz[2], S Yılmaz[3]
[1]Kocaeli University, Faculty of Dentistry, Prosthodontic Department, Kocaeli, Turkey
[2]Marmara University, Faculty of Dentistry, Prosthodontic Department, Istanbul, Turkey
[3]Medipol University, Faculty of Dentistry, Oral and Maksillofacial, Istanbul, Turkey

Introduction: Hard and soft tissue defects can be caused by gunshot. Prosthodontic procedure is a good approach for restoring function and speech. An obturator can be a removable complete or partial dental prosthesis. An air space is left to balance the oral and nasal resonance. A prosthesis should be thin for patient comfort and to minimize gag reflex. An obturator prostheses made from a variety of materials and techniques.
Materials and Metods: A 49-year-old man with a maxillary hard palate defect referred to the Department of Prosthesis. Obturator was planned to close the nasal cavity. Acrylic resin were injured the nasal cavity tissues. Implant retained obturator prosthesis were planned. Because of hard palatal defect implant were placed to appraximately 13-16-27-28 teeth place. Bar restoration were planned for placing the prosthesis in one way and also connected to all implant in order to be more rigid. Laser fusing technique were used in order to have good adaptation and also not have extra force any implants. Two attachment were prepared in the bar in order to connect to special metal to base of the nasal cavity. To connect the matel base and acriylic resin metal frame work design. Complete dentures were finished for both jaws
Results: Implant retained obturator with metal base had satisfied the patient. Because of not close the nasal cavity. Patient was adapted soon and speech was excepted.

Conclusion: Implant retained obturatur with special design to nasal base was good alternative for patient to adapt the obturator

P-217

Rehabilitation of a palatal defect with a small obturator prosthesis: A case report

D Çınar
Baskent University Faculty of Dentistry Ankara, Turkey

The soft palate, lateral and posterior pharyngeal walls form the velopharyngeal closure so that all of them create a three dimensional muscular valve which is known as velopharyngeal sphincter. Velopharyngeal insufficiency is distinguished by speech and nasal resonance abnormalities related to defects of the soft palate, which may be congenital as in cleft lip and palate or acquired as in palatal tumor resection. The obturator prosthesis that close these defects and separate the oral and nasal cavities may be constructed in different sizes and shapes, depending on the extent of the defect.
A 56-year-old man patient was self-referred to Baskent University, Faculty of Dentistry, Ankara. The patient had a history of adenoid cystic carcinoma and tumor sites were left mandible, nasopharynx and soft palate. In 2007 an obturator prosthesis was made after the surgery. The chief complaint was the poor adaptation of the obturator. Construction of a new and small obturator prosthesis was decided for the rehabilitation of the patient after clinical examination. Maxillary left premolars and molars were restored with porcelain-fused-to-metal crowns. A precision attachment was placed on the palatal embrasure of the second premolar and the first molar. When the fixed restorations were completed detailed impression of the defect side was made. A metal framework from cobalt-chromium alloy was fabricated and another impression was taken with this framework from the defect size for better adaptation of the obturator. At the end a small obturator was obtained. The patient was satisfied both esthetically and functionally.

P-218

Buccal flange obturator with implant-supported bar retainer: A case report

M Kayış, E Şeker
Eskisehir Osmangazi University Faculty of Dentistry Department of Prosthodontics, Turkey

Fabricating a maxillary obturator can be challenging in oral rehabilitation of patients who have had undergone maxillary resection procedure in consequence of congenital malformation, neoplasm or trauma. Placement of implants can have a significant effect on the stability and retention of the prosthesis in the edentulous maxillectomy case. The aim of prosthodontist is to ensure the proper function and aesthetics of patients thereby improve the quality of daily life. This clinical report represents the prosthodontic rehabilitation of an unilateral maxillectomy patient with the use of implant supported obturator that planned on custom abutments and bar retainers via CAD/CAM technology. The use of bar retainers in conjunction with buccal flange obturator revealed remarkable improvement in retention and stability compared to the previous tissue supported maxillary obturator prosthesis.

P-219

Prosthetic rehabilitation of a patient with a resected right temporomandibular joint and ramus

M Dinçel, HÖ Gümüş, H Şentürk Çeşmeci, H Albayrak
Erciyes University, Faculty of Dentistry, Department of Prosthodontics, Kayseri, Turkey

50 years old patient's right temporomandibular joint (TMJ) and right ramus was resected after a traffic accident nine years ago. He also lost all his maxillary teeth; all right mandibulary premolars and molars; and all left mandibulary molars(34, 35, 36, 37, 46, 47). The patient didn't use any prosthesis for nine years. Because of the absence of his right TMJ, during elevation of mandible and closing of mouth, patient's mandibule was sliding to the left side and positioning abnormally.
There were 4 implants placed to the maxilla in 15, 13, 23 and 25 region. 2 implants were placed to the mandible, in 46 and 47 region. The implant in 15 region was failed. Fixed metal-porcelain implant supported crowns were prepared for 46 and 47. Bar and clip attachment retained prosthesis was prepared for maxilla. During elevation of mandible to make the mandible slide back to its normal position, a ramp was prepared to the palatal side of the left maxillary teeth. During elevation of mandible, left mandibulary teeth was touching this ramp first, and finding its normal position in occlusion with left maxilary teeth. While setting of the teeth in the left side of maxilla, teeth were set in two lines. One line of teeth was in palatal side for occlusion and the other line was in buccal side for esthetic. In the first week of delivery of prothesis, patient complained about diffuculty in speaking and chewing because of little space for tongue. After shortening of ramp after four weeks, patient is pleased with his prosthesis.

P-220

3 unit posterior bridge with CEREC system: A case report

S Bayrak, E Tamam, M Kocacıklı
Gazi University, Faculty of Dentistry, Department of Prosthodontics, Ankara, Turkey

Purpose: Purpose of this case report is to show posterior bridges can be fabricated with both high durability and esthetic material. Sirona InCoris ZI zirconia block was used for framework to support Sirona CEREC feldsphatic block for superior layer of bridge. Materials and Methods: A 28 years old male patient attended Gazi University Faculty of Dentistry Prosthodontics Department for loss of 3 unit porcelain fused to metal bridge and patient wanted a replacement in a short time. Optical impression was taken with Omnicam and opposing teeth were scanned for virtual articulator which is special for CEREC system to form an accurate occlusion. After designing bridge with software firstly Sirona InCoris ZI block was milled and sintered in InFire HTC Speed sintering furnace for 6 hours. During sinterization Sirona CEREC S3M feldsphatic block was milled. The fitting between zirconium framework and feldsphatic layer was checked with low viscosity C-silicone. Inner side of feldsphatic layer was etched (Ultradent porcelain etch) and silaned (Ultradent silane) for further cementation with Panavia F 2.0 to zirconium framework. Before cementation of bridge, Optrafine finishing and polishing kit was used instead of glazing. Results: Esthetic and durable bridge was manufactured at high accuracy. It was verified that not only single crowns also bridges could be manufactured with CEREC system but also patient satisfaction was attained with shortened treatment duration. Conclusion: This clinical report describes a chairside CAD/CAM technique. This restoration

materials provides esthetic advantages with regard to high color stability, minimal transluscent effect, and favorable polishing properties.

P-221

The estimation of cost effectiveness of the composite restoration

K Abdul Majeed[1], LC Choon[2]
[1]IIUM Conservative Dentistry, Malaysia
[2]USM Pharmacology, Malaysia

Purpose: The purpose of this study is to evaluate the cost effectiveness of posterior composite resin through the amount of microleakage.
Materials and Methods: 72 Cl V cavities were prepared in 36 teeth (extracted upper first premolar), one buccally and one palatally in each tooth, the cavities were located in the middle third of the crown.
The teeth were randomly divided into three groups (24 cavities for each group);
Group A: filled with Helio- molar radiopaque composite.
Group B: filled with Tetricceram composite.
Group C: filled with an Ariston PHc composite .
After the teeth were filled, they were restored in normal physiological saline in an incubator at 37 ^{o}C. one third of each group (8 cavities) were thermocycled for one day (30 cycle), 2nd third thermocycled for 10 days (300 cycle), and the last third thermocycled for 100 days (3000 cycle).
Results: One-way-ANOVA-analysis revealed significant differences among the groups ($p<0.05$) in the terms of the cost effectiveness, The results revealed that the Ariston Phc composite has better cost effectiveness from the other tested types. It is not a significant difference between Group C and B, and it is a significant difference between Group C and A.
Conclusion: Material C has better cost effective than other tested materials. None of the materials tested was able to achieve the absolute cost effectiveness.

P-222

Veneer ceramic to Y-TZP bonding: Comparison of different surface treatments

Ö Kırmalı[1], A Kapdan[2], A Kuştarcı[3]
[1]Akdeniz University, Department of Prosthodontics, Turkey
[2]Cumhuriyet University, Department of Restorative Dentistry, Turkey
[3]Akdeniz University, Endodontics, Turkey

Purpose: The aim of this study was to investigate the effects of different surface treatments to improve the bond strength between veneer ceramics and zirconia.
Materials and Methods: Pre-sintered zirconia specimens were divided into eight groups (n=10) according to the surface treatment, such as untreated, air abrasion with Al_2O_3 particles and Er,Cr:YSGG laser irradiation with different energy intensities (1 W to 6 W). Then, all the specimens were sintered and they were veneered with veneering ceramic. All zirconia-ceramic specimens were steeped in 37 ºC distilled water for 24 h. Then, shear bond strength test was measured at a crosshead speed of 1 mm/min and the average means were calculated. The zirconia surfaces were examined under a stereomicroscope to show their fracture pattern, and the surface topography was evaluated with a SEM after treatments.

Results: Although all surface treatments resulted in increased bond strength, statistically significant differences were found between the 6 W irradiation groups and the other groups. Conclusion: The present study's findings showed that higher energy densities were needed for laser irradiations to improve the bond strength between veneer ceramics and zirconia.

P-223

Bond strength of veneering-ceramic to framework prepared by different methods

D Saraç, N Kaleli
Department of Prosthetic Dentistry, University of Ondokuz Mayıs, Turkey

Purpose: Most of the failures seen in metal ceramic restorations is the exposure of metal framework caused by debonding of ceramic layer. Recently rapid prototyping systems began to gain acceptance in the field of dentistry. Selective laser sintering is a new technology used in metal ceramic restorations. The purpose of this study was to compare the bond strengths of cast, milled and laser sintered frameworks to veneering porcelain. Materials and Methods: Twelve laser sintered, 12 conventionally casted and 12 milled cobalt-chromium (Co-Cr) alloy bars (25x3x0.5 mm) were prepared according to ISO standards. All specimens were air abraded with 50 μm aluminum oxide particles, then opaque ceramic and feldsphatic ceramic were applied to the middle section of the bars 8 mm in length. Three point bending test was applied to all specimens after thermocycling. Bond strength was recorded using a universal testing machine. Data were statistically analyzed by one way ANOVA (?=0.05).
Results: No significant difference were found with the groups of conventionally cast, selective laser sintering and milling (p>0.05). All fracture failures were observed in mixed form.
Conclusion: All samples showed remarkable bond strengths which are higher than 25 MPa. Milling and selective laser sintering were found to be reliable methods as conventional cast method in terms of metal ceramic bond strength.

P-224

Magnetic flux density of new generation dental magnets

H Akın
Cumhuriyet University Faculty of Dentistry, Prosthodontics, Turkey

Purpose: The purpose of this study was to analyze the static magnetic flux density of different types of new generation laser welded magnetic attachments in the single position and the attractive position and to determine the effect of different corrosive environments on magnetic flux density.
Materials and Methods: Magnetic flux densities of four magnetic attachment systems (Hyper slim, Hicorex slim, Dyna and Steco) were measured with a gaussmeter. Then magnetic attachment systems were immersed in two different media, namely 1% lactic acid solution (pH 2.3), and 0.9% NaCl solution (pH 7.3). Magnetic flux densities of the attachment systems were measured with a gaussmeter after immersion to compare with measurements before immersion (?=.05). The data were statistically evaluated with one-way ANOVA, paired-samples T-test and post hoc Tukey-Kramer multiple comparisons tests (?=0.05).
Results: The highest magnetic flux density was found in Dyna magnets for both single and attractive positions. In addition, after the magnets were in the corrosive environments for two weeks, they had a significant decrease in magnetic flux density (p<0.05). No significant

differences were found between corrosive environments (p>0.05).
Conclusion: The leakage flux of the all magnetic attachments do not exceed the WHO's guideline of 40mT. The magnets exhibited a significant decrease in magnetic flux density after aging in corrosive environments including lactic acid and NaCl.

P-225

Testing parameters on load-bearing capacity of prosthetic materials: Systematic review

M Özcan, J Hohn
University of Zurich, Dental Materials Unit, Switzerland

Purpose: Durability of fixed dental prosthesis (FDP) is usually tested using fracture strength tests. The experimental parameters show great variations in the dental literature. Materials and Methods: Original papers on fracture strength of prosthetic materials published in MEDLINE (PubMed) between 01/01/1981 and 01/06/2010 were included (MeSH terms: “Dentistry”, “Fracture Strength”, “Fracture Resistance”, “Fixed Dental Prosthesis”, “Mechanical Loading”, “In vitro”). Statistics was performed for different factor levels: test method (static loading), material type (metal-ceramic-MC, all-ceramic-AC, fiber-reinforced-composite resin-FRC, composite resin-C), periodontal ligament (without or with) and restoration-type (single-crowns, 3-unit, 4-unit, inlay-retained and cantilever-FDPs). Results: Selection process resulted in 72 studies and 377 subgroups revealed results from static load-bearing. Fourteen MC, 190 AC, 121 FRC, 45 C groups, were identified as subgroups. Out of 333 subgroups, 163 subgroups involved PDL simulation. Decreased results were observed with the presence of PDL for single-crowns (without PDL=1117±215 N; with PDL=876±69 N), 3-unit FDPs (without PDL=791±116 N; with PDL=675±91 N) made of AC, 3-unit FDP (without PDL=1244±270 N; with PDL=930±76 N) and inlay-retained FDP (without PDL=848±104 N; with PDL=820±91 N) made of FRC and 4-unit FDPs (without PDL=548±26 N; with PDL=393±67 N) made of C. For single-crowns, fracture strength of FRC was higher than that of AC and MC; for 3-unit FDPs FRC=C>AC=MC; for 4-unit FDPs AC>FRC>C and for inlay-retained FDPs, FRC=AC.
Conclusion: Decreased static fracture strength was observed with the simulation of PDL but due to insufficient data this could not be generalized for all materials.

P-226

Radiographic evaluation of FPDs in Akdeniz University Department of Prosthodontics

MM Özarslan, US Büyükkaplan, O Kırmalı, N Türker, M Arslan
Akdeniz University, Prosthodontics, Turkey

Purpose: Fixed partial dentures (FPD’s) are often preferred due to the long-term success rates currently. However, different complications may occur at abutment teeth in time. The aim of this study was to evaluate FPDs in terms of some complications radiographically. Materials and Methods: A total of 380 patient applied to the present study. Existing FPDs were evaluated in terms of caries and periapical lesions in abutment tooth radiographically. Periapical lesions were evaluated according to periapical index (PAI). Accordance to the Ante’s Rule of FPDs were also evaluated.
Results: Caries formation in abutment teeth was observed in 40.5% of patients. Distribution of periapical lesions according to PAI was found 23% Class III, 1.8% Class IV, 1.3% Class V. 10.2% of restorations were not follow the Ante’s Rule. Periapical lesions were observed

to 16.5% in endodontically treated abutment teeth.
Conclusion: If conventional FPD is the treatment choice, protective measures should be taken to prevent formation of caries and periapical lesions of the abutment teeth. The results of the present study confirms the rationale of implant treatment for conservation of natural tooth. For further research, to carry out the present study with larger populations and different parameters are planned.

P-227

Properties of food bolus for assessing quality of mastication

T Sachie, I Tetsuo, N Atsuko, H Tsuyoshi, N Kan
Department of Oral and Maxillofacial Prosthodontics, Institute of Health Biosciences, The University of Tokushima, Japan

Purpose: Mastication should be assessed not only by masticatory performance but by its quality for oral perception. The purpose of this study was to clarify the relationship between physical properties of food bolus and masticatory behavior during masticatory processing.
Materials and Methods: Fifteen young volunteers with normal dentitions participated. Two types of jelly differing in hardness, a biscuit, and cooked rice were used as food materials. The mean number of masticatory cycles for each food material in each subject was defined as 100% mastication. The participants were asked to spit out the food bolus after 25%, 50%, 75%, 100%, and 125% mastication. The physical properties of the food bolus were analyzed by texture profile analysis. The electromyogram of both the masseter and temporal muscles were also recorded. This research was approved by the Research Ethics Committee of Tokushima University Hospital (#1381).
Results: During mastication, hardness decreased for every type of food material, and cohesiveness increased for the biscuit and the two types of jelly. Cooked rice showed little change in cohesiveness. Adhesiveness of the biscuit samples markedly increased during mastication. The electromyogram showed characteristic changes for properties of food bolus.
Conclusion: Masticatory behaviors would be influenced by two factors; properties of food bolus and habitual one. The harder the food is, the more behavior is influenced.

P-228

Comparison of objective and subjective evaluation of the mastication predominance

Y Yamasaki, R Kuwatsuru, Y Tsukiyama, H Matsumoto, K Oki, K Koyano
Section of Implant and Rehabilitative Dentistry, Division of Oral Rehabilitation, Faculty of Dental Science, Kyushu University, Fukuoka, Japan

Purpose: The aim of the present study was to investigate the correlation of objective and subjective evaluation of the mastication predominance in healthy dentate (HD) subjects and patients with unilateral posterior missing teeth [partially edentulous (PE) patients].
Materials and Methods: The sample consisted of 50 HD individuals and 71 PE patients. Participants were asked to chew three kinds of test foods (peanut, jerked beef and chewing gum) freely. EMG activities were recorded from the bilateral masseter muscles. EMG signals were converted to the root mean square values. The chewing side (right or left) was judged by the level of root mean square EMG amplitude. The mastication predominance was then assessed by mastication predominant score (MPS). The self-awareness of the mastication

predominance (SAMP) was evaluated using a modified visual analog scale. Then, the mastication predominance of the HD and PE groups for each test food was analyzed.
Results: MPS of jerked beef and chewing gum was weakly correlated to SAMP in the HD group (r_s=0.413, $p<0.05$), whereas strong correlations were observed between MPS and SAMP in the PE group among the all test foods (r_s=0.725-0.926, $p<0.01$).
Conclusion: The results suggested that the individuals with unilateral posterior missing teeth were more aware of mastication predominance than healthy dentate individuals.

P-229

Effect of masticatory movements on postural stability during standing position

K Shima[1], K Sakaguchi[1], T Maruyama[2], A Yokoyama[1]
[1]Department of Oral Functional Prosthodontics Graduate School of Dental Medicine Hokkaido University, Sapporo, Japan
[2]Ibaraki National College of Technology, Hitachinaka, Japan

Purpose: The purposes of this study were to evaluate the effect of masticating chewing gum on head, trunk and body sways during standing position, and to evaluate these interrelationships.
Materials and Methods: Ten healthy subjects volunteered for this study. The MatScan® system was used to measure changes in body posture while subjects maintained standing position with the 2 mandibular positions (rest position and centric occlusion) and masticating chewing gum. A three-dimensional motion analysis system was used to measure changes in head and trunk positions in the 2 mandibular positions and masticating chewing gum. Changes in body posture, head and trunk positions were measured simultaneously.
Results: When subjects maintained standing position with masticating chewing gum, head, trunk and body sways were significantly smaller than when they maintained their mandibles in the rest position and centric occlusion ($p<0.05$). Head, trunk and body sways showed significant correlations ($p<0.05$). No significant differences were found in the weight distribution between the 2 mandibular positions and masticating chewing gum. It was founded that masticating chewing gum affected the stability of head, trunk and body sways during standing position, and that there were significant correlations between changes in head and trunk positions and body posture.
Conclusion: These findings suggest that masticatory movements affect the postural control by enhancing the postural stability during standing position.

P-230

The effect of mastication on glp-1 via parasympathetic nerve

Y Kan[1], Y Toyoshita[1], K Kawanishi[1], H Aita[1], D Selimovic[2], H Koshino[1]
[1]Department of Oral Rehabilitation, Health Sciences University of Hokkaido School of Dentistry, Tobetsu, Japan
[2]Clinic of Operative Dentistry, Periodontology and Preventive Dentistry, Saarland University, Hamburg, Germany

Purpose: For prevention of diabetes, it is essential how to control of blood glucose level. Glucagon-like peptide-1 (GLP-1) has a function to lower levels of glucose in the blood and is regulated by parasympathetic nerve, blood glucose level, and mechanical stimulus by digested food. In this study, we examined whether mastication affects blood glucose level and secretion of GLP-1 via parasympathetic nerve.

Materials and Methods: Male Wistar rats were starved for 24 hours and then were divided into two groups: the solid feed group and the liquid feed group. After they fed same calorie of solid or liquid food (10 kcal/kg), GLP-1 level in serum was measured by enzyme immune assay at 0,15, 30, 60 and 90 minutes from the start of feed. To block parasympathetic nerve we administered atropine by intraperitoneal administration and measured GLP-1 level in the same way. The data of GLP-1 level were analyzed using Mann-Whitney U-test. In statistical analyses, $p<0.05$ was considered statistically significant.
Results: GLP-1 level in the solid feed group was increased at 90 minutes whereas that in the liquid feed group decreased at same minutes. In case of intraperitoneal administration of atropine, GLP-1 level in the both groups were approximately equal level.
Conclusion: In this study, it is suggests that mastication affects the secretion of GLP-1 via parasympathetic nerve.

P-231

Effects of chewing on stress-induced bone loss

M Furuzawa[1], H Chen[2], S Fujiwara[1], K Kubo[3]
[1]Department of Prosthodontics, Asahi University, Gifu City, Japan
[2]Department of Anatomy, Gifu University, Gifu City, Japan
[3]Seijoh University, Tokai City, Japan

Purpose: Chronic stress is a risk factor for osteoporosis due to the effects of corticosterone. Chewing attenuates stress-induced increases in plasma corticosterone. Here we examined the effect of chewing on chronic stress-induced bone microstructural deterioration in mice.
Materials and Methods: Male 12-month old C57BL/6(B6) mice were randomly divided into control, stress, and stress/chewing groups (n=15/group). Mice in the stress and stress/chewing groups were placed in a ventilated restraint tube for 60 minutes, twice a day for 4 weeks, thereby inducing chronic stress. Mice in the stress/chewing group were allowed to chew on a wooden stick during the same period. After 4 weeks, blood biochemical markers were evaluated. Trabecular bone in the distal femur and 4th lumbar vertebra was evaluated by histologic analysis and image analysis software using micro-computed tomography.
Results: Mice in the stress-chewing group had significantly lower plasma corticosterone levels than mice in the stress-only group, similar to controls. Mice in the stress-chewing group exhibited a significantly attenuated chronic stress-induced reduction in bone formation, increased bone resorption, attenuated trabecular bone loss, and decreased bone microstructural deterioration compared with the stress-only group, similar to control levels.
Conclusion: The present findings indicate that chewing can ameliorate chronic stress-induced bone loss in B6 mice. Chewing may represent a useful method for preventing and/or treating chronic stress-related osteoporosis.

P-232

Impact factors for chewing function in maxillectomy patients

M Haraguchi[1], M Yamashiro[2], YI Sumita[1], M Mizutani[2], Y Michi[3], N Tachikawa[4], S Kasugai[4], H Harada[5], K Harada[3], H Taniguchi[1]
[1]Department of Maxillofacial Prosthetics, Graduate School, Tokyo Medical and Dental University, Tokyo, Japan
[2]Dentistry & Oral Surgery, NTT Medical Center Tokyo, Tokyo, Japan
[3]Department of Maxillofacial Surgery, Graduate School, Tokyo Medical and Dental University, Tokyo, Japan
[4]Department of Oral Implantology and Regenerative Dental Medicine, Graduate School, Tokyo Medical and Dental University, Tokyo, Japan
[5]Department of Oral and Maxillofacial Surgery, Graduate School, Tokyo Medical and Dental University, Tokyo, Japan

Purpose: Which is the impact factor for chewing function in maxillectomy patients, defect size or the number of residual teeth? The purpose of this study is to evaluate the impact of defect size and the number of residual teeth for the chewing function in maxillectomy patients.
Materials and Methods: Forty-nine dento-maxillary prostheses wearers after maxillectomy (30 males and 19 females, mean age 68.1 years) participated as the subjects in this study. Resection form in Aramany's classification was used to classify defect sizes and Eichner's classification was used to classify the number of residual teeth. Data on masticatory performance were measured by gummy jelly, color-changeable chewing gum and food intake questionnaire with 35 foods listings. The relationships between defect sizes by Tukey's multiple comparison test and residual teeth by unpaired t-test were analyzed for masticatory performances (glucose extraction and a*), masticatory score, satisfied level and QOL. The level of significance was $p<0.05$.
Results: There were no significant differences in masticatory performances between Aramany's I, II and IV. In Eichner's classification, masticatory performances in B group were significantly higher than those in C group.
Conclusion: The number of occlusal area among the residual teeth was suggested to be an important factor affecting chewing function.

P-233

Fabricating dental prosthesis for odontophobic patient with abnormal gag reflex

F Okutsu, S Ohkawa, S Somekawa, Y Ohkawa
Meikai University, School of Dentistry, Japan

To fabricate dentures for an odontophobic patient with an abnormal gag reflex using general anesthesia and systematic desensitization.
A 46-year-old female patient requested treatment for denture fabrication under intravenous sedation on the basis of her odontophobia and abnormal gag reflex.
The treatment plan was as follows:
1.Extract teeth 13, 12, 11, 22 and 23 under general anesthesia.
2.After extraction, take impressions of the maxilla and mandible, and determine a tentative occlusal plane.
3.Fabricate maxillary training dentures in three stages of increasingly larger sizes to be worn by the patient during desensitization.

4.Evaluate the patient's masticatory efficiency with gummy-jelly chewing, a State-Trait Anxiety Inventory (STAI), and a Food Intake Questionnaire.
After extracting teeth, and taking impressions of the maxilla and mandible, a complete maxillary denture was fabricated. The patient was instructed to initially insert the denture for 5 minutes per day for systematic desensitization, and was slowly transitioned into wearing dentures of larger sizes over time.
One year later, the patient required fabrication of a lower denture. Although both the maxillary and mandibular dentures were fabricated in the normal form under intravenous sedation, there was no appearance of abnormal gag reflex immediately following denture insertion and the patient has since been able to use the dentures without incident. The STAI score decreased. The result for masticatory efficiency of gummy-jelly chewing and the food intake survey indicated a significant increase in food consumption over time. The patient was completely satisfied with the treatment.

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The role of dental occlusion to temporomandibular joint disorder development

C Andrea[1], B Smaranda[1], L Liana[1], C Radu[2], I Simona[1], F Mirela[1]
[1]University of Medicine and Pharmacy, Prosthodontics, Romania
[2]University of Medicine and Pharmacy, Odontology, Romania

Purpose: To evaluate the intermaxillary relationships in patients with disc displacement with reduction and to establish a correlation between occlusal status and temporomandibular disorder (TMDs).
Materials and Methods: Fifty students from Dental Medicine Faculty (mean age 22), were clinically evaluated and Research Diagnosis Criteria for Temporomandibular joint disorder (RDCT) Axis I form was applied. The clinical examination included articular, muscular and occlusal (static and dynamic) evaluation. Disk displacement without reduction was diagnosed based on RDCT score and clinical examination of the temporomandibular joint.
Results: 64% of cases presented occlusal interference 11 patients were diagnosed with disc displacement with reduction. Only in 5 patients disc displacement was associated with pain. The correlation between disc displacement and propulsive interference (Pearson coefficient) was 0.47 and for laterotrusive interferences 0.39.
Conclusion: In our study although most of the patients presented occlusal interference, only a small group (11 patients) presented disc displacement. Ligament laxity, the presence of estrogen hormones and psychical structure in females predisposes to disc displacement and TMDs (associated with pain). The statistical analysis revealed a relative correlation between nonfunctional contacts and disk displacement, stronger in propulsive than in laterotrusive interference.

P-235

The facial prosthetic treatment at Tokyo Medical and Dental University

YI Sumita, H Taniguchi, M Hattori, M Elbasthti, S Yoshi, N Minamisawa, T Otomaru, A Kanazaki, A Yanagi, M Moustafa, M Haraguchi, M Kosaka
Department of Maxillofacial Prosthetics, Graduate School, Tokyo Medical and Dental University (TMDU)

Purpose: Case reports or material study about facial prostheses are often seen in literatures. However statistical investigation of the clinical treatment is rarely done. Therefore, we would

like to introduce the present status of facial defect cases in Clinic of Maxillofacial Prosthetics, Tokyo Medical and Dental University Hospital of Dentistry from 1980 to 2009. The purpose of this study was to survey patients with facial defect examined in Clinic of Maxillofacial Prosthetics, Tokyo Medical and Dental University Hospital of Dentistry from 1980 to 2009. In this report, we would like to focus on the combined defect cases and to present the details.
Materials and Methods: Using the patients' record of Tokyo Medical and Dental University Hospital of Dentistry from 1980 to 2010, the number of patients who had defect and the number of patients who had combined defect such as the combination of intraoral and facial defect were counted.
In addition, about the combined defect cases, gender, primary disease, defect site of the tumor over 10 decade were investigated and discussed.
Results: The total number of patients visited the clinic in the period was 6065. The number of the patients who had facial defect was 89. Among them, the number of patient who has combined defect such as intraoral defect and extraoral defect was 65, male to female ratio was 8:5. The most common primary disease was malignant tumor and the most common defected site was maxilla
Conclusion: The great number of facial defect patients had combined defects.

P-236

Prosthetic rehabilitation of hemisected mandible: Case report

M Yenisey[1], N Kaleli[1], M Sumer[2], O Etoz[1]
[1]Ondokuz Mayıs, Prosthodontics, Turkey
[2]Ondokuz Mayıs, Oral and Maxillofacial Surgery, Turkey

Purpose: Malignant tumors related with mandible mainly ends up with segmental resection or hemisection of lower jaw. This situation lead to great prosthetic challenge because of deviation of the mandible to the defect side. In this case, an implant supported overdenture prosthesis which prevents the deviation of mandible was applied.
Materials and Methods: Fifty-five years old female patient, which had undergone resection of the left mandible and reconstructed with vascularized fibular bone graft on account of osteosarcoma, applied to our clinic two years ago for prosthetic rehabilitation. The patient was examined and diagnosed mainly with clinical and radiographic information. All of the mandibular teeth and most of the maxillary posterior teeth were missing. Because of the mandibular deviation to the defect side during chewing cycle, an implant supported overdenture which had a guide plane blocking the deviation and a removable maxillary partial denture working in harmony with the guide plane were constructed.
Results: During the controls of one month, three months and six months respectively after the treatment the patient was evaluated clinically and radiographically. Patient had complaints about the pain mainly localized on TMJ area.
Conclusion: Guide plane prosthesis prevents the deviation of resected mandible and provides a proper chewing cycle.

P-237

Prosthetic rehabilitation of partial auricular defect: Case report

M Yenisey, N Kaleli
Department of Prosthetic Dentistry, University of Ondokuz Mayıs, Turkey

Purpose: Multiple plastic surgery operations are carried out for patients suffering from congenital auricular defect, however, reconstruction of the auricular area is a highly challenging process mostly resulting with failure. Auricular epithesis meets the aesthetic and economic demands is such cases. In this case, an auricular epithesis was constructed to cover surgical failures and provide a symmetrical appearance.
Materials and Methods: Twenty years old male patient, undergone several plastic surgery operations for the reconstruction of left ear due to congenital absence, applied to our clinic one year ago because of asymmetrical appearance. The patient was examined and diagnosed mainly with clinical information. An auricular epithesis was planned without implant anchorage because of the cartilage tissue surgically placed before. Impressions of right ear and left auricular area were taken. After wax up procedures, construction of the epithesis was completed by using heat temperature silicone material and delivered to patient. Retention of the epithesis was provided by tissue adhesives and mechanical coverage of the existing cartilage tissue.
Results: During the controls of one month, three months and six months respectively after the treatment the patient was evaluated clinically. Patient had no complaints and was satisfied with his appearance.
Conclusion: An auricular epithesis offers an acceptable appearance as well as economic and atraumatic treatment process in cases of auricular deficiencies.

P-238

Analysis of small GTPases in keratinocytes during nickel allergy development

M Watanabe, T Ichikawa
Oral and Maxillofacial Prosthodontics and Oral Implantology The University of Tokushima Tokushima, Japan

Purpose: Although Nickel is well known as the common allergenic dental materials, the mechanisms of Ni allergy development have many unknown points. Keratinocytes are the major cellular components in skin which contact with dendritic cells (DC) and produce cytokines in response to stimulations or cell damages.
The aim of this study is to examine whether signaling pathways, especially small GTPases in keratinocytes are activated during Nickel allergy development.
Materials and Methods: C57BL/6J mice were injected twice with $NiCl_2$ to develop Nickel allergy. Epidermal sheets were obtained by peeling ear skin with ammonium thiocyanate. Keratinocytes and DC in the sheets were observed by confocal microscopy. Human keratinocyte line HaCaT were cultured by the additional stimulation of $NiCl_2$ and several protein expressions were examined by Western blot., FACS, PCR and ELISA.
Results: We detected activated RhoA and Rac1 in HaCaT and keratinocytes in the epidermal sheets stimulated by $NiCl_2$.
In addition, an increase in DCs expressing activated RhoA protein was observed right after the stimulation by $NiCl_2$ and it was reduced in a time dependent manner.
Conclusion: The Rho family of GTPases is known as its function to regulate many aspects of intracellular actin dynamics. An activation of RhoA right after the stimulation with $NiCl_2$ might affect the interaction between keratinocytes and dendritic cells and induce migration of DC to develop Nickel allergy.

P-239

Evaluation of possible genotoxic damage in patients used metal-ceramic restorations

Y Burgaz[1], G Alp[1], G Çakmak Demircigil[2], PG Tütüncü[1]
[1]Department of Prosthodontics, Faculty of Dentistry, Gazi University, Ankara, Turkey
[2]Pharmaceutical Toxicology Department, Faculty of Pharmacy, Gazi University, Ankara, Turkey

The purpose of this study is to determine whether the genotoxic damage occurred or not in patients treated with metal-ceramic restorations containing Ni-Cr. In oral mucosa cells, buccal Micronucleus Cytome Method was used. In 40 patients, the buccal smear samples were collected and micronucleus tests were performed before operative procedures and cementation of the prosthesis, one week, one month and three months after prosthesis delivery respectively. Feulgen Fast Green was used as staining agent for evaluating the micronucleus. Additionally saliva samples were collected in all different measurement periods and the changes in the pH values were determined with the indicator bars. Since an alloy's ability to cause genotoxic damage is directly related to its corrosion, the corrosion behaviors of metal alloys were evaluated by the method of inductively coupled plasma optical emission spectrometry. The results indicate that Ni-Cr dental casting alloys led to increase of micronucleus in target buccal epithelium cells and caused genotoxic damage. Moreover it was observed that genotoxic damage was not repaired even within a period of 3 months. In summary, it has been confirmed that metal ions released by the base metal dental casting alloys examined in this study, might be responsible for DNA damage of oral mucosa cells. Therefore, the results of this study emphasize the importance of *in vivo* evaluation of the dental materials with respect to their genotoxicity, which is of major importance to ensure long-term biocompatibility.

P-240

Cell attachment and proliferation on Mg-based scaffolds for dental-tissue regeneration

A Bakopoulou[1], E Kontonasaki[1], E Papachristou[1], G Theodorou[2], L Papadopoulou[3], G Leyhausen[4], W Geurtsen[4], K Paraskevopoulos[2], P Koidis[1]
[1]Dentistry Department, Aristotle University of Thessaloniki, Greece
[2]Physics Department, Aristotle University of Thessaloniki, Greece
[3]Geology Department, Aristotle University of Thessaloniki, Greece
[4]Conservative Dentistry, Periodontology and Preventive Dentistry, Medical University of Hannover, MHH, Germany

Purpose: Aim of this study was to investigate cell attachment and proliferation on Mg-based bioceramic scaffolds containing ions with antimicrobial properties.
Materials and Methods: Two formulations of sol-gel bioactive glasses were synthesized (A-Zn: SiO_2=60, MgO=7.5, CaO=30, ZnO=2.5 and B-Cu: SiO_2=60, CaO=30, MgO=7.5, CuO=2.5; components in wt %). Scaffolds were prepared by the foam replica technique and sintered at 860°C (10°C/min). Cultures of Dental Pulp Stem Cells were established and characterized for stem-cell markers. Cells were spotted at low volume into the scaffolds at 5×105 cells/ scaffold in 48 well-plates. Cell viability/proliferation was evaluated after 24, 48 and 72h by the MTT assay while cell attachment was evaluated by SEM.
Results: Cell viability was comparable to the respective scaffold-free controls. Cells in B-Cu scaffolds presented higher proliferation rate compared to the A-Zn scaffolds. Higher

numbers of attached cells were recorded in the B-Cu scaffolds.
Conclusion: Mg-based scaffolds supported cell attachment and proliferation and can be therefore considered for further evaluation/optimization regarding other properties e.g. biodegradation, before application in dental tissue engineering.
Acknowledgements: This study was conducted under the action Excellence II (Project: 5105) and funded by the European Union (EU) and National Resources.

P-241

Localization of growth factors and their receptors in tooth germ

M Hisamoto, T Iwanaga, A Yokoyama
Hokkaido University Oral Functional Prosthodontics, Japan

Purpose: The aim is to investigate cellular mRNA expression of growth factors and their receptors in the tooth germ of mice.
Materials and Methods: In situ hybridization technique was performed on tissues sections from the heads of fetuses and neonates of ddY mice.
Results: Odontoblasts intensely expressed TGFß1, while expressions of TGFß receptor-1/2 together with Smad3 were localized in ameloblasts, suggesting that TGFß signals are directed from odontoblasts toward ameloblasts. Among TGFß family, a significant expression of BMP2 was found in odontoblasts, while BMP4 was mainly expressed in ameloblasts. PDGFα was expressed in the inner enamel epithelium of fetuses and undifferentiated ameloblasts in neonates. Receptors for PDGFα were restricted to the dental pulp of fetuses and neonatal odontoblasts, suggesting that PDGFα signals are directed from the enamel organ toward the dental papilla possibly to induce odontoblast differentiation. The dental follicle of neonates expressed IGF1 and IGF-binding protein (IGFBP3), while IGF receptor-1 was most intense in the stratum intermedium of the enamel organ.
The expression sites of CTGF shifted from the inner and outer enamel epithelia in fetuses to dental follicle and odontoblasts during tooth development.
Conclusion: TGFß and PDGFα are important regulators of the epithelial- mesenchymal interaction in tooth germ. IGF and CTGF may be involved in formation of periodontal tissues including periodontal ligament and alveolar bone.

P-242

Epidemiological study of behavioral strategies used by Greek prosthodontists

P Kamposiora, M Epitropaki, A Sarafianou, G Papavasiliou
University Of Athens, Prosthodontics, Greece

Purpose: Communication is an important factor in the marketing process, which may be enhanced through various behavioral strategies. The objective of the present study was to examine the use of behavioral strategies and restorative techniques used by dentists in Greece during the financial crisis, when dealing with patients in need of prosthodontic treatment.
Materials and Methods: A questionnaire dealing with standard background information as well as the availability of special restorative techniques and the use of certain marketing tools was completed by 200 Greek dentists. Descriptive statistical analysis was performed followed by comparative analysis (P = 0.05).
Results: The majority of the dentists were familiar with the current restorative techniques

investigated, with the exception of CAD/CAM technology. Professional listings, logos, office parties and voluntary work were the most common marketing tools employed. Specialists tended to use marketing tools to a statistically significant higher degree than general practitioners.
Conclusion: Greek dentists have incorporated current and specialized restorative techniques in their practices. The behavioral strategies used by Greek dentists aim in establishing a strong customer base through a personalized approach. Specialists appear more eager to endorse behavioral strategies than general practitioners.

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Bioactivity and bonding strength of zirconia implant material coated with bioceramics

S Kolçakoğlu[1], NV Asar[2], C Yılmaz[2], T Korkmaz[2]
[1]Melikgazi TSM, Ministry of Health, Kayseri, Turkey
[2]Department of Prosthodontics, School of Dentistry, Gazi University, Ankara, Turkey

Purpose: To evaluate the bioactivity and bonding strength of zirconia implant material coated with hydroxyapatite (HA) and wollastonite (W) bioceramics using plasma spray technique.
Materials and Methods: 60 semi-sintered Y-TZP specimens, 20 cylindirical specimens for bonding strength and 40 square prism specimens for bioactivity, were prepared with CAD/CAM technology and the sintering process was completed conventionally in an oven at 1500°C for 10 hours. Specimens were coated with hydroxyapatite and wollastonite powders (100% HA, 70% HA and 30% W, 30% HA and 70% W, and 100% W) using plasma spray technique. The bonding strength between zirconia and coating material was measured with a tensile test in accordance with ASTM C-633 standard. The specimens prepared for the bioactivity test were incubated in 37°C simulated body fluid (SBF) for 2, 7, 14, and 21 day periods. The changes that occurred on the surfaces of specimens were analyzed with scanning electron microscopy (SEM), energy dispersive X-ray spectrometry (EDS) and x-ray diffraction instrument (XRD).
Results: Bonding strength test revealed that wollastonite incorporated coatings resulted in significantly higher bonding strength to zirconia than pure HA coating. All specimens used in this study showed bioactive properties in SBF.
Conclusion: Coating zirconia implants with bioceramics, especially with wollastonite, may be useful to improve the bonding between the implant and the surrounding bone.

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The rehabilitation of restricted interocclusal space with custom made abutment

F Emir, B Pişkin, C Sipahi
Gülhane Military Medical Academy, Department of Prosthodontics, Ankara, Turkey

The achievement of an esthetic implant-supported restoration is an ongoing challenge to dentists especially restricted interocclusal spaces. With the development of CAD/CAM technology, custom made abutments have been gradually used in dental implant systems. Custom made abutments have been attracting more attention due to their accuracy fit and usage in the presence of limited interocclusal space. The aim of this case report was present to restore the partial edentulous posterior mandible with limited interocclusal space. A 37-year old female patient applied to our clinic with the complaint of chewing disability. The clinical and radiographic examination of the patient shows that there were two implants

in the left mandibular posterior region with limited interocclusal space for a cement-retained implant supported fixed prosthesis. Therefore it was decided to fabricate a custom-made screw-retained abutment for each implant. At the end of the treatment, the functional and aesthetic deficiencies were fully compensated. After the delivery of the prosthesis the patient was clinically and radiographically examined at 3rd, 6th and 9th months. The nine months follow-up period of the patient did not reveal any complication.

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Clinical survival of indirect, surface-retained fiber-reinforced composite fixed-dental-prosthesis: 3-year follow-up

G Aktaş[1], D Burduroglu[1], F Keyf[1], M Özcan[2]
[1] Department of Fixed and Removable Prosthodontics, University of Hacettepe, Ankara, Turkey
[2] Center for Dental and Oral Medicine, Dental Materials Unit, University of Zurich, Zurich, Switzerland

Purpose: This clinical study evaluated the performance of indirect, anterior, surface-retained, fiber-reinforced-composite restorations (ISFRCR).
Materials and Methods: Between September-2011 and May-2014, a total of 17 patients (13 females, 4 males, 29-65 years old) received 17 ISFRCRs at the Hacettepe University, Turkey. All restorations were made indirectly on a plaster model using unidirectional E-glass fibers (Interlig, Angelus) in combination with a resin composite (Gradia, GC) and cemented according to the instructions of resin cement (Choice 2, Bisco). After baseline recordings, patients were followed at 6 months and thereafter annually up to 3 years. The evaluation protocol involved technical (chipping, debonding or fracture of tooth/restoration) and biological failures (caries).
Results: Mean observation period was 25 months. Altogether, 4 failures were observed [survival rate: 76.5%] (Kaplan-Meier). Two debonding of the restorations and two delamination of the veneering composite (chipping) were observed. Except one, all defective restorations were repaired or recemented. Annual failure rate of ISFRCRs was 0.11%. Secondary caries did not occur in any of the teeth.
Conclusion: The 3-unit anterior indirect surface-retained resin-bonded FRC FDPs with the fiber, veneering resin and cement could be advised as a semi-permanent treatment modality at this stage. Experienced failures were either due to debonding of the restoration or delamination of the veneering composite.

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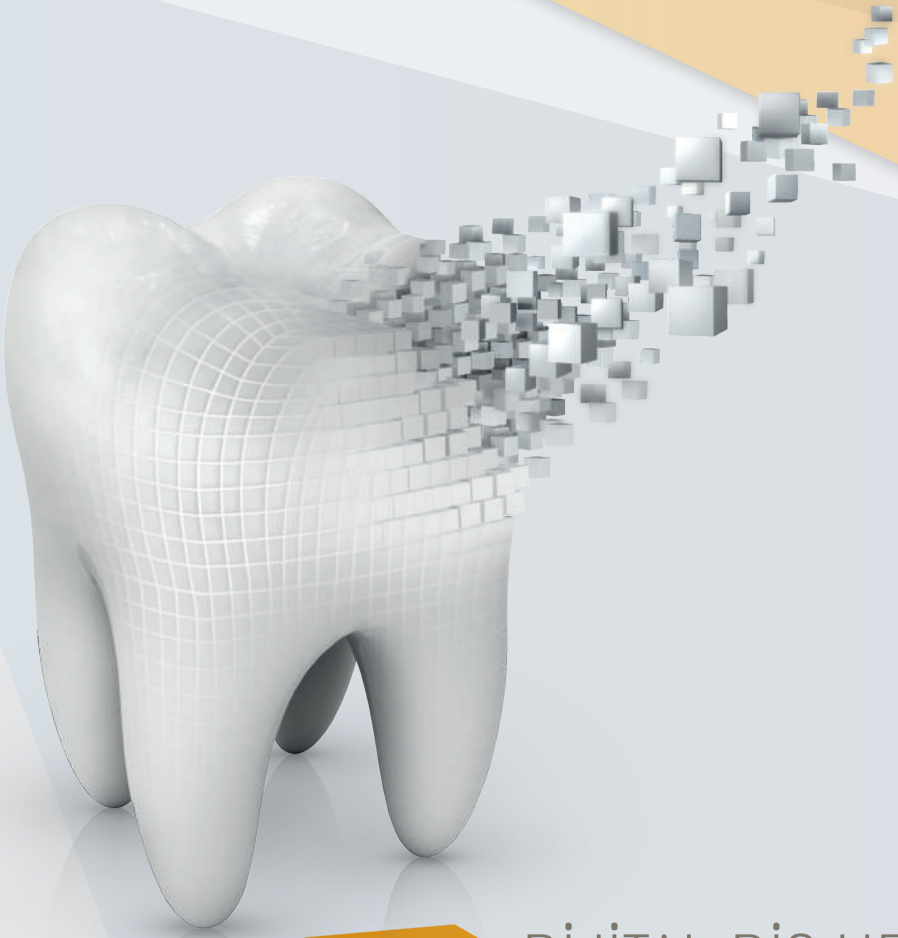

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