41st Annual Conference of the European Prosthodontic Association (EPA)

11th International Congress of the Romanian Society of Oral Rehabilitation

7th Scientific Conference of the Romanian Society of Robotic Prosthodontics and Implantology

September 28th - 30th 2017, Bucharest, Romania
Hotel Radisson Blu, 5*

EPA Oral/Poster Presentation Prize

CURRENT CONCEPTS AND PARADIGM SHIFTS IN PROSTHODONTICS

ABSTRACT BOOK

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Prof.Univ.Dr. Norina Forna

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EPA 2017
41st Annual Conference of European Prosthodontic Association
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CURRENT CONCEPTS AND PARADIGM SHIFTS IN PROSTHODONTICS

September 28th – 30th 2017
Bucharest, Romania – Radisson Blu Hotel
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Welcome Note

EPA 2017 Conference Chair

Prof. Univ. Dr. Norina Forna
President of the European Prosthodontic Association
President of the Romanian Robotic Prosthodontics and Implantology Association
President of the Romanian Society of Oral Rehabilitation

Dear Colleagues,

It is our privilege and special pleasure to invite you to the 41st Annual Conference of the European Prosthodontic Association, which will be held in Bucharest, Romania, 28th –30th of September, 2017.

We hope that Bucharest will be a milestone in the history of EPA Conferences. This meeting will offer practitioners from across the world an ideal opportunity to pursue continuing medical education, to learn about recent advances, likely future developments and potential research avenues, and to exchange scientific ideas and experiences in our field – all within a unique environment.

The EPA meeting promises to be a highlight for the multidisciplinary community that forms the heart and soul of dental medicine. There will be plenary lectures devoted to this field of interest, distinguished speakers will address the state of the art and new developments in clinical and preclinical areas, covering a broad range of topics. The multidisciplinary symposium organized throughout the meeting will truly reflect EPA’s mission to interact with other European and global organizations, with the goal of providing the best possible care for our patients.

We rely on the most meaningful participation of many colleagues from all over Europe in order to make our next congress a real scientific success. Thus, we are looking forward to welcome you in Bucharest, the heart of European culture and civilization, and to receive you according to the traditional Romanian hospitality.
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Protector and healer: Bactericidal copperion cement + copal barrier

Hoffmann’s

**Perio3 Oil**
The gentle alternative to chlorhexidine based on ozonized olive oil and castor oil

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OP1 Planning systems and robotized applications in contemporary implantology and prosthodontics  
Norina Fornea  
*Faculty of Dental Medicine, “Grigore T. Popa” University of Medicine and Pharmacy Iasi*  
*Romania*

Essential links that underpin a long-term success in addressing the edentulous patient consist of a balance on both morphological and functional elements of the stomatognate system.

The parameters that can influence in a high percentage this balance consists in the local compartment, periodontal, and on the prosthetic solution, finding itself in this equilibrium, and also in the loco-regional compartment, the musculo-ligamentous and articular level and in the end the general condition is one that can tip the balance between these compartments.

The accuracy with which these rehabilitation treatments, may they be simple or complex-implants and prosthetic treatments, can be managed and completed will offer degrees of predictability of the final success.

Any of these multiple compartments neglected offer a short-term success.

Robotized techniques used for the patients evaluated by both classical and modern technique offered at a rate of 80% accuracy in choosing the optimal bone implant position. The precision in finding the ideal position for an optimum implantation axis reduces the angulation of the implant abutment and therefore gets a correct occlusion ensuring the long term success of the prosthetic restoration.

Navigation in implantology as any other type of navigation, in the medical field, gives an accurate picture in real time execution avoiding any future risks and failures. Planning will track the implants and will create a treatment plan according with the needs of rehabilitation.
Purpose: An important number of patients wearing acrylic dentures do not clean their dentures properly, with multiple local and general side effects. The aim of this study is to evaluate the information patients have regarding cleaning acrylic dentures, and the cleaning habits they practice.

Materials and Methods: A questionnaire consisting of eleven bivariate and multiple answer questions was distributed in physical format to completely edentulous patients of the Prosthodontics Clinic of Carol Davila University of Medicine and Pharmacy. Dental staff assisted the patients in filling in the questionnaires. Results were collected and analyzed using Microsoft Office Excel software.

Results: 62 patients aged 50-90 years old participated in the study, 61% females. All patients were completely edentulous, unimaxillary (26%) or bimaxillary (74%). The majority stated they cleaned their dentures once a day (36%), while more than half of the participants stated they performed denture hygiene once every 2-3 days or once a week, using mostly toothpaste (50%) or soap (35%). 82% of the participants mentioned they had received information regarding cleaning the dentures from their dentists, but 28% of them would need more details.

Conclusion: The information patients have regarding cleaning acrylic dentures vary, but most of them are not informed regarding the modern methods (peroxide tablets, ultrasonic devices). Since most patients were instructed by their dentists in this field, the problem could be the implementation of the instructions, which could suggest the necessity for a different approach when delivering the cleaning instructions.
**OP3**  
**Edentation Prevalence and Complications in Moldova County**  
Ovidiu Stamatin, Roxana Ionela Vasluianu, Ramona Diana Feier, Monica Andronache, Norina Forna  
*Faculty of Dental Medicine, “Grigore T. Popa” University of Medicine and Pharmacy Iasi, Romania*

**Purpose:** The study presents the incidence, prevalence and nature of the complications of untreated edentations, their role and impact on the health status of the population.

**Materials and Methods:** The study is based on a total of 4250 patients from rural and urban areas of Moldova counties, over a 5-year period. General health status, area of origin, complications of partial edentation, localization of edentation, number and distribution of the abutments, evaluation of clinical indexes have been considered. The evaluation of the general and oral health was done on the basis of clinical and paraclinical assessment, as well as through questionnaires focused on determining the access to medical services, eating and hygiene behavior.

**Results:** During the analyzed period, 89% of the cases indicated pre-prosthetic treatment, while 82% had the recommendation for pro-prosthetic treatment. Provisional RPDs are recommended as treatment in the first stage, with a prediction of positive results after definitive treatment. Rural and urban origin, such as the degree and number of complications ($P < .05$), have influenced the statistical evolution.

**Conclusion:** Continuing awareness of the editorial impact on health and the need for oral hygiene techniques, as well as improving health care and reducing inequities, should be treated as a priority.

**Keywords:** removable partial dentures, edentation prevalence, statistical analysis, Moldova County

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**OP4**  
**High performance polymers in implant dentistry**  
Iuliana Babiuc, Mihaela Pauna, Titus Farcasiu, Oana-Cella Andrei, Adriana Bisoc  
*Faculty of Dentistry, “Carol Davila” University of Medicine and Pharmacy Bucuresti, Romania*

High-performance polymers represent a new group of biomaterials that nowadays find more and more indications in prosthetic dentistry. These thermoplastic polymers can be injected or processed using CAD/CAM technology.
They are indicated for high precision restorations, such as hybrid implant restorations, hybrid implant abutments and different types of frameworks for removable dentures. The current presentation contains two clinical cases where high-performance polymer PEEK from Juvora and CAD/CAM technology was used to produce implant supported restorations. These prosthetic devices are very precise, light weight, biocompatible, resistant and displaying great esthetics.

**OP5**

**Evaluation of marginal fit for prosthetic preparations using theoretical and experimental methods**

Simona Ioana Hategan¹, Cosmin Sinescu², Anca Jivanescu¹, Alina Belea³, Meda-Lavinia Negrutiu²

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2) Department of Prostheses Technology and Dental Materials, Faculty of Dentistry, University of Medicine and Pharmacy "Victor Babes", Timisoara, Romania
3) Politehnica University of Timisoara, Faculty of Mechanics, Timisoara, Romania

**Purpose:** There are several types of preparations in the manufacture of a single- or multiple- fixed prosthetic restoration. The purpose of the study is to document the advantages and disadvantages of each type of preparation.

**Material and Method:** Using improved dental stone for model cast with removable pin in the tooth 1.6, four types of marginal preparations were made: knife edge, shoulder, bevelled shoulder and chamfer. Prepared teeth were poured into metal abutments on which temporary composite resin crowns were made using a direct technique. Temporary crowns were cemented with provisional cement and then analyzed by theoretical and experimental methods. Theoretical techniques, scanning of the prepared metallic abutments as well as those covered with diacrylic resin were scanned using a Scan Box Pro scanner. The software being used by CAD-Smart Optics, obtaining the 3D model in the STL extension. The numerical analysis of the finite element resulting from scanning was imported into the SOLID WORKS 2007 specialized software in order to obtain a solid geometry that was exported to the ABAQUS program. Experimental techniques, the mechanical tests were performed on a Zwick Roell test device, incorporating the testXpert II Testing Software. Forces were applied up to 1300 N and the linear displacement for each metal bin was determined.
**Results:** The results obtained after the mechanical tests are more accurate than ones using the virtual simulation as changes in the marginal fit of the different preparations can be tested more easily than in the virtual one.

**Conclusions:** This preliminary study enhances the idea of differentiating preparations for distinctive alternative prosthetic treatment plans.

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**OP6**

**Postoperative evolution of patients in implant stage in relation to the type of anesthesia**  
Manuel Florin Rosu, Claudiu Topoliceanu, Norina Forna  
Faculty of Dental Medicine, “Grigore T. Popa” University of Medicine and Pharmacy Iasi  
Romania

**Aim of study:** The objective of this study was to assess the postoperative evolution of patients following two types of anesthesia during surgical implant procedures.

**Materials and Method:** The research was performed on 120 patients treated by implant therapy, divided in a study group (60 patients) submitted to intravenous anesthesia with Midazolam and a study group (60 patients) submitted to intravenous anesthesia with Midazolam in combination with Fentanyl and Propofol. The postoperative evolution of the clinical parameters (pain control, recovery time, clinical recovery time) was recorded and compared between groups.

**Results:** The recovery time and clinical recovery time were longer for the group submitted to intravenous anesthesia with Midazolam.

**Conclusion:** Favorable postoperative evolution was recorded for patients submitted to the anesthesia obtained by combination Midazolam, Fentanyl and Propofol.
Evaluation of the periodontal changes in patients with prosthetic iatrogenies
Liliana Pasarin, Sorina Solomon, Irina-Georgeta Sufaru, Cornelia Teodosescu, Silvia Martu
Faculty of Dental Medicine, “Grigore T. Popa” University of Medicine and Pharmacy Iasi
Romania

Troubles in conducting a correct dental treatment can interfere with periodontal tissues homeostasis, including the prosthetic treatment of missing teeth. The aim of the study was to assess the periodontal changes in patients with fixed dental prosthesis. The study was conducted on 58 patients who previously had dental prosthetic treatments. The evaluation included the clinical periodontal parameters (probing depth, bleeding on probing, furcation involvement and gingival recessions), as well as radiological findings. The data revealed that a very high percentage of the prosthetic treatments were incorrect (96.55%), with 83.92% having overhanging margins and 46.42% presenting signs of severe periodontitis. Thus, our results suggest that the quality of prosthetic treatment can severely affect the periodontal tissues health, with important effects on the treatment outcome; also, a good collaboration between the dental prosthodontist, the periodontal specialist and the dental technician being essential.

Primary and Secondary Prevention of Periodontitis and Peri-Implantitis
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¹) Faculty of Dental Medicine, “Grigore T. Popa” University of Medicine and Pharmacy Iasi
²) Faculty of Medical Bioengineering, “Grigore T. Popa” University of Medicine and Pharmacy Iasi
Romania

Purpose: Primary and secondary prevention of periodontitis (PD) and peri-implantitis (PI) inflammation should be a basic desideratum for each clinician. When dental implants and prosthesis have been inserted correctly, the prophylactic criteria for their maintenance remain the most important aspect. In the conditions of an increased bacterial activity and when we don’t have the bacterial control, the local defense is affected and causes the installation of the local complications. The objectives of the investigation were to evaluate the level
of hygiene, the quantification and the efficiency of mechanical and chemically control of bacterial plaque.

**Materials and Method:** The study included patients who had prosthetic treatments on natural teeth and implants over a period of more than 1 year. Experimental methods used were formed by quantitative quantification of bacterial plaque and level of PD and PI. Oral and dental hygiene has been mechanically controlled (hand and electric brushes, interdental brush, super floss, oral jet) and chemical (chlorhexidine-0.06%-0.2% and naturally active compounds) in the long and short term recommendations. Plate index evaluation was done with revelators. The evaluation of the degree inflammation was established by clinical-biological indices and by 2D-3DRx-analysis. The data processing was performed with SPSS15.0 for windows with a statistical significance threshold of $p \leq 0.05$.

**Results:** There were statistically significant differences between the initial and subsequent evaluation. The differences were given by the control differences of the bacterial plaque.

**Conclusions:** Because PD and PI already installed in their initial phase have been resolved by applying individual and professional hygiene methods, patients' awareness from pre-treatment is decisive. The realization of the bacterial profile and the medical treatment is another essential component in the treatment of PD and PI.

**Key words:** periodontitis, peri-implantitis, oral hygiene, bacterial plaque

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**OP9**

**Career opportunities for dental students through European projects**

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²) Faculty of Medicine, “Grigore T. Popa” University of Medicine and Pharmacy Iasi

Romania

**Purpose:** Our paper aims to propose strategies to facilitate the transition to the labor market, it is necessary to know what are the requirements and needs of different stakeholders regarding the preparation of graduates. Based on their needs, the goal of higher education is to identify the profile of skills that make graduates preferred by employers.

In an attempt to delineate the profile of graduates’ employment, it is necessary to begin by defining what we mean by employability, using instruments developed
in the National Quality Barometer report, based on feedback from students, teachers and hiring companies.

**Materials and Methods:** The questionnaire applied to students of dentistry aims to identify the characteristics of good student, being statistically interpreted with SPSS 12.

**Results:** For teachers, good student is mobilized by thirst for knowledge, the desire to grow personally through learning, while 20% of respondents share this opinion. The following are good learner characteristics: reliability, conscientiousness, diligence, ability to listen and to be disciplined. Also intelligence is considered to be important. We note that most features are the traditional ones relating to the ability to be obedient to the education of students. Analyzing the importance of hiring criteria for the sampled companies, the most important criteria are:
- Prompt and efficient use of time (mean 4.80)
- Honesty, trust (mean 4.63)
- Proactive attitude oriented for new solutions (average 4.60)
- The candidate’s motivation and attitude towards work (mean 4.54).

We note that the most important criteria are not so focused on skills general or specific ones (as expected from the results of studies in the literature), but on some features related to the way of being the candidate (promptness, honesty, motivation).

These results show that employing companies do not necessarily relate to the work experience of the candidates, but rather to their attitude to work.

**Conclusions:** To conclude, in an attempt to develop the profile of qualities that make a graduate a desirable employee we identified the most important features in terms of the three categories of stakeholders (teachers, students, employing companies). These are related to way of being of students / graduates: thirst for knowledge, diligence, conscientiousness and to inspire confidence.
For fixed dentures on implants different implant-abutment materials are available. Beside mechanical and technical characteristics the materials differ concerning biological aspects. Aim of the study was to test common abutment-materials regarding their periimplant soft-tissue integration: zirconia (Zr), zirconia with feldspathic veneering (ZrF) and polyetheretherketon (P) in comparison with the current golden standard titanium (Ti).

30 experimental abutments (Ti: N=11, Zr: N=6, ZrF: N=7, P: N=6) were placed in 15 edentulous test-persons with 2 interforaminal bone-level implants each and clinically studied: PI, BOP, probing-depth. The implants were followed by standardized X-rays regarding crestal bone-level alterations at the following points in time: abutment-installation (t0), abutment-removal (t3), 6 months after abutment-removal (t9). After 3 months (t3) of open, unloaded healing, the abutments were removed with the attached soft-tissues and were analyzed by cyto-biological and histological test methods. Non-parametric statistics were applied. (KEK Bern: 157/2008)

Histologically, the peri-implant soft-tissues of all abutments showed a lymphocytic infiltration. However, ZrF demonstrated less mononuclear cells than Ti (p<0.001). Zr and ZrF had an increased collagen fiber component in the soft tissue compared with Ti and P. All implants fulfilled the accepted success-criteria, whereas at implants with P abutments a slightly increased peri-implant bone-loss was found.

From the biological point of view Zr, ZrF and P abutments showed results similar to Ti with slight advantages for Zr and ZrF.
Design of implant supported cross arch restorations for the edentulous maxilla

Theodoros Gonidis, Charitomeni Chatzinikolaou, Phophi Kamposiora, Georgios Papavasiliou, Panos Zoidis

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Background: When it comes to the Prosthetic Rehabilitation of the Edentulous Maxilla there is a great number of options for the clinicians to select as far as the design and materials are concerned. Conventional dentures are of great acceptance to the elderly patients. However edentulous patients of younger age expressing the desire for fixed restorations and special anatomic defects, such as the extreme resorption of the alveolar crest, lead to treatment plants including dental implants.

Aim: The aim of this report is to present all the available options to date, for the construction of implant supported restorations for the edentulous maxilla through a picturesque presentation of cases delivered in the Postgraduate department of the Dental School of NKUA.

Material and Methods: The parameters analyzed for the meticulous design of such Prosthesis are the number and type of Implants, the type of restoration fixed, removable or combination of both, the type of abutments related to the Implants selected and the superstructure design, material and manufacturing methods, and the priorities of the overlaying materials.

Two implants placed at canine sites can serve for the fabrication of a fixed anterior partial denture supporting a removable partial denture through ERA attachments. Placing four implants is the minimum number for overdentures, while six implants is the least for constructing fixed restorations.

Nowadays material Industry has made great steps allowing us to construct frameworks of metal, PEEK (polyetheretherketone) or Zirconia. The fabrication of metal frameworks can also be achieved either by casting or by CAD/CAM Milling or Sintering. Whereas PEEK and Zirconia Frameworks can only be CAD/CAM Milled.

Tissue mimicking materials have also been developed but true evolution concerns teeth materials, with high optical and textural properties, so these prosthesis achieve great aesthetics, giving individuals foremost customized smiles.

Results: The number of implants that can be placed in the edentulous maxilla due to anatomic defects, the ability of grafting or not, and financial potentials are most determining for the type of restoration to be chosen. Digital imaging of the final prosthesis and the fabrication of stereolithografic surgical templates lead to precisely favorable implant placement and help deliver immediate loading to the implants. Material industry development has moved long away to
reconstructions of great physical and aesthetic properties. The detailed planning from the very beginning makes the selection among all the analyzed factors easier, predetermining the cost, the time needed and a view of the final result. **Conclusion:** This guide sets the clinical, biological and technical parameters that should be taken into consideration to the selection of implant type, the superstructure parts, the materials and the designs particularity when rehabilitating patients with implant supported prosthesis.

**OP12 Modern Methods to Evaluate Peri-Implant Bone Loss**

Francisc-Florin Bartok, Norina Consuela Forna  
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**Purpose:** Peri-implantitis represent an inflammatory process affecting soft and hard supporting tissues of osseointegrated implants. The aim of this study was to investigate if there are any correlations between receptor activator of nuclear factor kappa B (RANK) concentrations in peri-implant crevicular fluid and clinical parameters that reflect inflammatory nature of peri-implantitis.  

**Materials and Methods:** The study included 62 patients divided into 3 groups: healthy implants (n = 21) periodontitis (n = 21) and peri-implantitis (n = 20). Patients were selected and divided into groups according to the criteria for inclusion, and samples of peri-implant/gingival crevicular fluid were collected. A complete periodontal and peri-implantar evaluation were conduct on every patient. To determine the concentration of RANK in PICF and GCF was used a commercial ELISA Kit. Determination of RANK was obtained by spectrophotometric assessment.  

**Results:** RANK concentration was significantly higher in the group with periodontitis compared with healthy group (P = 0.000), also in the group with peri-implantitis compared to healthy patient group (P = 0.000). Thus, RANK concentration is significantly higher in patients with peri-implantitis in comparison with control group, with a statistical difference between the two values (P<0.001).  

**Conclusion:** The concentration of RANK can be used as a parameter that can be monitored in the diagnosis and prognosis of peri-implantitis. Also, this determination can be an easy method of tracking the success of treatment, and a target of future research regarding the mechanisms that occur in the peri-implantar bone destruction.  

**Key words:** receptor activator of nuclear factor-kappa b, dental implantation, periodontitis
Purpose: The study looked for an individualization using different types of grafting materials in the therapeutic algorithm of implanto-prosthetic rehabilitation methods.

Materials and Methods: The study group included 98 patients in the private practice of dentistry in Baia Mare, and also those within the discipline of Prosthodontics and Oral Implantology of the Base Clinical Education of the Faculty of Dental Medicine Iaşi, who were diagnosed with different types of edentation and who will benefit from reconstructive techniques based on different grafting systems.

Results: According to each specific clinical case there were used in implant prosthetic rehabilitation algorithm different types of bone grafting, 60% for using heterogrefts, 30% for allografts and autografts 10%. Regarding the possibilities of prosthetic implant rehabilitation, a percentage of 65% has been met for the different types of fixed restorations on implants and a 35% for removable prosthetic implants.

Conclusions: Out of the grafting materials used, xenografts are successful in different types of augmentations contributing to the success of implant treatment with thorough clinical and laboratory evaluation of the patient candidate for the implant and with the compliance of the rigorous surgical protocols. Choosing the therapeutic implant prosthetic solution is the result of a careful analysis of the particularities of the prosthetic area, with a particular attention for the mucobone support, for the presence of complications existent, locally or generally.

Key words: regeneration, biomaterials, augmentation, prosthetic implant rehabilitation

Purpose: This study aimed to quantify the contribution that different materials may bring for bone regeneration potential in gum regeneration in resizing bone structures affected, in order to establish oral rehabilitation.
**Materials and Methods:** There were considered a total of five bone regeneration materials (Hydroxapatite, Bio-Oss, OsteoGraf /N, Osteogen, Cerasorb), applied in similar clinical situations, radiological assessment of bone regeneration issues, made before the application, immediately after application and 6 months after application.

**Results:** Regarding the quality of bone neo formation, the bone structure was very dense when using Bio-oss and Cerasorb, relevant issues the X-ray that provides the necessary information. In terms of clinical results, they were very good for the other three biomaterials used for bone regeneration. When used properly, biomaterials for bone regeneration provide very good results in terms of maintaining bone volume to withstand the demands, offering also a high percentage of vitality, safety and lack of complications.

**Conclusions:** Biomaterials for bone regeneration techniques can preface rehabilitation implantation, may intervene in the same step with the implantation, or they can find the insertion in reconstructive periodontal therapy.

**Key words:** regeneration, biomaterials, augmentation, bone density

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**OP15  Success vs failure rate in implanto-prosthetic rehabilitation**

Alexandru Calin, Norina Consuela Forna

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**Purpose:** This study aims at analyzing and quantifying the decisional factors having a role in the success-failure rate for implant therapy, focused on the implications of structural analysis and design of implant-prosthetic rehabilitation.

**Materials and Methods:** The clinical and laboratory evaluation of a batch of 85 edentulous patients to be rehabilitated by prosthetic implant, made to quantify essential factors that can lead the implant-prosthetic therapy to success or failure, special attention being paid to structural aspects of implant-prosthetic rehabilitation.

**Results:** In implantology, the success in therapy involves a careful and detailed preprosthetic treatment plan, the three-dimensional optimal application of implant, soft tissue management, the use of bone augmentation techniques and the ability to use various prosthetic components.

**Conclusions:** In terms of functional rehabilitation it must be complementary to the aesthetics and vice versa, too. Compliance with the protocol of surgical and therapeutic observance of all therapeutical principles in choosing the type of implanto-prosthetic restoration are items.
Key words: ceramic biomaterials, zirconia, augmentation, prosthetic implant rehabilitation

OP16  In-vitro evaluation of the effect of thermomechanical loading on the stability of dental implants restored with different ceramic abutments

Merve Bankoglu Gungor, Secil Karakoca Nemli, Meral Bağkur, Mustafa Kocacıklı

Gazi University, Faculty of Dentistry, Department of Prosthodontics

Purpose: The purpose of the present study was to evaluate the stability of the dental implants restored with different esthetic abutments before and after thermomechanical loading by Resonance Frequency Analysis.

Materials and Methods: Digital impressions were taken from the implant which were inserted into the missing area of the upper right central tooth, adjacent and opposite teeth, and buccal side of the casts. Abutments and lithium disilicate crown restorations were designed and milled. Three experimental groups (n=5) were generated as: Lithium disilicate abutment, Prefabricated zirconia abutment, and Zirconia abutment. All specimens were subjected to 1000 thermal cycles at 5-55 centigrade degrees water and 200000 mechanical cycles with 50 N load. Manufacturer’s Smartpegs were inserted onto the implants and implant stability quotient (ISQ) values were measured from the four different sections before and after the thermomechanical loading and recorded. Two-way Analysis of Variance with repeated measures was used to compare the ISQ values. The alpha level was set at 5%.

Results: Variance analysis showed that materials thermomechanical loading interaction was not significant (P>.05); however, the effects of the material and thermomechanical loading factors were found to be significant (P<.05). ISQ values were significantly decreased after the thermomechanical loading (P<.05). According to the Bonferroni results, Prefabricated zirconia abutment group showed significant higher ISQ mean values than Lithium disilicate abutment group (P<.05).

Conclusion: Decrease on the ISQ values that showing the decline in implant stability after loading may be a sign of the decrease on the durableness of implant-bone interface. However, it must be under consideration to evaluate the results of the present study that acrylic resin has different properties than living bone tissue.

Key words: Dental implant, Ceramics, Dental Implant-Abutment Design
Marginal Bone Loss Around Early Loaded SLA And SLActive Implants

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Turkey

**Purpose:** The aim of this study was to compare marginal bone loss around early loaded SLA and SLActive tissue level implants (Straumann Dental Implants; Institut Straumann AG, Basel, Switzerland) after a mean of 81 months follow-up periods.

**Material and Methods:** 107 SLA and 68 SLActive implants were placed in 55 patients and loaded with final restoration after 8 and 3 weeks` healing time, respectively. Marginal bone loss around implants was determined radiographically at initial and after a mean observation time ranging between 20 and 81 months. The effect of location (mandible vs maxilla), smoking habit, gender, implant length and diameter, and type of prosthesis on the marginal bone loss was evaluated.

**Results:** The overall cumulative survival rate was 98.2% being 99% for SLA implants and 97% for SLActive implants. After 20 months` follow-up period, mean marginal bone loss values for the SLA and SLActive implants were 0.24 and 0.17 mm, respectively. After 81 months, mean marginal bone loss for the SLA and SLActive implants reached 0.71 and 0.53 mm, respectively. Marginal bone loss was affected by the length and type of implant and patients` smoking habit after a mean of observation time of 20 months. However, none of the parameters had any significant effect on the marginal bone loss after a follow up period of 81 months.

**Conclusion:** Although cumulative survival rate of implants with either SLA or SLActive surfaces were similar up to 6.5 years of function, implants with SLA surfaces showed more mean marginal bone loss at early and late follow up periods.

**Key words:** Bone resorption, implant length, smoking, survival
Rehabilitation with Slim and Short Implants in Extremely Atrophic Mandible
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Purpose: In patients with extreme alveolar ridge atrophy (intraforaminal height < 10 mm; buccolingual diameter < 4 mm) it is almost impossible to deliver a stable well functioning mandibular complete denture (MCD) and/or to insert standard size implants without bone augmentation. We aimed for the first time to rehabilitate such patients by means of both, slim and short (≤ 8 mm) mini dental implants (MDIs) and monitor them over time.

Materials and Methods: After approving the protocol by finite element analysis, 20 patients (D or E classification according to Leckholm and Zarb assessed by panoramic radiographs and CBCTs) received four MDIs (2.0-2.5 mm wide; 6-8 mm long) by a flapless technique. When insertion torque was ≤ 25 N/cm² MDIs were splinted 3 month to ossteointegrate, or were early loaded (6-8 weeks, >25N/cm²). New MCDs reinforced with CoCr metal framework were made. Patients completed the OHIP-EDENT and the chewing function questionnaire (CFQ) at the baseline, one-month and one-year observation appointments. Retroalveolar and panoramic radiographs were also obtained.

Results: Patients were successfully provided with slim and short MDIs and respective overdentures. From over 70% of participants not being able to wear MCDs, 100% of them wore overdentures afterwards. Two implants fractured during insertion and one failed later. All other implants were firm, without periimplantitis. The OHIP EDENT and the CFQ scores significantly decreased from the baseline to the 1-year observation stage (p< 0.01). Crestal height at MDI sites remained stable, only 4 MDIs showed minimum bone loss (up to 1 mm). Ten individuals have been now successfully wearing respective dentures up to three years with no deterioration of OHRQoL and chewing ability (p>0.05). No more implants were lost.

Conclusions: Preliminary clinical results are promising; however more patients and a longer period of observation will be necessary to confirm the treatment success.

Acknowledgment: Croatian Science Foundation for funding project: 1218, Acronim: Mini dental implants
**OP20**  The digital planning of the pro prosthetic stage in the implant-prosthetic rehabilitation

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**Aim of study:** The objective of this study was to assess the advantages of using digital planning of the pro prosthetic stage in the implant-prosthetic rehabilitation.

**Materials and Method:** The clinical and biological indices were evaluated at baseline and after pro prosthetic stage, using software Prodent Indici (Neotech, Romania). The changes of the clinical-biological indices were measured in relation to the parameters related to patients and prosthetic field.

**Results:** Following the surgical pro prosthetic procedures and temporary prosthetic treatment, it was recorded the increase of bone support index, mucosal support index, occlusal support index, and cranio-mandibular relation index.

**Conclusion:** The digital planning of therapy can be used to assess the quality of the pro prosthetic field following the surgical pro prosthetic procedures.

**OP21**  The “pink” aesthetic management in the implant-prosthetic treatment

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**Introduction:** Successful prosthetic restorations on implants depend not only on the functional aspect but also on the gnathological, aesthetic and hygieno-prophylactic ones. The aesthetic effect is strongly influenced by the ratio established between „white” and „pink” aesthetics.

**Purpose:** The main objective of this article is to present the attempted methods to obtain a high aesthetic effect of prosthetic treatment for partial unidental edentulous sectors of the dental arches using aesthetic implant restorations.

**Materials and Methods:** There were presented four clinical cases, in which were inserted 5 two-stage dental implants (4 - "Alpha-Bio" 1 - "MIS") by using the „flap-less” surgical technique. The overdentures were made following the standard protocol.

**Results:** By analyzing the cases we can see that the buco-dental harmony is influenced by a number of aspects specific to different levels and stages. Overall
(harmony of the face, the smile line), local (the alveolar ridge condition, the degree of atrophy of the gingival papillae), pre-surgical and surgical (the choice of implant parameters and how they were positioned), pre-prosthetic and prosthetic (the type of connection between the elements of the implant, crown anatomy, etc.). Thus, although fixed prosthetic restorations on implants have some net-superior advantages compared to other prosthetic methods, they represent more the functional aspect, while the aesthetic one may have a number of disadvantages. Some of these are: the effect of elongated tooth, the effect of shortened tooth, large interdental spaces, large cervical abrasions, etc.

**Conclusions:** Following this study we can conclude that the integrity of the dental arches and aesthetic effect can be successfully restored in unidental edentations using edoosseous two-stage implants. To establish a fair correlation between „white” and “pink” aesthetic a major importance is given to gingival phenotype.

**Key words:** restorations on implants, "pink" aesthetic

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**OP22**  
Tridimensional soft and hard tissue reconstruction. The story of success  
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The target of the paper is to present three-dimensional reconstruction of the bone to a volume that allows insertion of implants in the ideal position in terms of prosthetic, even in cases of patients with marked bone atrophy. This can be done using modern techniques supported by indisputable contribution of modern bone regeneration materials. Regenerations were sustained also by the latest surgical techniques such as Socket Shield and Free Gingival Graft. The key to success, however, is represented by the stability of both bone and connective tissue graft, especially tension-free flap closure. If these criteria are fully respected, spectacular results can be achieved even in situations that might seem impossible to treat.
Three ways for fabrication of prosthetic products are known nowadays. The manual fabrication, CAD/CAM and 3D printing as the newest method. 3D printers can be categorized to two main groups according to the power source for polymerization. The heat is used for FDM (Fused Deposition Modeling) and LFDM (Liquid Frozen Deposition Manufacturing). Light as a source for polymerization is used for SLA (stereolithography) or DLP (Digital Light Processing). SLS (Selective Laser Sintering) uses laser for polymer sintering. SLM (Selective Laser Melting) prints dental products from metals and dental alloys. This lecture presents 3D printing technique using photopolymers for DLP.

3D printer Way2Production SolFlex650 (Konica Minolta, Japan) as UV-LED DLP (Digital Light Processing) able to print 50µm pixels in 25µm layer resolution was used. Different printed samples of implant supported temporary crowns were tested for biological properties (test of metabolic activity) of material (NextDent C+B, Vertex Dental, Netherlands), in comparison with crowns fabricated manually. 3D printing procedure for clinical usage as well as exposure times for polymerization, pre-processing and post-processing of samples were tested.

Biological test showed higher metabolic activity of cells in group of samples with 60 min polymerization, while the activity was lowered in group of manually fabricated samples. Some problems as the time needed for pre and post-processing, quality of samples in lateral printing fields of printer, software problems-orientation of virtual sample in field, number and orientation of
supports, limited color shade for restorations etc. were proved for the clinical everyday usage of printed crowns. Under limitation of this study 3D printing method for photopolymers is hopefully developing method for clinical usage. The literature is not presenting enough clinical studies to compare different types of 3D printers and materials in dentistry. The procedures and method need more time for definitely evaluation. Supported by programme PROGRES Q29. Key words: 3D printer, photopolymer, metabolic activity

OP24 | Early Intervention On Hypoplastic Amelogenesis Imperfecta Enables Normal Oral Development  
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In patients with hypoplastic Amelogenesis Imperfecta (AI) the form and thickness of the enamel is reduced while in general the enamel is of good quality. This as in contrast to the hypocalcification and hypomaturation type of AI. The form of the crowns on eruption is normal however the enamel is of such poor quality that it chips or breaks very easily and bonding to it is not predictable. Missing a sufficient layer of enamel causes problems for the future treatment of these patients. These problems are caused by mesial drift and by the changed vertical dimensions. The result is root proximity. In case of periodontal infection there is reduced resistance of the interradicular tissues resulting in an almost untreatable pocket straight to the apices. Many of these patients are treated with crowns after the growth has been completed. The consequence is that a substantial amount of healthy structure of teeth has to be removed. The posterior region is most vulnerable resulting in a high risk for endodontic and periodontal complications. In the lecture a concept is presented and illustrated to prevent these complications.
New Technologies in Periodontal Instrumentation and Their Efficiency Regarding Root Surface Quality

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Purpose: The purpose of the study was to establish comparatively the effectiveness of three methods of periodontal instrumentation used in the causal treatment of periodontal disease. The three methods investigated are: scaling and root planning with Gracey’s curette, SRP with ultrasonic scaler and special perio-tip and SRP with Profin reciprocating system and Periotor inserts.

Materials and Methods: The study was conducted on 33 extracted teeth by periodontal pathological reasons which were randomly distributed in three groups: group 1 (instrumentation with Gracey curettes), group 2 (ultrasonic piezoelectric scaling) and group 3 (instrumentation with reciprocating system). The quantitative evaluation of hard tissue loss after instrumentation was done by weighing each tooth before and after performing the procedure. Samples were examined using ESEM and for each sample micrographs were obtained in four magnifications.

Results: The greatest weight loss in the samples was registered by Group 1 (Gracey curettes), but there were no statistically significant differences between the mean values of the weights between the study groups. Lowest scores were obtained by scaling with Periotor inserts followed closely by ultrasonic scaling with perio-tips.

Conclusion: The results of our study revealed the fact that SRP with Periotor inserts was the least aggressive method, followed by the ultrasonic scaler and the Gracey curettes. Using Periotor inserts for root surface scaling the root surface morphology obtained is the most regular and even with fewest dentin denudation areas.

Key words: tissue loss, Gracey curette, ultrasonic scaler, reciprocating system, ESEM
Deposition of Hydroxyapatite Nano-Particle on Zirconia to Improve its Bonding

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Purpose: Although Zirconia has many advantages in the restorative dentistry, some concerns exist about its bonding strength to different dental substrates. On the other hand, Hydroxyapatite is an excellent biocompatible material with good bonding ability. In this study, it was hypothesized that combining the mechanical properties of Zirconia with bonding features of Hydroxyapatite would improve bond strength of Zirconia to different dental substrates.

Material and Method: Forty five Zirconia blocks were randomly divided into the 3 groups; Hydroxyapatite deposition, sandblasting and control. In the first group, the surface of zirconia blocks was thermal coated by Hydroxyapatite nanoparticle. In the second group, the zirconia blocks were sandblasted with Al₂O₃ 50 μ particles. In the control group, no surface treatment was done. The blocks were bonded to cement and following load application, the micro-shear bond strength of Zirconia to the resin cement was measured. The bond strength values were analyzed by Kruskal-Wallis test in 3 groups and paired comparisons were made by Mann-Whitney U test. The failure patterns of the specimens were studied by a stereomicroscope and a scanning electron microscope and then analyzed by the chi-square test (significance level = 0.05).

Result: Deposition of hydroxyapatite on the zirconia surface significantly improved its bond strength to the resin cement in comparison with the control specimens (p < 0.0001). Also, the bond strength was similar to the sandblasted group (p =0.34). The sandblasted and control group only showed adhesive failure, but the hydroxyapatite coated group had mixed failures, indicating the better quality of bonding (p <0.0001).

Conclusion: Hydroxyapatite coating on the Zirconia surface improved the bond strength quality and values.
Dental erosion belongs to the category of non-carious dental wear caused by a series of intrinsic factors (gastro-oesophageal reflux, regurgitation, hiatal hernia, gastrointestinal disorders, bulimia vomiting, hormonal disorders affecting salivary function) or extrinsic factors (food, acidic beverages, acidic potentially erosive drugs, toxic professional environment). Continuous teeth exposure to these acids can cause severe dental tissue loss. Cases raise complex problems, and treatment should be designed to address both the loss of dental substance and the progression stoppage of the process. The use of ceramic micro-veneers can be a therapeutic solution. In order to allow a veneer indication in this case it is necessary that the nature of the dental tissue losses and wear characteristics respect certain clinical and functional parameters. We present a case of erosive dental wear caused by GERD (gastro-oesophageal reflux) in combination with the frequent use of acidic (citric) foods, which was solved by the ceramic incisopalatal micro-veneer technique. Obtaining an exceptional final result implies considering, in addition to the aesthetic qualities and the strength of the material, two other extremely important factors: the space required / available for the future restoration and the presence / absence of occlusal forces or parafunctions. Last but not least, an important factor is the cementing procedure, which requires special surfaces conditioning of the two surfaces that come into contact so as to obtain a maximum of adhesion. CONCLUSIONS: No-prep pressed ceramic micro-veneers are aesthetic, biological, minimally invasive functional and durable solution that provides optimum results and satisfaction to both the patient and the dentist-technician team for the reconstruction of the dental hard tissue losses caused by erosion.

**Key words:** erosion, ceramic micro-veneers
OP28 | The use of surgical lasers in the pre prosthetic and pro prosthetic stage  
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**Aim of study:** The objective of this study was to assess the benefits of the surgical lasers in the preparation of the prosthetic field during the pre prosthetic and pro prosthetic stage.

**Materials and Method:** Two groups of patients for gingivectomy procedures (laser; classic, n=20) and two groups of patients for frenectomy procedures (laser; classic, n=20) were investigated to compare the evolution of the postoperative clinical parameters (pain, discomfort, healing time).

**Results:** The patients submitted to laser surgical procedures experienced less postoperative pain, discomfort and accelerated healing time.

**Conclusion:** The surgical lasers support the minimal invasive approach in the pre prosthetic and pro prosthetic stage.

OP29 | Integrating CAD/CAM, facial scanning and virtual articulator in prosthodontic rehabilitation  
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**Background:** Computer-aided design and computer-aided manufacturing (CAD-CAM) technology is routinely employed in prosthetic full mouth implant-supported rehabilitation. The availability of cone-beam computed tomography, digital intraoral impression and laboratory scanning, computer-aided framework and prosthesis design, and high-precision computer-guided milling and printing is rapidly changing the clinical practice of prosthodontics. However, a significant shortcoming of the current digital workflow includes its limitation to static bite registration with no information regarding virtual articulation of the lower jaw to aid in virtual teeth setup design.

**Purpose:** To integrate facial scanning, CAD/CAM and virtual articulator in CAD teeth setup design and manufacture full mouth restorations.

**Materials and Methods:** Ten patients in need of full mouth reconstruction were recruited for this investigation. CBCT, intraoral, facial scans and dynamic mandibular movements were obtained from each patient. Informed consent was
obtained from each patient in this pilot clinical study. A virtual patient setup was realized through integrating all digital information and virtual teeth try-in was obtained using the facial scan and individualized virtual facebow transfer and articulator settings of horizontal and sagittal condylar inclinations and Bennet angle. Using the virtual patient setup and the jaw motion data, individualized occlusal scheme was realized and was used to fabricate milled PMMA provisional restorations. Following three months of functional loading, definitive restorations were made using high translucency CAD/CAM monolithic zirconium constructions (Bruxzir).

**Results:** Ten patients were treated using a digital workflow integrating guided implant surgery, CAD/CAM, facial scanning and virtual articulator. Provisional and definitive restorations full mouth implant-supported restorations were manufactured using complete digital workflow with no porcelain layering. Individual occlusal scheme, which was obtained for each patient using dynamic jaw motion data, was integrated in the final restoration.

**Conclusions:** A novel digital workflow integrating static and dynamic information was used in large prosthetic constructions. More research is required to assess the validity of this approach.

**OP30** Non-invasive surgical methods in the rehabilitation of the bone support
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**Aim of study:** The objective of this study was to assess the postoperative clinical benefits of the surgical lasers in the guided bone regeneration technique.

**Materials and Method:** Two groups of patients (laser-assisted versus classic surgery) treated by alveolar augmentation with bone xenograft Cerabone and collagen membrane were investigated to compare the evolution of the postoperative clinical parameters (pain, discomfort, healing time).

**Results:** The patients submitted to laser-assisted guided bone regeneration technique experienced less postoperative pain, discomfort and accelerated healing time.

**Conclusion:** The use of surgical lasers improves the postoperative clinical evolution in the guided bone regeneration technique.
**OP31** Variations of the sintering temperature in the technology of metal ceramic dental prostheses: non-destructive investigations using swept source optical coherence tomography

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Metal ceramic dental prostheses combine both, the exceptional esthetic properties of ceramics and the good mechanical properties of metals. Acceptable restorations require the alloy and ceramic to be chemically, thermally, mechanically, and aesthetically compatible. Thermal and mechanical compatibility include a fusing temperature of ceramic that does not cause distortion of the metal substructure. Decalibration of ovens used for sintering of the ceramic layers for metal ceramic dental prostheses leads to stress and cracks in the veneering material, and ultimately to the failure of the restoration.

The aim of this paper is to approach this issue by using an established biomedical imaging technique, optical coherence tomography (OCT). This technique, based on the principles of low coherence interferometry, presents millimeter depth penetration and micrometer resolution. Out of the many methods to perform OCT, the swept source (SS) OCT method is chosen here, which offers the highest achievable acquisition speed and the best sensitivity.

**Materials and Methods:** 25 metal ceramic prostheses were made for this study. They were divided in five groups, each sintered at a different temperature: a group at the temperature prescribed by the producer, two groups at lower and two groups at higher temperatures set in the ceramic oven. An established non-invasive biomedical imaging method, swept source (SS) optical coherence tomography (OCT) was employed, in order to evaluate the modifications induced when using temperatures different from those prescribed for firing the samples.

**Results and discussios:** A quantitative assessment of the probes is performed by en-face OCT images, taken at constant depths inside the samples. The differences in granulation, thus in reflectivity allow for extracting rules-of-thumb to evaluate fast, by using only the prostheses currently produced the current calibration of the ceramic oven.

**Conclusions:** OCT imaging can allow quick identification of the oven dekalibration, to avoid producing dental prostheses with defects.

**Key words:** sintering temperature, ceramic-fused-to-metal dental prostheses, nondestructive investigations, swept source optical coherence tomography, quantitative assessment, en-face OCT images
Acknowledgments: This work was supported by the PIII-C2-PCFI-2015/2016 project – UMF VICTOR BABES TIMISOARA. A. Bradu and A. Podoleanu acknowledge the support of the European Research Council (http://erc.europa.eu), Grant 249889. A. Podoleanu is also supported by the NIHR Biomedical Research Centre at Moorfields Eye Hospital NHS Foundation Trust, and UCL Institute of Ophthalmology. The authors declare no potential conflicts of interest with respect to the authorship and publication of this article.

OP32 News in classical and modern impression in dentistry
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Purpose: New trends in classical and modern impression technique are emerging due to different problems. In the classical procedure the main problem is related to the cervical contraction of the impression material. In the optical impression the main problem is related to the necessity of the proper elevation of the abutment preparation. This paper has the purpose to propose some new solutions for those problems.

Material and Method: For the classical impression technique the usual method of impression with silicone is compare with a new technique which involve a 3D polymer printed scaffold. The measurements were performed manually as well as by a CAD scanning technology to validate the obtained results. The optical impression is compare with a Spectral Domain Optical Coherence Tomography working at 860 nm.

Results: The new solution for the classical impression seems to offer a more stability of the cervical dimensions for the abutments preparations in compare with the conventional method. For the optical impression the proper elevation of the abutment preparation represent the key for a proper result. Optical coherence tomography does not need any kind of elevation for a good impression.

Conclusions: The impression technique needs to be improved for better prosthetic results in both directions, classical and modern.

Acknowledgment: This work was supported by the Romanian National Authority for Scientific Research, CNDI–UEFISCDI project PN-III-P2-2.1-PED-2016-1937 (http://3om-group-optomechatronics.ro/).
Purpose: The objective of the study was to review concept changing in oral rehabilitation choices for posterior edentulism.

Material and Methods: Study used a retrospective model. A number of 420 dentists with different ages from Craiova were included. They were asked to answer a questionnaire with questions about prosthetics choices and their motives in posterior edentulism. The results from questionnaires analysis were compared with the results from an electronic search of PubMed with the question “posterior edentulism”.

Results: From the study group 395 of dentists responded. Their choices for prosthetic treatments of posterior edentulism differed according to their age and their specialty. Older dentists used for treatment cantilevered bridges, partial dentures and rarely, dental implants. Younger dentists used more dental implants for rehabilitation of posterior edentulism, choosing different types of implant restorations. Also, dentists with specialty in dental alveolar surgery choose more frequently dental implants, adding also different surgical interventions like sinus lift or bone regeneration. Also, the choice for prosthetic rehabilitation in posterior edentulism depended on patient choice, influenced by dental anxiety, financial aspects or health problems. Compared with other countries, in Romania implant supported bridges are still underused for posterior edentulism, especially for financial aspects.

Conclusion: The prosthetic concepts about oral rehabilitation in posterior edentulism changed over decades. From cantilever bridges and partial dentures they evolved towards implant supported bridges, with bone regeneration and other surgical interventions.
**OP34**  Combined Analysis of Effects of Various Instrumentation Systems and Applied Different Cements and Ceromer on Fracture Resistance of Endodontically Treated Teeth: An in Vitro Study  
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**Purpose:** The objective of present study to evaluated the fracture resistance of teeth following the instrumentation with One Shape New Generation (OSNG), ProTaper Gold (PTG), and K3XF nickel-titanium instrumentation systems and titanium screw post cemented with glass ionomer cement (GIC) and resin modified cements (RMC) and ceromer.  

**Material and Methods:** 135 mandibular premolar teeth were prepared with PTG, OSNG and K3XF. Then, the teeth were randomly divided to GIC, RMC, and ceromer subsets (n=15). The fracture resistances of all the specimens were measured and analyzed with two-way ANOVA and Tukey's test.  

**Results:** The OSNG and PTG provided highest values of fracture resistance (p<0.05). Overall, ceromer had significantly highest fracture resistance values compared to other cements (p<0.05). Overall, the specimens prepared with ceromer and OSNG or ceromer and PTG had the highest fracture resistance values.  

**Conclusion:** The leading finding of this study was the demonstration of distinctive superiority of ceromer as adhesive during the preparation with OSNG and PTG.  

**Key words:** Ceromer, endodontic instrumentation systems, fracture resistance, titanium screw post, adhesive cements

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**OP35**  Current Approaches in the Adhesive Therapies for Teenagers and Young Patients  
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The adhesive prosthetics therapies, together with the evolution of the biomaterials and techniques, is based upon a viable treatment solution, grafted upon concepts specific to the treatment plan of the teenagers and youths.  

**Aim:** To identify therapy management at the teenager and young patients who is frontally and frontally and laterally toothless, objective which is made up of the
achievement of a fast and efficient algorithm, adapted to the features of the studied group, structured on the following trajectories: the analysis of the growth, rapid evolution, surprising the stage cliché parameters and selection of the therapy solution based upon the minimally invasive principles, the Maryland bridge type, Ovate pontic restoration and Encore bridge.

**Materials and Method:** We carried on a practical therapy management guide for the frontal and frontal-lateral toothless in the young patients, guide which comprises an efficient clinical algorithm, grafted upon the morphological and functional features of the paediatric dentistry, individualising the clinical and para-clinical examination, governed by the conservatory and minimally invasive principle, the final choice in this age interval being dominated by the possibility of aesthetic recovery. With the help of the mathematical simulators, we carried on a comparative study of the three techniques used for the various clinical situations.

**Results and discussions:** As final result we have the solution selection based upon the type of toothless, its location, the chosen bio-materials and adhesives, as well as the involved tensions. It is observed the flexibility of the Encore bridge restorations compared to the popular Maryland bridge ones, aspect with profound clinical implications.

**Conclusions:** These non-metallic and minimally invasive therapies, anchored in the adhesive registry, lead to successful results, their selection being in full accordence with the aetiology of toothless, the type of static occlusion and dynamics, as well as other particularities of each clinical case.

**Key words:** adhesive techniques, Maryland bridge, Encore bridge, Ovate pontic restoration

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**OP36**

**Contribution to the analysis of some biological markers within metabolic disorders**

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**Introduction:** Despite the essential role of bacteria in inducing periodontal disease, when establishing the individual risk profile for a patient to develop periodontitis, patient-associated characteristics need to be taken into consideration. A high percentage of dyslipidemic patients are also affected by
periodontitis, but few studies have determined the effect of periodontal treatment on some interleukin levels in this context.

**Aim:** The present study focused on investigating whether the two isoforms alpha and beta of interleukin 1 can modulate the response to periodontal treatment, as well as the potential association between interleukin levels and dyslipidemia in different forms of periodontal alter.

**Materials and methods:** Fifty patients with periodontal injury were selected and equally allocated to case and control group. All subjects were evaluated at baseline for periodontal parameters (oral hygiene index, probing pocket depth, clinical attachment level) and gingival fluid (GCF) and serum biological markers: IL-1α, IL-1β level, serum HDL and LDL. The subjects received non-surgical periodontal therapy and were re-evaluated for periodontal and biological parameters in two follow-up sessions, at 2 and 6 months respectively.

**Results:** Both interleukin isoforms were significantly higher in GCF than in serum, p= 0.0048 for IL-1α and p= 0.0293 for IL-1β. The levels of both isoforms decreased in GCF and serum as well, with only minor reductions in serum following periodontal treatment in accordance with the improvement of PPD and CAL. Although the periodontal parameters did not show statistical significance for improvement following the non-surgical treatment, we noticed a tendency of decrease in PPD and a mild improvement in the CAL at 2 month, that was even more noticeable at the 6 months follow-up session. Both IL-1 isoforms seem to improve following periodontal treatment, with statistical significance only in the case of IL-1α in the dyslipidemic patients.

**Conclusions:** Our study showed that GCF sampling could be a useful tool for monitoring the immune response of the host in dyslipidemic subjects with periodontal injury. However, if blood sampling would be considered as an additional indicator in parallel with periodontal measurements, possibly even a better predictor for the evolution of periodontal disease than IL-1 levels could be represented by measurements of lipid metabolic status in serum.

**OP37**

**Effects of Different Occlusal Splints on Joint Vibrations in Bruxers**

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**Purpose:** The effects of occlusal splints on joint vibrations are not fully elucidated. The aim of this study is to evaluate the effects of three different occlusal splints (soft, hard and semi-soft) on joint vibrations in patients with bruxism and to compare with asymptomatic individuals.
Materials and Methods: This study was carried out on 49 patients with bruxism and 15 asymptomatic individuals, totally 64 subjects. The selection of patients with bruxism was based on, International Classification of Sleep Disorders Sleep bruxism diagnostic criteria. 16 patients were treated with soft splint, 17 patients were treated with hard splint and 16 patients were treated with semi-soft splint. Joint vibration records were made with JVA (Biopak system BioResearch, Inc., Milwaukee, WI) device. The recordings were made two times at three months intervals.

Results: There was no significant difference in joint vibration parameters between patients with bruxism and asymptomatic individuals before treatment (p>0.0063). Between the increase in soft group and reduction respectively in hard group and semi-soft group especially for total integral values variations, after treatment at the opening movement for left joint were statistically significant (p=0.005 and p<0.001).

Conclusion: The patients with bruxism showed higher joint vibration values than asymptomatic individuals according to some parameters, although there was no statistical difference. Likewise, occlusal splint treatment showed variations in some joint vibration parameters. As a conclusion within the limitations of this study, it is thought that the use of hard and semi-soft splints may be more convenient than soft splints according to joint vibration analysis.

Key words: bruxism, occlusal splint, TMJ vibrations

OP38 Evaluation of the interdisciplinary interface between fixed prosthodontics and periodontics
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Aims: It is the purpose of this study to outline the areas of overlap between prosthodontics and periodontics that dictate the interdisciplinary treatment.

Material and Method: Prosthodontic treatment should enhance patient comfort, function, health and esthetics. We analyzed 2 lots of patients with fixed prosthetic appliances: one in relative periodontal health, the other with at least chronic generalized medium periodontitis regarding six periodontal–prosthodontic interfaces in detail as they relate to conventional fixed prosthodontic treatment: gingival level and contour, edentulous area, magnitude of periodontal support, abutment tooth preparation, prosthesis morphology, prosthesis material.
**Results and discussion:** It is imperative that periodontal tissues are healthy before prosthodontic treatment commences, and additional periodontal treatment is commonly indicated to facilitate improved prosthodontic treatment outcomes. Predictable prosthesis longevity is dependent on the cleanability of the restored tooth or teeth and on the relationship between prosthodontics and periodontics when planning and performing the prosthodontic treatment. To ensure patient satisfaction, multidisciplinary treatment is essential. This includes simultaneous and coordinated periodontal and prosthodontic care to ensure a favorable outcome for patients with complex prosthodontic and/or periodontal presentations.

**Conclusions:** The contemporary literature pertaining to fixed prosthodontic treatment reflects the close relationship with periodontal parameters and promotes the concept of a biologically driven prosthodontic practice.

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**OP39 Implementing the Vienna Concept in Complex Prosthodontic Cases**

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2) Medical University of Vienna

**Greece**

**Introduction:** The Vienna Concept incorporates a sequence of precise and exact diagnostic steps, leading to a highly individualized and functionally oriented rehabilitation. Jaw Tracking and Lateral Cephalometrics are integral parts of this process, while the decision upon angulation of occlusal plane, the angle of disocclusion and the inclination of canine controlled eccentric jaw movements dominate planning in prosthodontic treatment.

**Aim:** The aim of this poster presentation is to provide a detailed description-illustration of the way the Vienna Concept can be incorporated in full mouth prosthetic rehabilitation via a case presentation, while at the same time, whenever possible, minimal invasive-preparation approach with onlays, veneers and composites is utilized to preserve as much tooth structure as possible.

**Materials and Methods:** All sequential steps are described and illustrated from diagnostics- incl. functional analysis, dynamic jaw tracking, cephalometrics, functional wax up- temporarization to the delivery of the final prosthesis.

**Results:** After 2 months of temporarization, the procedures for the final restoration followed. Vertical dimension of occlusion was raised by 5mm in the incisal pin and canine guidance with sequential disocclusion was the delivered occlusal scheme.
**Conclusions:** Adhering to a standardized, detailed and functionally oriented protocol offers predictability, which is the key element in Prosthodontics treatment-planning and execution.

**Key words:** Jaw Tracking, Axiography, Cephalometrics, Vienna Concept

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**OP40**

**Combining Orthodontic and Restorative Treatment for Complete Oral Rehabilitation**

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**Purpose:** In the last decades patients’ demand for dental and facial esthetics increased tremendously. Patients are seeking for orthodontic treatment not only for esthetic reasons, but also to improve their function and occlusion, especially in those cases with important occlusal imbalances or particular dental conditions. Our aim is to underline the need for a dental team in order to establish the correct treatment planning and treatment sequence.

**Materials and Methods:** Patients with different orthodontic malocclusions and spaces in the dental arches due to previous extractions, congenitally missing teeth or tooth size discrepancy were examined and treated by a dental team composed of orthodontist, dental surgeon and prosthodontist for complete oral rehabilitation of the patients. All patients received orthodontic treatment with different types of orthodontic appliances in order to correct the malocclusion and to create favorable conditions inside the dental arches for the next restorative procedures.

**Results:** At the end of the treatment all the patients showed good dental and facial esthetics, functional and stable occlusion and the integrity of dental arches reestablished through dental or implant supported crowns and bridges. A case with tooth size discrepancy in the incisors’ area was treated by orthodontic means to recreate space up to the normal size of the teeth and then reshape the teeth by using ceramic veneers.

**Conclusions:** There are cases in which the orthodontic treatment represents only the first stage in treatment planning and it should be followed by different restorative procedures provided by members of the dental team for successfully completion of the oral rehabilitation.

**Key words:** orthodontic treatment, oral rehabilitation, dental team
Purpose: Evaluation of clinical criteria in the process of prediagnosis of temporomandibular disorders.

Material and Methods: The arthrogenic temporomandibular disorders, clinically is characterized by the presence of signs and symptoms, the assessment of which underlies the presumptive diagnosis. Symptomatic triad including articular noises, arthralgia, and deviation of mandibular movements orientates the clinician towards the initial differentiation of clinical forms of articular disorders. The objective clinical examination, based on diagnostic criteria, confirms or excludes the clinical diagnosis. The rationale for the diagnostic process is focused on a phased therapeutic management. Were examined clinically and selected 15 patients (8M, 7W) aged 45 years with temporomandibular dysfunction of the condyle-disc assembly. The anamnesis was done through the method of medical dialogue correlated with data from our questionnaires. Clinical examination methods (inspection, palpation, auscultation) were supplemented with specific clinical tests (resistance test, articular game control).

Results and Discussion: Following the evaluation of the anamnestic data and the objective clinical examination, the clinical diagnosis of the temporomandibular arthrogenic dysfunction was preset. In this context, the diagnosis included the clinical form of dysfunction, the etiological factors, and the prognosis of evolution over time. Subsequently, for paraclinical examination methods were selected to confirm or refute the diagnosis of temporomandibular dysfunction.

Conclusion: A complete and complex clinical examination based on clinical and diagnostic criteria is the key to success in setting up a true diagnosis.
**OP42**

**Statistical Study Regarding the Binom Oral Pathology – General Status**  
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Romania

**Purpose:** This study aimed the quantification of the oral pathology prevalence according with the general state health of the examined subjects.

**Materials and Method:** The lot of study has been represented by 210 subjects from Galati County. The sex distribution and ratio was: 64,46% females and 35,4% males. The patients have been the subject of a combined questionnaire and clinical examination method.

**Results:** The general state of health diagnosis of the subjects studied was reflected in percents as following: 71 percentage of subjects presented a good general health, 29 percentage of subject claimed various symptoms related to various maladies and syndromes that influence the oral status and impair the developing of specific stomatological therapies. Regarding the oral state health an important percentage of 42,23 presented a healthy status while the rest of 57,7 developed a complex and wide range of oral manifestations.

The results create the premises for extrapolating the populational screening and implementing new and well guided selective methods for prevention, that aim each clinical entity.

**Conclusions:** The correlative aspects resulted after analyzing the statistical processed data creates the premises of a clear view upon the oral health in the general pathology complex context. The correlative aspects between the general state of health and the oral pathology represent the start line for a pertinent specific therapy.

**Key words:** oral pathology, general status, populational screening, specific therapy

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**OP43**

**Study Regarding the Effects of Occlusal Trauma in Patients with Periodontal Disease**  
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Romania

**Purpose of the study:** Occlusal trauma is a term used to describe pathological changes or adaptive changes that develop in periodontium as a result of the excessive force produced by the masticatory muscles. The purpose of this study
was to evaluate the degree of periodontal lesions in patients with chronic periodontitis, with or without occlusal trauma.

**Materials and Methods:** In the study, 40 patients with chronic periodontitis were divided into two groups: study group with periodontal disease and occlusal trauma (n=30) and the control group consisting of patients with periodontal disease but without occlusal trauma (n=10). Patients were clinically and radiographically examined, including the bacterial plaque index, absent teeth number, probing depth, recessions, number of teeth with mobility and furcation lesions.

**Results:** Most patients with mild periodontitis did not show occlusal trauma sites, while most patients with severe chronic periodontitis had more than three occlusal trauma sites per patient. The difference between groups was statistically significant (P <.05).

**Conclusion:** This study has shown that occlusal trauma generates significant periodontal changes. Thus, the therapy of occlusal trauma becomes an absolute necessity in periodontal therapy.

**Key words:** occlusal trauma, periodontitis

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**OP44**

The treatment of complex clinical cases – an interdisciplinary approach (orthodontics and prosthodontics)

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**Background:** In modern dentistry, solving complex cases can only be achieved by interdisciplinary approach (orthodontic, surgical, prosthodontics...). This approach aims to obtain a stable occlusion, improved facial aesthetics, increased patient quality of life.

**Aim:** As part of the interdisciplinary treatment, orthodontics can be used to deliver an overall treatment which is minimally invasive and maximally efficient for the patient, and can make prosthodontics potentially ideal.

**Materials and Methods:** In this report, the presented cases was treated using orthodontic and prosthodontic treatment. The orthodontics was called to treat either primary malocclusion, or to help decisively in reducing secondary tooth migrations following extraction in order to be able to perform best possible prosthodontic treatment. The report describe for each presented case the
diagnostic, treatment plan, indications, contraindications, problems and benefits of orthodontic/prosthodontic treatment.

**Results:** The interdisciplinary approach involving an orthodontist, an oral surgeon and a restorative dentist has led to maximizing the aesthetic and functional results in all presented cases.

**Conclusions:** Outcome of combined efforts of orthodontist and prosthodontist was greatly enhanced due to the optimal collaboration between the two in order to establish clear goals and optimal treatment sequence.

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**OP45 Integrated Management of the Perio-Ortho-Prostodontic Patient**  
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**Purpose of the study:** As the age of the population increases, so does the complexity of oral rehabilitation required to bring a state of homeostasis to an ever aging humankind. The study aimed to assess the treatment outcome in perio-ortho-prostodontic patients.

**Materials and Methods:** The study was conducted on 32 patients, with orthodontic and prosthetic treatments, who were submitted to clinical and radiologic examination, with recordings of the plaque index, the periodontal tissue loss and bleeding on probing.

**Results:** We observed a relatively high number of incorrect prosthetic treatments (62.5% of the examined patients); also, 43.75% of the examined patients presented occlusal trauma sites, with clinical attachment loss higher than 4mm.

**Conclusion:** Therefore, the treatment plan must be discussed thoroughly amongst all the members of the periodontic-orthodontic-prosthetic team in order to achieve the best possible outcome, thus enhancing the patient comfort, function, health and esthetics. Complex factors should be taken into account such as design of the prosthesis, preparation, materials used, number, position and status of the remaining teeth, bone and gingival level, occlusion. Periodontal stability must be obtained before any orthodontic and prosthodontic therapy commences, and a careful monitoring of periodontal status must be maintained thought treatment in order to assure a favorable outcome.

**Key words:** *prosthetic treatment, orthodontic treatment, periodontitis, occlusal trauma*
OP46  
**Quantitative assessment of subgingival bacterial plaque in dental prosthesis patients**  
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**Purpose:** This observational study was done to evaluate the quantitative changes in the microbial flora in the gingival sulcus of abutment teeth, adjacent to the edentulous space over varying time intervals of 1 month, 2 months and 3 months respectively.

**Materials and Methods:** Forty partially edentulous patients, with single missing teeth, were selected and their microbial samples were collected from the gingival sulcus of abutments adjacent to edentulous space with sterile paper points at 1 month, 2 months, 3 months intervals during which the collected subgingival microbial samples were cultured and the corresponding quantitative microbial alteration in the restored gingival sulcus was recorded.

**Results:** We observed a statistically significant (p<0.001) progressive increase in gingival sulcular microbial colonization over varying time intervals of 1 month (3.25 ± 1.21(10^6) CFU/ml), 2 months (4.64 ± 1.13(10^6) CFU/ml) and 2 months (4.75 ± 1.16(10^6) CFU/ml) respectively.

**Conclusion:** Subgingivally placed margins with heavy finish lines in the abutment teeth demonstrated a statistically significant increase in sulcular microbial colonization over varying time intervals, with great importance on periodontal support and the treatment outcome.

**Key words:** Subgingival microflora, Dental prosthesis, Subgingival margins

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OP47  
**Temporomandibular dysfunction vs. posture**  
Valeriu Fala  
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**Aim of the study:** Demonstration of occlusal rehabilitation procedures for patients with temporomandibular dysfunction, perpetuated by the incorrect posture.

**Material and Methods:** In this clinical study, there were enrolled 25 patients (15 male, 10 female, with an average age – 42 years), with signs and/or symptoms
specific to myogenous/arthrogenous temporomandibular dysfunctions, with an impact on the cephalic posture. The complex clinical-instrumental exam consisted of inspection, palpation, percussion, auscultation, and there were used several clinical tests: resistance, provocation, compression test. Evaluation of the head posture has been conducted in relation to the trunk via observation. Several other paraclinical methods have been employed: cone beam computer tomography for the temporomandibular joint, condylography, cephalometry.

**Results:** As a result of the clinical investigation and based on the validation of the clinical diagnosis, there have been conducted therapeutic procedures for the occlusal rehabilitation of patients with temporomandibular dysfunctions, with an impact on posture, based on the identified clinical forms of dysfunction. The interrelationships between the various clinical forms of temporomandibular dysfunction, as well as the identification of the incorrect posture as a perpetuating etiological factor, allowed the determination of the therapeutic objectives and the selection of the treatment procedures.

**Conclusion:** The usage of occlusal rehabilitation procedures for patients with temporomandibular dysfunctions and incorrect posture are based on the validation of the clinical diagnosis and on the individual approach concerning the treatment objectives.

**Key words:** posture, temporomandibular dysfunction, occlusal rehabilitation procedures

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OP48 | Present aspects of the children and youngsters’ frontal toothless rehabilitation

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The youth frontal toothless therapy supposes a specific approach dictated by the morphological and functional particularities of the 5-25 age stage.

**Aim:** To establish the prevalence and incidence of the child’s and teenager’s frontal toothless, with the identification of its etiology and the rehabilitation perspectives of the morphological and functional affected parameters.

**Material and Method:** For the clinical study, 120 patients were placed under observation, patients who presented at the Iasi Pediatric Dental Clinic and in private dental offices during the time interval 2015-2017, diagnosed with
multiple and various pathologies, among which frontal toothless was observed in 136 cases for the age comprised between 5 and 25 years.

**Results and discussions:** The patients were aged between 5 and 25 (37.21% 5-19 years, 62.79% 20-25 years). Regarding the prevention of the therapeutic solutions within the studied group we observe the weight of the temporary solutions for the childhood duration, followed by restorations with composed materials, significant statistical percentages belonging to the fixed restorations with the metal and ceramic crowns, the lowest percentage belonging to the ceramic-type restorations with zirconium or fully ceramic ones, choice dictated by the social and economic criteria, at the patients in which the growth process stagnated, essential elements of the patient's final behavior with regard to the body scheme reception.

**Conclusions:** Toothless architecture will lay at the basis of the prosthetic rehabilitation in full accordance with the factorial accumulation, embracing valences of high exigency at the teenager’s age, the frontal toothless being perceived as an amputation, forcing the teenager in isolation. In full accordance to the age and the particular clinical situation with regard to the successful esthetic restoration, the preparation and non-preparation actual techniques for the integrated ceramics constitute a selection option.

**Key words:** children, frontal rehabilitation, fixed aesthetics prostheses

**OP49 Prevalence of Partial Edentation and Prosthetic Treatment in Young Adults from Iasi, Romania**
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The loss of teeth in the young adult population is closely correlated with the oral health status, oral health behaviors and socio-economic level. The objective of the study was to determine the prevalence of partial edentation and prosthetic treatment among young adults in Iasi, Romania.

**Materials and Methods:** The study included a total of 184 students of the Faculty of Dental Medicine, Grigore T.Popu University of Medicine and Pharmacy Iasi, aged between 22 and 26 years. The EGOHID System was used in order to evaluate the oral health status. The data were analyzed by gender, socio-economic level and oral health behaviors using SPSS 20.0 (p<0.05).

**Results:** Out of the 184 subjects 46.7% had partial edentation. The major reason of tooth loss was dental caries (96.5%) followed by traumatic injuries (18.2%) regardless the socio-economic status. The most commonly extracted tooth was
the first molar both on the upper and lower jaw. The high prevalence of tooth loss was significantly associated with a high carbohydrates intake frequency. For the edentulous students the prevalence of different prosthetic rehabilitations was of 57.8%, mainly in females and high socio-economic level subjects. The major reason for non-replacement was the lack of knowledge about the implications of the edentation (61.3%) and the financial problems (19.8%).

**Conclusions:** The prevalence of tooth loss demonstrates the need of preventive programs in order to control the dental caries and to provide education for oral health.

**Key words:** edentation, young adults, behaviors, prevention

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**OP50**

**Quo Vadis Creativity in Prosthodontics?**

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**Purpose:** Prosthodontics is a branch of dentistry oriented in the past on replacement of missing hard dental tissues, whole teeth and adjacent maxillofacial structures. Technical evolution during the last century introduced new materials and technologies – modern dental alloys, polymers and sophisticated ceramic systems. Technical discoveries brought larger precision and prolonged aesthetic and functional lifespan of reconstructions. They made possible solutions for extensive defects in the facial area disturbing not only mastication, speech and aesthetics but also social relations. Up to now the predictability of result was strictly dependent on individual creativity both of dentists and dental technicians. Digitization and robotics changes many features.

**Materials and Methods:** Authors present comparison of clinical cases realized by conventional treatment methods and manufactured by progressive digital technology. They focus on experience, creativity, time and saving material and human sources.

**Results:** Digitization moves dentists‘ and technicians‘ creativity to more sophisticated communication, planning of final treatment on a higher level, more operative interdisciplinary cooperation, easy demonstration to the patient of possible and predictable treatment results. New technologies require new specialists – engineers, CAD/CAM operators, who save time of medical staff.
Conclusion: The 4th industrial – digital revolution rapidly infiltrates everyday live in dentistry. This reality shifts paradigms in all fields of production. Advancement is visible in the patient’s examination, virtual treatment planning in 3D projection, communication and project realization.

Key words: digitization in dentistry, dental technology, prosthetic treatment

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OP52  Volumetric evaluation of mandibular bone cyst using 2D and 3D imaging technique
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Purpose: To compare two methods of creating three-dimensional representations of mandibular cysts on the basis of 2D imaging: panoramic X-rays and 3D imaging: cone beam computed tomography (CBCT) data.

Material and Methods: A total of 10 mandibles with different bone defects miming cysts took part in this study. Panoramic X-rays and CBCT scans were obtained from all mandibles and saved in the Digital Imaging and Communications in Medicine (DICOM) format. Data were analyzed by two observers: a general dentist and a maxillofacial surgeon. The accuracy of the two methods in assessing cyst volume was compared.

Results: There are major differences between the analysis performed on panoramic X-rays and CBCT data. Also, there were found differences between the observers.

Conclusion: Our results demonstrated morphometric differences of mandibular cysts between panoramic X-rays and CBCT. Also, this study may improve surgical planning and outcomes by knowing the exact volume of grafting material needed prior to the surgical intervention.
Objectives: To assess if using shade-guides with tabs that mimic the form of different teeth would affect the performance in color matching.

Material and Methods: Three composite shade guides (Tetric EvoCeram) made of 10 tabs each, with incisor (ISG), canine (CSG) and molar (MSG) forms, respectively, were used to match the color of three target composite teeth (central incisor-I, canine- C, first molar-M), mounted in a typodont. The color parameters L* (lightness), a* (coordinate in red-green axis) and b* (coordinate in yellow-blue axis) of the shade-guide tabs and of the target teeth were recorded by spectrophotometry (VitaEasyshade, Vita, Germany). In standardized conditions (illuminant D65 produced in JUST LED Color Viewing Light, JUST Normlicht), the target teeth were color-matched, with all three experimental shade guides, by 21 experienced observers. For every tooth, three options were indicated (first, second and third best match). The color difference ΔE*ab between the teeth and the tabs was calculated and a score was assigned from the minimal difference (1) to the highest difference (10). Wilcoxon signed-rank test and Friedman test were used for the statistical analysis.

Results: When the I was matched with the three shade-guides, the following scores were calculated: 191 for ISG, 189 for CSG and 207 for MSG. C was best matched with the CSG (239 vs. 250 for ISG and vs. 291 for incisor-shaped tabs). M was best matched with the CSG (total score of 266) followed by the ISG (291) and MSG (295). However, no statistically significant differences have been found.

Conclusions: The “classical” incisor-shaped tab proved less beneficial in comparison with tabs in form of canines, when canines and molars were assessed. The incisor was the target tooth whose color was matched most precisely, no matter the shade-guide used.

Acknowledgement: This study was supported by Research Project PN-II-PT-PCCA-2011-3-2-1275.
Involvement of microbial flora in oral pathology of the elderly related to metabolic syndrome

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Senility is the biological-gerontological name of the stage of existence in time, characterized by physiological, morphological and psychological involutive changes that progressively occur in the body and precede the last stage of biological existence-death. Ageing is considered to be a gradual decrease in the functional regulation of complex multifactorial processes, the genotype of the individual having an impact on ageing. However, the genetic markers of the ageing process are not identified.

The psychological approach of the elderly should focus on developing autonomy, increasing activity, ensuring comfort, fighting polypragmasia, cultivating rewards, providing social support and vigilance towards the discrete presence of depression, in order to achieve the most fruitful doctor-patient relationship. Oral pathology of the elderly diabetic covers disorders in the oral mucosa (stomopathy), the dento-periodontal organ (dental caries and periodontitis).

Material and Methods: The study conducted within the discipline of Oral Dental Diagnosis and Gerontostomatlogy, during 2014-2016, was performed on a group of 134 patients aged 65-79 years, the mean being 72 years. Following a local clinical examination, a variable pathology was disposed of. There were diagnosed with carious lesions 20 patients (14.92%), oral candidiasis and angina cheilitis 30 patients (22.38%), erythematous conjunctival lesions following an incorrect or outdated prosthesis, 30 patients (22.38%), periodontal disease 54 patients (40.29%), 14 of whom had chronic gingivitis, 4 forms of gingivitis associated with gingival hyperkinesia, 36 cases with chronic marginal periodontitis.

Results and discussions: The clinical examination has detected lesions in the oral mucosa: stomatitis, cheilitis sometimes without subjective accusations only with some discomfort. Associations of existing lesions in the teeth, periodontium and mucosa were more common in diabetic patients. The observed microorganisms were Candida albicans, anaerobic flora, Gram positive and negative bacilli and cocci.

Conclusions: Ageing changes the oral biological balance, including that of the bacterial flora components. The decreased salivary flow caused by the involution...
of salivary glands, prosthesis, medication (polypragmasia), diabetes results in pH adjustment to acidity, favoring the demineralization of the enamel that has a low remineralization potential, increases the incidence of parietal caries. Knowing that the oral environment is an integral and integrated system of the body, its ageing has consequences on the whole organism, and the oral bacterial flora under the conditions of general affection becomes pathogenic with implications in oral pathology.

**Key words:** ageing, oral bacterial flora, oral microbiological disease

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**OP55**

Modulation of the oral oxidative status by some antioxidants and their evaluation by enzymatic markers

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**Introduction:** Several mechanisms have been proposed to explain the periodontal compromise induced by products released from the dental plaque and host immune-inflammatory response, some metabolic harmful species such as free radicals being also recognized as having significant impact. Aim. Starting from previous research demonstrating the determinant role of oxidative stress in periodontal tissue breakdown, we developed a clinical biochemical study to estimate the levels of a biochemical parameter of lipid peroxidation – malondialdehyde (MDA) in the gingival fluid crevicular (GCF), in clinically healthy patients and periodontal patients with chronic versus aggressive periodontitis. Comparative analysis of the effects induced by some antioxidant agents (flavonoids) upon the gingival fluid MDA levels and the degree of periodontal modulation have also been registered.

**Material and Methods:** For our study, we selected 42 patients, subsequently divided into 3 groups after assessing clinical indicators of periodontal impairment: patients with chronic periodontitis (n = 16), patients with aggressive periodontitis (n = 11) and the control group represented by periodontal healthy individuals (n = 15). From each patient GCF samples were collected using special paper strips, followed by their discharge in phosphate buffer, centrifuged and analyzed for marker of oxidative stress through liquid chromatography techniques. All subjects were evaluated at base line and six months for periodontal parameters and gingival liquid malondialdehyde values. The
individuals received non-surgical periodontal therapy and flavonoids (one daily tablet), being re-evaluated for periodontal and biological parameters at 6 months. **Results:** Analysis of MDA in GCF recorded statistically significant differences between the two groups of patients with chronic and aggressive periodontal disorder respectively, compared with controls. Furthermore, it has been observed a strong correlation between bleeding index and gingival fluid MDA value in subjects with periodontal alterations, that was even more obvious after 6 months of flavonoid daily consumption (p=0.0023). **Conclusions:** Oxidative stress is an important factor in the development of periodontal injury and this can be evidenced through MDA, as flavonoids displayed the potential to modulate the local enzyme level and periodontal activity. **Key words:** antioxidants, malondialdehyde, gingival fluid

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**FIXED PROSTHODONTIC**

**OP56**  | **A Comparison of fit of Monolithic Zirconia Crowns**  
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**Turkey**

**Purpose:** The aim of this study is to compare the internal fit of two different monolithic zirconia crowns.  
**Materials and Methods:** The mandibular left first molar of the dentulous mandibular cast (Frasaco AG-3 GmbH, Tettnang, Germany) was selected. The model was prepared by adjusting a 1mm circumferential chamfer margin, a 2mm occlusal reduction, a 1.5mm axial preparation, and a 6° convergence angle and was duplicated as an master die. Monolithic crowns manufactured with BruxZir (Glidewell Laboratories, Irvine, USA) and Incoris TZI (Sirona, Bensheim, Germany) appropriate for each abutment were manufactured using the commercial CAD/CAM systems. A total of 12 groups (n=12) were formed. Internal gap measurements of the crowns were made using a stereo microscope (Zeiss Stemi 2000-C and Axiocam ERC 5S, Oberkochen, Germany) with the silicon replica technique. To obtain reliable internal fit values each of the specimens was measured at 9 points from 3 directions, yielding 324 measurements in total. Statistical analysis was performed using two-way analysis of variance (ANOVA) and Bonferronni test for multiple comparisons (α=0.05).
**Results:** In the measurements, the highest internal gap values were found in occlusal sites of Bruxzir (213.85±26.93µm) and Incoris TZI (213.22±76.4µm) crowns, that was not statistically different from each other (p>0.05). The lowest internal gap values were found lingual-axial sites of Bruxzir (126.92±44.19µm) and Incoris TZI (113.9±57.28µm) crowns, that was statistically different from the measurements of occlusal sites (p<0.05). The internal gap measurements of buccal-axial and lingual-axial sites of two of the monolithic crowns were not statistically different from each other (p>0.05). In comparison of marginal fit of two different CAD/CAM systems, there were found statistically difference with each other (p=0.534).

**Conclusion:** Among the various sites, the buccal and lingual axial sites produced significantly better fit.

**Key words:** monolithic zirconia, internal gap, silicon replica technique

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**OP57** Butterfly Effect in the Color of All Ceramics: Cement Thickness

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**Purpose:** The aim of this study was to determine that has cement film thickness an effect on the color of CAD/CAM produced all ceramic crowns.

**Materials and Methods:** In this study 3 different ceramic blocs used to produce crowns. Dental implant abutments with same diameter (4.5mm) were used for supports of restorations. The research groups, which have 12 examples were produced from feldspathic-glass ceramic (CerecBlocs)(A1,A2,A3), lithium-disilicate (e.maxCAD)(B1,B2,B3) and nano-ceramic (Lava-Ultimate)(C1,C2,C3) blocks, in the range of 100,120 and 200 µ cement film thicknesses. CAD/CAM System (CerecAC) was used to produce the restorations. The restorations was cemented with a resin cement (PanaviaF2.0).The color values of the restorations were measured by spectrophotometer (SpectroShadeMicro). Using the obtained L,a,b values of the crowns were compared statistically before cementation, after cementation and after 24 hours from cementation. Using the L,a,b values obtained before and after the cementation of the same restoration, the ΔE00 values of each restoration were found with the CIEDE2000(ΔE00) color difference formula. Using these findings, groups were formed with the difference of cement film thicknesses in the crowns produced from the same material. The same procedures were repeated before and after cementation and after 24 hours from cementation. The combination of L,a,b values of the crowns was used to find
the ΔE00 value between two different groups of the same material. This method was repeated between two different groups of each material before cementation, after cementation and after 24 hours from cementation. Statistical comparisons of all data were made using the IBM SPSS program.

**Results:** The cementation process causes a decrease in the L,a,b values of the restorations. L,a,b values are increased by the cement film thickness increase. Feldspathic glass-ceramic and resin nano-ceramic crowns cement film thickness increases was resulted with increase of ΔE00 values of crowns. Lithium-disilicate glass-ceramic crowns cement film thickness increase was resulted with decrease of ΔE00 values of crowns.

**Conclusions:** Cementation is important in achieving the result color of the restorations and masking the background color. The change of cement film thickness causes a change in color values.

**Key words:** CAI/CAD/CAM, Cement Film Thickness, Color, Crown

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**OP58**  
**Comparison of Conventional Systems With Digital Systems in Onlay Restorations**  
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Turkey

In our modern dentistry, we have a lot of methods for keeping teeth with lots of excessive amount of tissue loss in mouth, such as inlays and onlays that very popular among dentists and are preferred by them.  
In the past, clinicians restored teeth with composite, amalgams and full veneers, instead of inlays and onlays.  
However, inlays and onlays are more ideal treatment option because of the difficulty of preventing leakage in wide cavities.  
Preventing polymerization shrinkage of the composite filling caused the necessity of post support in most cases and the lack of a minimally invasive approach.  
Because of these disadvantages we treated 6 patients with onlays. 3 of them were treated by conventional system and 3 patients treated by CAD CAM system. In these methods we used ceramic materials.  
In which case the patient will be able to comfortably use it in the long vault to provide the ideal function and esthetics without any complication such as wide filler teeth fracture or a more invasive operations such as full ceramics.
Finally, the results of this study can be used as a guidance in compares features of conventional systems and digital systems.

**Key words:** onlay, ceramic, digital dentistry, conventional dentistry

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**OP59**  
Conventional and digital implant impression: two sides of the same coin  
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**Statement of problem:** The accuracy and efficiency of digital implant impressions should at least match or be superior to conventional impressions. Comparisons should be made by means of experimental, as well as clinically-relevant data.

**Aim of the study:** was to examine-through a systematic review of the literature-the accuracy, patient perception and time consumption of digital vs. conventional implant impression techniques.

**Materials and Methods:** Scientific reports of digital- vs. conventional implant impression techniques were systematically searched in the following databases: PubMed and Web of Science. MEDLINE database was searched up to June 2017 by using Boolean operators aiming to make a holistic version of keywords search: 

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((digital) OR (cad-cam) OR (computed assisted design) OR (computed assisted manufacture)) AND implant* AND impression.
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After, the first research 205 results were obtained, through selection of the literature the results were narrowed down to 120.

**Results:** Sixteen studies were identified that matched the inclusion criteria (15 in vitro and one clinical trial). Results depict a superiority of digital implant impressions for full arch prosthesis compared to open tray, polyether-based conventional implant impressions. In contrast, there was no significant difference between digital and conventional (polyether or Polyvinylsiloxane-PVS) implant impressions for single- or two implant-supported restorations. Three studies examined the operation time and included Visual Analysis Scale (VAS) criteria (discomfort, bad oral taste, convenience, shortness of breath, anxiety, nausea, pain) showing superiority of digital impression techniques regarding all these parameters. Digital techniques emerged as the most preferred ones based on patient-centered outcomes and were more time-effective (minimizing to half clinical operation time compared to conventional procedures).
Conclusion: Digital implant impression techniques seem to be an acceptable alternative to conventional impression methods based on in vitro studies, although neither of the studies considered the different distance between the scanbodies in clinical situation as a parameter.

OP60 Digital Occlusal analysis in patients treated with a posterior implant supported crown
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The Netherlands

Background: Occlusal overload is often regarded as one of the main causes for biomechanical failure of the implant supported crown. However, current methods of occlusal analysis used in clinical practice do not provide any valid indication of occlusal load. To review the relation between occlusion and biomechanical failure of the implant supported crown it is first warranted to objectively measure the distribution of occlusal force and contact timing in patients with an implant supported crown.

Purpose: The main purpose of this study is to digitally analyze static and dynamic occlusion with the T-Scan® Novus (Tekscan, South Boston, USA) in patients with a posterior implant supported crown and to verify if the results of the T-Scan meet the guidelines for implant-specific occlusion. Secondary objective was to assess the interrater reliability of the T-Scan Novus.

Material and Methods: Patients that had received a posterior implant-supported crown were included if the crowns were approximately 1 year in function and initial occlusion was established using conventional methods. The study population comprised 40 subjects, 27 females and 13 males (median age 59 years, aged 26-83). The T-Scan Novus was used to record static and dynamic occlusion for each subject. The distribution of force in MIC and the corresponding load to occlusal contact on the implant-supported crown was equilibrated. The intraclass correlation coefficient (ICC) was used to assess interrater reliability.

Results: The mean measurement of force distribution on the implant supported crown in MIC was 6.9 % (± 6.5) of the total bite force exerted. On the most posterior implant supported crowns the mean measurement of force distribution in MIC was higher (10.4 % (±6.7)). In 20% of the subjects the implant supported crown received much higher force than other teeth during closure. No premature contacts were found on the implant supported crowns. Working-side interferences on the implant supported crown were found in 30% of the subjects. The ICC values of the separately compared force percentages per tooth in MIC varied from 0.86 (95%-BI: 0.72-0.91) tot 0.96 (95%-BI: 0.9-0.98).
Conclusion: This study shows there are multiple deviations from clinical guidelines for implant occlusion when occlusion is established using conventional methods. Within the limitations of this study, it can be stated that, using conventional methods, integration of guidelines for implant-specific occlusion is limited. Digital analysis of occlusion using the T-Scan Novus seems to be a promising tool to evaluate guidelines-based implant occlusion.

OP61 Digital Veneering Versus Conventional Layering on Zirconia Ceramics
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Turkey

Purpose: Zirconia restorations are generally processed by layering a ceramic material on a zirconia core. Failures in zirconia restorations are mostly formed at the interface between the core and ceramic veneer. CAD-CAM technologies became more widespread and digital veneering technique was developed to overcome problems due to conventional veneering. The purpose of this study was to evaluate the shear bond strength between varied digitally produced veneer materials and zirconia ceramic.

Materials and Methods: Zirconia (APW02 Zir Dental; Aidite, China) and veneering samples per each material (feldspar ceramic; Cerec Blocs, VITA Zahnfabrik, Germany and lithium disilicate glass-ceramic; IPS e.max® CAD, Ivoclar Vivadent AG, Liechtenstein) were prepared. Test samples were arranged in four groups. 1: Conventional layering as control (VITAVM®9; VITA Zahnfabrik, Germany), 2: Bonding veneering material to zirconia with resin cement (RelyX Ultimate Clicker, 3M GmbH, Germany), 3: Bonding veneering material to glazed zirconia surface with resin cement and 4: Application of low fusing porcelain (Vision Zirkon, Wohlwend AG Dental Manufacturer, Schellenberg, Liechtenstein) to bond zirconia and veneering material. Shear bond strength test was performed in a universal testing machine (Lloyd-LRX, Lloyd Instruments, UK) at crosshead speed of 1mm/min and preload of 10 N.

Results: The best shear bond strength values were observed with conventional layering method (25.50 MPa). Application of low fusing porcelain showed similar results with layering (Cerec Blocs; 24.47 MPa and IPS e-max; 24.24 MPa). Bonding veneering material with resin cement showed statistically significantly lower results than layering and application of low fusing porcelain (Cerec Blocs; 17.12 MPa and IPS e-max; 18.41 MPa). Application of glaze layer to zirconia surface decreased the bond strength (Cerec Blocs; 11.79 MPa and IPS e-max; 9.92 MPa).
Conclusions: Application of low fusing porcelain to bond zirconia and digitally produced veneering material can be an alternative veneering method to conventional layering method.

Key words: zirconia veneering methods, digital veneering

OP62  Effect of preparation and cement type on laminate veneer retention
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Purpose: The purpose of this study was to observe the effect preparation design and resin cement type on retention of porcelain laminate veneers.

Materials and Methods: Buccal surface of 40 maxillary first premolars were prepared in two different designs. In the first group, samples were prepared up to the border of buccal and occlusal surfaces (Feather edge preparation). In the second group, preparation on buccal surface extended to buccal half of the occlusal surfaces (Overlap preparation). Pressable lithium disilicate glass ceramic laminate veneers (IPS e.max Press, Ivoclar) were bonded using cements with two different adhesive mechanisms (Total etch and self etch) (RelyX Veneer, 3M Espe; NX3 Universal Resin Cement System Kerr). Samples were undergone a shear test with 45 degree angle and the experimental groups were compared in terms of retention. The shear bond strengths (N) of failures were recorded.

Results: Regarding preparation designs, overlap preparation type (p:0.003; p<0.05) and regarding cement types, total etch mechanism (p:0.035; p<0.05) resulted in higher shear bond strength values than feather edge preparation type and self etch mechanism.

Conclusions: The preparation design and cement type may significantly effect the retention of porcelain laminate veneers for maxillary premolars.

Key words: Porcelain laminate veneer, premolar, preparation, retention, cement

OP63  Effect of sintering time on the marginal and internal fit of monolithic zirconia restorations
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Monolithic zirconia restorations are a good alternative to metal-supported restorations, particularly in the posterior region, where the chewing force is
concentrated, given their high fracture toughness, counter-dental natural tooth-like abrasion behavior, and esthetic properties. Changes in temperature and the duration of the sintering process, which is one of the most important steps in the production of these restorations, can affect the physical properties of the material. The purpose of this in vitro study was to investigate the effect of changes in sintering time on marginal and internal fit of monolithic zirconia crowns. For this purpose, a total of 60 monolithic crowns were produced from LAVA® Plus, CEREC®, or KATANA® Y-TZP semi-sintered blocks, on the implant cement-retained abutment analogues at 4-mm height, in the form of the first molar tooth. The samples were divided into 3 groups according to the brand and 2 subgroups according to sintering time (2.25 or 7 h) (n = 10 per subgroup). The marginal and internal gaps were photographed using a light microscope (× 45 magnification) by a silicon replica method, and the measurements were made digitally, using Image J. The effect of the brand and sintering time on the marginal and internal gap values were examined concurrently using 2-way analysis of variance. According to long sintering time, no statistically significant difference was observed between the systems used in the study in terms of total cemented film thickness values. Crowns fabricated from CEREC® and LAVA® blocks, marginal gap values were not affected as statistically significant due to the change of sintering time. Crowns fabricated from the KATANA® blocks, the shortening of the sintering time caused a statistically significant increase in the marginal and occlusal gap values. As a result of our work, the necessity of applying the sintering time in accordance with the manufacturer's recommendations is supported.

**OP64** | Evaluation of Prosthodontics Options as Alternatives for Establishing Acceptable Esthetic and Treatment of Impairment Anterior Teeth
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Iran*

**Purpose:** Ugly face related to anterior teeth impairment such as spacing, tooth-loss, crowding and/or abnormal tooth (teeth) 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 and classical treatments with presentation of different types ugly anterior teeth and prosthodontic correction.
**Materials and Methods:** In this study 43 patients with anterior aesthetic who suffered anterior teeth impairment understood both traditional treatments (TT) and the alternative prosthodontic treatments (APT) for solvent of their problems. They found advantages and disadvantages of both treatment methods. Each patient signed the prepared information sheet with suggested treatment(s). 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 different 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 make decision about choosing the definitive treatment option. Around 70% of patients accepted the prosthodontic option and the main reason(s) was time shortening and the other reasons respectively were reasonable cost, social limitations and surgical phobia were their most reasons for tendency to prosthetic aesthetic treatments. All patients who accepted TT were under 24 years old. All patients were satisfied about their treatments and the mean time of follow up during 6 years showed acceptable results.

**Conclusion:** With limitation of this study, despite of ideal and/or classic or contemporary treatments for anterior impairment correction, the older patients (above 24 yo) have more tendencies to alternative prosthodontic treatments and the younger below 24yo accepted classic treatments. Furthermore the alternative prosthetic treatments could be reliable treatment for correction of anterior teeth deterioration. "All treated cases will discussed"

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**OP65** | **Fit of Zirconia Fixed Dental Prosthesis-Systematic review and case presentation**

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**Purpose:** Aim of this study was to systematically review the current literature on marginal fit and internal accuracy of fixed dental prosthesis-FDP fabricated from zirconia. A case report with zirconia FDP will also be presented.

**Materials and Methods:** An electronic search was performed using the MEDLINE and SCOPUS databases where the following key words were applied: ("Cad Cam" OR "digital" OR "computer assisted design" OR "computer assisted manufacturing") AND ("zirconia" OR "Zr" OR "zirconium dioxide") AND
("framework" OR "prosthesis") NOT implant*. The search was limited to articles written in English, published up to May 2017. A manual search was also conducted reference lists of related articles.

**Results:** A total of 84 papers were retrieved from the search, from which 19 met the inclusion criteria, while 5 additional papers were selected from the manual search. The selected articles showed significant heterogeneity in terms of experimental methodology, milling system, manufacturing company, state of the zirconia, sample size and span length. From the included articles, 19 were in vitro studies, while 5 were clinical studies. CAD/CAM systems were more precise with better marginal and internal fit than CAM systems. Span length seems to have an influence on marginal and internal fit. Increase of zirconia framework of 6 or more-unit fixed dental prostheses decreases marginal and internal fit. Moreover, marginal gap is increased after veneering process, though still remains in clinically acceptable values. Finally, digital impression results in better marginal fit than conventional impression.

**Conclusion:** The accuracy of zirconia FDPs or frameworks is significantly influenced by the processing procedure used. While in the majority of the studies the measurements of marginal and internal fit were clinically acceptable (<120 μm), those results should be addressed with caution due to the several limitations of the in vitro studies.

**Key words:** zirconia, CAD/CAM, computer assisted manufacturing, marginal fit

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**OP66**

**Modern methods of investigation and treatment for the edentulous patients**

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The purpose of this study is to identify the factors that influence the selection of the ideal solution in cases with different types of edentulism, an accurate analysis being necessary for achieving a good viable final treatment.

**Materials and Methods:** A number of 27 patients diagnosed with edentulism were clinically and paraclinically investigated. The principle of treatment were individualized and corroborated with clinical and biological parameters, regarding the general health state, local and regional status, without excluding the social-economical aspects in concordance with technological endowment.

**Results:** The criterions in selecting the ideal solution are complex and difficult to standardize because they are specific, depending on the clinical case particularities. The biomechanic principle holds an important role that direction the practitioner in selecting the ideal appliance, either fixed or removable. On
equal terms, the biological and the curative principles plead for selecting a certain biomaterial correlated with the technological process.

**Conclusions:** Each clinical case is having a possible ideal therapeutical solution based on a complex algorithm of conception, selection and materialization. The ideal solution in treating the edentulism is the result of an accurate clinical and paraclinical evaluation corroborated with the aspects regarding the correct implementation of the principles of treatment: prophylactic, biological, biomechanical and curative.

**Key words:** edentulism, clinical case, therapeutical solution

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**OP67**

**Fracture Resistance of Post-Restored Pulpless Teeth with Different Crowns**

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**Purpose:** Different post systems and prosthetic materials have been proposed for the long-term survival of endodontically treated teeth. The aim of this study was to investigate the fracture resistance and the fracture mode of endodontically treated premolars (ETP) restored with either fiber posts and monolithic zirconia (MZ) or prefabricated metal posts and metal-ceramic (MC) crowns.

**Materials and Methods:** Thirty recently extracted human maxillary premolars were endodontically treated and randomly divided into 3 groups of 10 specimens each. Teeth in group I received a resin filling in access hole and served as control (C). ETP in group II were restored with glass-fiber posts, composite cores and MZ crowns, while ETP in group III were restored with prefabricated metal posts, composite cores and MC crowns. Specimens were embedded in acrylic resin and loaded at a 135-degree angle to their long axis into a universal testing machine, until fracture. The mode of fracture was recorded after the test using an optical microscope. The fracture modes were divided in repairable and irreparable. All statistical analyses were performed with the SPSS v.15.0, enhanced with module Exact Test.

**Results:** Mean fracture loads (N) were 121.93 N for C, 441.04 N for MZ and 474.20 N for MC. Fracture resistance was not significantly different between MZ and MC groups. Median values for MC and MZ exhibited significant higher
fracture resistance compared to control. No statistically significant difference found between the three groups relative to the distribution of repairable and irreparable failures.

**Conclusions:** Under the loading conditions of this in vitro study, it was concluded that the crown placement significantly improved the fracture resistance of ETP irrespectively of the post and crown type. Premolars restored with MC and metal posts exhibited slightly greater fracture resistance than premolars with MZ and fiber posts, although the difference was not statistically significant.

**Key words:** fracture resistance, metal ceramic crown, monolithic zirconia crown, fiber post, static loading

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**OP68 Fracture strength of pulpless premolars restored with different restorative materials**

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**Purpose:** The type of a coronal restoration plays an important role in the longevity of endodontically treated teeth. The aim of this study was to investigate the fracture strength and the fracture mode of endodontically treated premolars restored with two types of posts and either monolithic zirconia(MZ) or metal-ceramic(MC) crowns.

**Materials and Methods:** Thirty intact human maxillary premolars were endodontically treated and randomly divided into 3 Groups of 10 specimens each. The first Group received a composite filling in the access hole and served as control. Teeth in Group II were restored with glass fiber posts and composite cores while those in Group III were restored with prefabricated metal posts and composite cores. Restored premolars included in Group II received MZ and those included in the third Group received MC crowns. Specimens were embedded in acrylic resin and subjected to axial compression loading into a universal testing machine at a cross-head speed 1 mm/min, until fracture. The fracture modes were divided through optical microscopy to repairable and irreparable. Mean values were compared with the Least Significant Difference criterion. Significance level of all hypotheses testing procedures was predetermined as P≤0.05.

**Results:** Mean fracture loads (N) were 224,36 for Group I, 1422,85 for Group II and 2427,17 for Group III. MC crowns exhibited significant higher fracture strength compared to both control and premolars restored with MZ crowns.
The percentages (%) of repairable fractures were not statistically significant different between MZ and MC restored teeth.

**Conclusion:** The presence of crown positively affects the fracture strength of premolars irrespectively of the type of post and crown. A significant effect of the type of restoration was reported as teeth restored with MC crowns exhibited greater fracture resistance than the MZ crowns. However, the repairable fractures were slightly higher in MZ compared to MC restored teeth.

**Key words:** fracture resistance, monolithic zirconia crown, metal-ceramic crown, fiber post, metal post

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**OP70**  
Influence of different clinical factors on the margin quality of intraoral scanning

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**Purpose:** The purpose of this study is to assess the effect of different clinical factors on the accuracy of intraoral scanning.

**Material and Methods:** A superior first premolar on a typodont cast (Frasaco, Germany) was prepared for an all-ceramic crown with equigingival (buccal) margins and 1 mm supragingival (lingual) margins. The master cast scan was obtained by scanning the tooth with a model scanner (Cercon Eye, Degudent). An intra-oral scanner (Planscan, Planmeca) was used to acquire sets of scans under varying conditions: 1) with the model hand-held or mounted in manikin head; 2) the presence/absence of adjacent teeth; 3) with and without margins elevation. The master scan was aligned to each intra-oral scan. The mean contour of each margin section (buccal, lingual, mesial and distal) was evaluated using Meshlab. The effect of each factor on the scanned shape of the margin was analyzed using ANOVA.

**Results:** Compare to equigingival (buccal) margin, the supragingival (lingual) margin contour remained consistent regardless of scanning conditions. Distal and mesial margin shape was significantly influenced in the presence of adjacent teeth and all margins were influenced by the proximity to the gingivae.

**Conclusions:** Within the limitations of this study, it can be concluded that the accuracy of the margin recorded by an intraoral scanner is significantly influenced by specific clinical factors.
Interdisciplinary management of the esthetic zone after mistreated orthodontic and periodontal therapy

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Purpose: Congenital absence and/or misalignment of teeth make the need for orthodontic treatment mandatory. However, lack of proper treatment planning may lead to several esthetic and biological problems and the need for a prosthetic approach is the last treatment option for a healthy and esthetic dentition.

Materials and Methods: Case 1: A 19 years old female patient was referred to the Graduate Prosthodontic clinic with congenital absence of lateral incisor after her orthodontic treatment. Diagnostic casts and waxing showed that another orthodontic approach was needed. After completing second orthodontic therapy, treatment plan, included implant restoration of the missing lateral incisor and five all ceramic veneers. Implant provisional restoration was constructed to reestablish esthetics and function and at the same time to manage soft tissue esthetics. An Atlantis custom abutment (Dentsply, Mölndal, Sweden) was digitally designed to preserve soft tissue management. A lithium disilicate crown and five lithium disilicate veneers were cemented. Case 2: A 32 years old patient was referred with severe periodontitis and tooth migration after completing her long-term orthodontic therapy. Periodontal and prosthetic treatment were needed. Long-term provisional restoration dictated splinting the final restoration so as to avoid a new tooth migration. After six months splinted zirconia crowns were cemented.

Results: Soft tissue management, concerning implant or teeth restoration, is one of the key factors for a complete esthetic outcome. Healing and provisional time is mandatory for establishing a stable and esthetic gingiva line.

Conclusion: In cases of congenital absence or teeth misalignment all parameters have to be considered to have an esthetic outcome. The interim period is the most significant factor for the esthetic and functional result. During that time soft tissue and esthetics have to be managed in a precise and satisfactory way.
**OP72** Long Term Success Of Extra Short Implant: Case Report
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The anatomical limitations of the jaw are influential in determining implant length. Limited vertical bone height has increased the clinical use of short dental implants because of the difficulty of surgical procedures, the systemic condition of the patient or economical reasons.

Short and extra short implants are the best alternative in such cases. This case report shows a 5-year success of a fixed partial prosthesis made using standard implants and an extra short implant. Because of the atrophy of the posterior mandible, a standard implant was not preferred and a 6.0 / L 5.0 mm implant was placed in the dental area (46). Two standard implants of 3,3 / L 11 mm and 3,3 / L 13 mm were placed in the missing tooth areas (43 and 44). Metal ceramic fixed partial denture was designed. Patient has been using prosthesis without problem for 5 years. No problems were found tissues around the implants when examined radiographically and intraorally. So that we could make an appropriate prosthesis instead of the teeth that are lost by extra-short implants without additional surgical intervention.

Use of extra Short implants for patients; The lack of surgical procedure increases both pleasure and comfort, as well as saving time and money. This will increase the future use of extra-short implants.

**Key words:** extra short implant, long term success, fixed partial denture

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**OP73** Oral rehabilitation by fixed ceramic restorations on zirconium
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The concept of oral rehabilitation involves restoring and maintaining the functions, comfort, appearance and health of the patient by restoring natural teeth and / or replacing missing teeth and restoring oral and maxillofacial tissue with artificial substitutes.

**Scope:** Implementation of aesthetic and oral physiognomy by ceramic on zirconium support and its biocompatibility with neighboring tissues.

**Material and Method:** We performed a retrospective study of a total of 23 patients over a 2-year period aged between 20-54 who received fixed ceramic on
zirconium support to which we studied the general health assessment, aesthetics, position of teeth, biocompatibility with neighboring tissues, resistance, wear degree, color and satisfaction of the patient.

**Results and Discussion:** The degree of satisfaction of patients on the age groups of which the most pleased were the young people who wanted a "Hollywood smile".

**Conclusions:** Patients were very pleased, no zirconium fracture or ceramics, very good biocompatibility by ceramic on zirconium support. Zirconium does not produce any chemical reaction in the mouth. A major disadvantage for zirconium-ceramic crowns is its fairly high price.

**OP74**

**Performance of zirconia crowns according to finish lines and frameworks**

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**Turkey**

**Purpose:** The objective of this study was to evaluate the effect of different finish lines and framework designs on fracture strengths of zirconia molar crowns. The fracture strength of monolithic zirconia crowns were also evaluated.

**Materials and Methods:** Three prefabricate acrylic mandibular first molar teeth were prepared with a shoulder (S), chamfer (C) and knife-edge (K) finish lines. For each finish line, 22 silicone impressions were made in order to duplicate the prepared tooth into cobalt-chromium dies, additionally 11 impression were made from chamfer group to fabricate monolithic zirconia crowns (M). The copings of zirconia crowns were fabricated with inCoris ZI blocks in anatomic and non-anatomic designs and monolithic zirconia crowns were fabricated with inCoris TZI blocks using CEREC 4.2 CAD/CAM technology. They were then veneered with IPS e.max Ceram. Finally, they were glazed and cemented with Panavia F 2.0 onto metal dies. All crowns were subjected to thermal cycling (5-55 °C, 10.000 cycles) and 10.000 cycles of cycling loading with 1 Hz crosshead-speed and a load of 10-110 N. Subsequently, all specimens were loaded at an angle of 10°, until a fracture occurred in a universal testing machine (Shimadzu AG-IS 100). Failure types were examined with stereomicroscope. Scanning electron microscopy was used for further fractographic failure analyzing. The fracture load data were compared by a one-way analysis of variance test (ANOVA) at a significance level of 0.05.

**Results:** Mean fracture strength of groups were; CA=4456,82±1406,29 N; CN=3576,14±1092,44 N; SA=2598,37±660,346 N; SN=3154,26±1893,95 N;
KA=3270.74±1294.81 N; KN=2666.48±1498.84 N; M=7582.25±1891.90 N. According to the results of the study chamfer group showed higher fracture strength than other groups (p<0.05).

**Conclusion:** According to the results of this in-vitro study, finish lines had significant effect on fracture strength (p<0.05) and framework design did not significantly affect the fracture strength of the crowns (p>0.05).

**Key words:** Zirconia restorations, monolithic zirconia crowns, finish lines, framework design, fracture strength

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**OP75**

**Position Accuracy of Implant Analogs on the 3D Printed Polymer versus Conventional Dental Stone Casts Measured Using a Coordinate Measuring Machine**

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**Purpose:** This study compared the accuracy of implant analog positions on the complete edentulous maxillary casts either made of dental stone or additive manufactured polymers using a coordinate measuring machine (CMM).

**Material and Methods:** A complete edentulous maxillary model of a patient with 7 implant analogs was obtained. From this model, two types of casts were duplicated namely, conventional dental stone (CDS) using a custom tray impression technique after splinting (N=5) and polymer cast (PC) using additive manufacturing based on STL file generated. PCs (N=20; n=5 per group) were fabricated using 4 different additive manufacturing technologies (multijet printing-MJP1, direct light processing-DLP, stereolithography-SLA, multijet printing-MJP2). CMM was used to measure the correct position of each implant and distortion was calculated for each system at x, y and z-axes. Measurements were repeated 3 times per specimen in each axis yielding to a total of 546 measurements. Data were analyzed using ANOVA, Sheffe tests and Bonferroni correction (alpha=0.05).

**Results:** Compared to CMM, the mean distortion (m) ranged from 22.65 to 74.86, 23.4 to 49.05 and 11.01 to 85.78 in the x, y and z-axes, respectively. CDS method (x-axis: 37.1; z-axis: 27.62) showed significant difference compared to DLP on the x-axis (22.65) (p=0.037) and to MJP1 on the z-axis (11.01) (p=0.003). Regardless of the cast system, x-axes showed more distortion (42.62) compared to y- (34.62)
and z-axes (35.97). Among additive manufacturing technologies, MJP2 presented the highest (64.3±83.6), and MJP1 (21.57±16.3) and DLP (27.07±20.23) the lowest distortion being not significantly different from CDS (32.3±22.73) (p>0.05).

**Conclusion:** For the fabrication of the definitive casts for implant prosthesis, one of the multijet printing systems and direct light processing additive manufacturing technologies showed similar results to conventional dental stone.

**Clinical Significance:** Conventional dental stone casts could be accurately duplicated using some of the additive manufacturing technologies tested.

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**OP76**

**Restoring Different Color Substrates Using Various Lithium Disilicate Core Options**

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**Purpose:** The purpose of the following case presentation is to indicate the prosthetic solutions offered to a young patient with high esthetic expectations. Different substrates for prosthetic restoration were present in her dentition.

**Materials and Methods:** A forty year old female patient needed to restore functionally and esthetically her maxillary dentition. The upper right first molar and second premolar were missing and were replaced by two implants. The upper right first premolar as well as the upper left first molar were endodontically treated and were restored with post and cores made of precious alloy. Regarding the frontal dentition, the four incisors were fractured due to an accident during childhood and were restored with failing resin fillings lacking marginal integrity and color performance. The right lateral incisor was non vital and discolored.

**Results:** The restoration of this complicate esthetic case included three partial coverage restorations for teeth #11, 21, 22, three full coverage restorations for teeth #12, 14, 26 and two implant supported restorations replacing #15, 16. The material of choice was IPS e.max press and different ingots were chosen per tooth. More specifically, for the four upper incisors Medium Opacity A2 ingots were used to fabricate cores, which were then veneered with IPS e.max Ceram. The low translucency cores eliminated the color variance between the vital #11, 21, 22 and the non-vital discolored #12. For the abutment teeth with the gold posts, High Opacity A2 ingots offered a masking effect of the dark substrate. Finally, e.max hybrid abutment crowns (shade A2) combined with Titanium bases were used to restore the implants #15, 16.
**Conclusion:** In the same dentition vital and non-vital discolored teeth as well as implants were restored using different versions of the same all ceramic material, leading to a homogenous and high esthetic color result.

**Key words:** lithium disilicate, color substrate

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**OP77**

Success rate of resin-bonded fixed dental prosthesis made of zircon oxide

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A fairly new material that can be used to create resin-bonded fixed dental prosthesis (RBFDPs) is Zircon Oxide. The major limitation of Zircon Oxide is getting a predictable and reliable adherence to this material. The purpose of this study is to evaluate the possibility of using Zircon Oxide for RBFPD, considering its success rate with regard to bonding.

**Materials and Method:** The cohort of this retrospective cohort study consists of 118 patients, who received a 3-unit RBFPD. The RBFDPs are criticized using registered information in a database about their bonding by determining the survival rate. A standard procedure for bonding was executed. There are several variables included to criticize their influence on bonding: 1) the location from the RBFPD intraoral, 2) the location within the jaw and 3) the differences in preparation design.

**Results:** The Kaplan-Meier survival rate at 12 months was 96.8%. The Cox-regression analysis suggests that the risk of debonding in the mandible is 5 times more likely than in the maxilla. There were no significant differences in risk of debonding depending on location within the jaw and on different preparation designs.

**Conclusion:** The survival rate after one year of resin-bonded fixed dental prosthesis made of Zircon Oxide proofs to equal that of metal RBFPD. However the survival rate after 2,5 year of Zircon Oxide RBFPD is lower than of metal RBFPD. The risk of debonding for Zircon Oxide RBFPD in the lower jaw is higher than in the upper jaw. At the same time the studied data do not indicate a difference in debonding risk for RBFPD placed in the posterior region compared to RBFPD placed in anterior region.

In case of an appropriate selected preparation design there is no significant difference in debonding risk between prepared and unprepared abutment teeth.
The aim of the study was to assess a possible correlation between the anterior guidance morphological disorders and the pathological signs of the dysfunctional syndrome of the stomatognathic system occurrence.

**Materials and Methods:** We analyzed health records from 646 patients who consulted the Prosthetic Department of Dental School, University of Medicine and Pharmacy Iasi, for frontal arch treatment. The data regarding existing disorders on the frontal jaw teeth were statistically processed. The clinical pathological entities identified were divided into 2 categories. Ones modify the morphological parameters of the dental arch, which have the potential to cause occlusal changes, mandibular and articular dynamic alterations and even mandibular-cranial disorders. The other one have an influence only on the aesthetic appearance.

**Results:** For the group with potential of developing dysfunctional syndrome, the prevalence of the dysfunctions was of 35.20% malocclusions, 61.6% signs of articular joint disease and 27.39% mandibular-cranial disorders.

**Conclusions:** There are various significant statistical correlations between the anterior guidance morphological disorders and the pathology at the occlusal, articular and mandibular-cranial level.

**Key words:** dysfunctional syndrome, anterior guide, dental lesions, statistical study
**Aim:** Evaluation of required functional and anatomical parameters for implant placement in posterior edentulous maxilla.

**Material and Methods:** The research was based on literature data as well as clinical and paraclinical examination of patients with maxillary posterior edentulous areas which had dental implant placed. The following parameters have been evaluated: bone quantity and quality, gingival biotype, available prosthetic space, type of antagonist arch, occlusion.

**Results:** The posterior maxillary areas are subjected to high resorption degree associated with sinus pneumatization which decrease the possibility of implant placement in the existing space without bone grafting. The low primary and secondary stability require modification of loading terms and schemes. Old edentulous areas in posterior maxilla may be associated with teeth migration which creates difficulties for prosthetic reconstruction due to insufficient space.

**Conclusions:** Implant-prosthetic rehabilitation of posterior edentulous maxillary areas requires a thorough clinical and paraclinical examination of anatomical and functional parameters prior to implant placement in order to have a long-term predictable result.

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**OP80 The differential diagnosis of dysfunctional pathology in TMJ with oromaxillo-faciale diseases**

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**Introduction:** The stomatognatic system is affected by various pathologies. Frequently, they are the masticatory muscle diseases, cervical spondylarthrosis, headaches and pain in TMJ. In order to succeed their important treatment, there should be performed different kind of diagnosis as the treatment itself is different.

**Purpose of study:** To accurately diagnose the differential dysfunction in TMJ with various pathologies of the anatomical structures of the stomatognathic apparatus.

**Materials and Methods:** Examine 27 patients, aged 20-60 years old. Patients were classified into two groups: the first group includes 15 patients with pain in TMJ. The second group includes 12 patients with pathology of the cervical colon, tension disorders, migraine, etc. The differential diagnosis was made by recognizing the symptoms of dysfunction in TMJ. As a diagnostic tool apart from the anamnesis, we also used scanners, panoramex, etc. The treatment methods were done by the two groups: The first group was treated with therapeutic prosthetics. While, the second group was treated according to the respective
specialties. A specific treatment namely ozone therapy was given to the patients with spondylopathies.

**Results and Discussion:** The result of treatment was taken for a period of time from 1 month, 6 months to one year. The Positive results in the treatment of dysfunction in TMJ was received after 6 months in 82% of the cases, while in the case of ozone therapy treated spondylolytic patients, we received 76.7% of the cases in the first month.

**Conclusion:** The differential diagnosis of various pathologies in stomatognatic apparatus adequately defines the treatment method.

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**OP81**  
Orthodontics and prosthodontics, combined treatment in congenital edentulism  
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**Introduction:** The concepts of formation, growth and development of jaws are necessary for each dentist, to understand the changes, observe differentiation of normal variations, the abnormal or pathological processes. Staging treatment of partial edentulous patients has the same requirements from orthodontist and prosthodontist.

**Material and Methods:** An epidemiological study was conducted, in the period 2012-2016, on 218 partially edentulous patients. The patients were divided in 2 groups: The first group consisted of 132 patients, of which 68 patients aged between 11-18 years (43 women and 25 men) with frontal edentulous areas. In the second subgroup were 64 patients (39 women and 25 men) aged between 19-40 years old also with frontal edentulous areas.

**Results:** Congenital edentulism was found in a rate of 5.33%, which is 114 cases in 86 patients, of which the average for women was - 6.7% and the average for men was - 4.3%. In all patients, clinical and laboratory examinations were performed using diagnostic methods like: the biometric study of casts, cephalogram analysis and appreciation of available space for implant.

**Conclusions:** Results drawn from this epidemiological study, combined with the national and international literature demonstrated an algorithmic aspect of studied partial edentulism and with a dominant global ratio of hypodontia: Europe (1: 1.4) the difference between women, men, and in Moldova difference is (1: 1.3) of the total population. Comparing the prevalence values associated with hypodontia the most often defect in patients was aesthetic rather than occlusal.
one that is why made lots of different studies have been done. Interdisciplinary treatment stages require complex diagnostic and treatment methods, which allow obtaining a modern and effective occlusion good aesthetics and functional. **Key words:** partial edentulism, congenital, complex treatment, prevalence

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**OP82**  
**Bacterial Adhesion on Resin-Ceramic CAD-CAM Materials After Accelerated Aging**  
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**Turkey**

**Purpose:** Bacterial adhesion on restorative materials may lead to gingival inflammation and secondary caries.  
**Aim** of this study is to investigate the influence of aging resin-ceramic CAD-CAM materials on adhesion of bacteria.  
**Materials and Methods:** 120 rectangular shaped (5 mm, 5 mm, 2mm) specimens were fabricated from CAD-CAM blocks as 20 resin nano ceramic (Lava Ultimate), 20 hybrid ceramic (Vita Enamic), 20 flexible nano ceramic (Cerasmart GC), 20 unique hybrid ceramic (Shofu Block HC), 20 glazed Feldspathic ceramic (Cerec blocks C) and 20 polished Feldspathic ceramic (Cerec blocks C). Samples were polished with fine-grained alumina discs (Sof-lex, 3M, St. Paul, USA) under constant water cooling. 20 feldspathic ceramic blocks were glazed according to the manufacturer’s instructions. After 24 hours of storage in distilled water at 37°C, 10 samples from each group were subjected to thermocycling process in distilled water for 10,000 cycles, between 5 °C and 55 °C. Samples were placed in a standard suspension of S. mutans (ATCC 25175), containing 105 cells/ml and incubated for 24 hours. After incubation, the growth was suspended in sterile physiological solution (0.9% NaCl), and the number of cells in suspension was counted in a
spectrophotometer. Statistical analyses of the test materials were performed by ANOVA and Bonferroni/Dunn test. A p value, 0.05 was considered to indicate a statistically significant difference.

**Results:** There was only statistically significant difference between thermally aged and non-aged resin nano ceramic groups (Lava Ultimate). The highest bacterial adhesion was recorded for thermally aged resin nano ceramic (Lava Ultimate) specimens and the lowest was seen in glazed feldspathic ceramic (Cerec Blocks C) group. There was no statistically significant difference in other groups.

**Conclusion:** Glazed feldspathic ceramic showed the lowest bacterial adhesion in comparison to other CAD-CAM materials.

**Key words:** Bacterial Adhesion, Streptococcus Mutans, Hybrid Materials, Resin-Ceramic Materials

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**OP83**  | Effect of Different Surface Treatment on the Bonding of a Soft Liner to a Denture Base Material  
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Turkey

**Purpose:** The purpose of this study was to investigate the effects of tensile bond strength and adhesion of polydimethylsiloxane denture liner (Molloplast-B) to denture base material which was sandblasted with different size of aluminum oxide particles after thermocycling.

**Materials and Methods:** Forty rectangular heat-polymerized acrylic resin (Heraeus Kulzer GmbH Hanau) samples consisting of a set of 2 acrylic blocks were processed for bond strength according to manufacturers’ recommendations. (10x10 mm² cross sectional area) Samples were divided into 4 test groups (n=10) according to the surface treatment as follows: Group I: no surface treatment (control group), Group II, sandblasted with tribochemical silica coated with 30 μm silica-coated aluminum oxide particles (CoJet™ Sand, ESPE, Seefeld, Germany) Group III, sandblasted with 50 μm aluminum oxide (Al2O3) particles Group IV, sandblasted with 110 μm aluminum oxide (Al2O3) particles (Rocatec™ pre, 3M ESPE, Seefeld, Germany) All samples were thermocycled (5000 cycles). The average bond strength, expressed in megapascals (MPa), was determined in the tensile test using a universal testing machine at a cross speed of 5 mm / min. The normality of the data was tested by shapiro-wilk test. All data were analyzed using one-way ANOVA, and their mean values were compared using Tukey’s HSD test (p<0.05).

**Results:** The highest bond strength value was observed in Group II which was sandblasted with tribochemical silica coated. (1,51 ± 0,41 MPa) The lowest value
was observed in control group of untreated samples. (0.85 ± 0.27 MPa) Group I (control group) were significantly different (p<0.05) from group II and group III.

**Conclusion:** The treatment of acrylic surfaces with sandblasted with 30 μm silica-coated aluminum oxide particles effectively increased bond strength between silicone soft liner and denture base resin.

**Key words:** Tensile bond strength, Surface properties, Soft liner, PMMA

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**OP84 Experimental Study on Dental Resins for Complete Dentures**

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**Introduction:** The basis criteria in fracture mechanics are linked to expansion force of fractures and to resistance on fracturing. Based on cracks propagation speed and on variation graphics da/dN=f(ΔK), one can determine number of fatigue cycles until breaking and can make predictions regarding dental prostheses durability.

**Objectives:** Achieving objective standards for quality control of flaw dentures, that should provide bio-safety and durability warranties.

**Materials and Methods:** An experimental program for determining variation diagrams da/dN = f(ΔK) on 5 types of heat polimerizable resins (Meliodent, Triplex, Royaldent, Vertex, Superacryl) and 3 light polimerizable resins (Eclipse Base Plate, Eclipse Set Up, Eclipse Resin Contour) was established. A fatigue device type Walter-Bai - 10 kN was used, according to standard procedure ASTM 647, and tests were conducted on tearing mechanics samples, type CT (Compact Tension). A 3D LPX-1200 Laser Scanner (RolandDG Corporation, Japan) and Ansys (Ansys Inc., Philadelphia, USA) or Abacus 6.6.1. software were used.

**Results:** Main factors that influence crack’s propagation process are: microstructure, average tension of stress cycle and working environment. First domain corresponds to propagation speeds of up to 10to-8 m/cycle, meanwhile second domain consists in 10to-8 – 10to-6 m/cycle speeds. For amplitudes of stress that are under ΔKth value, cracks stop propagating. Third domain is characterized by high propagation speeds for fatigue cracks, which leads to its unstable extension. Life time for complete dentures submitted to fatigue tests fluctuates in connection with internal flaws, and reaches up to 4.5-5.5 years.

**Conclusions:** Studies in connection with fracture mechanics can reveal and explain coexistence of structural defects with significant long life-time for dental prostheses.

**Key words:** fatigue, dentures, experimental program
**Immediate Dentin Sealing: Effects on Monolithic Zirconia Adhesion**

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**Purpose:** The aim of this study was to evaluate the effects of (1) ‘Immediate Dentin Sealing’ (IDS), (2) ceramic pre-treatment method and (3) adhesive luting agent type, on the bond strength of Monolithic Zirconia (MZ) to human dentin.

**Materials and Methods:** Sixty intact human third molars were collected according to the Institutional Ethics Committee and stored according to ISO 29022:2013. Teeth were cleaned, their roots were removed and their crowns were sectioned mesio-distally. Enamel was removed and the teeth were molded in acrylic cylinders with their bonding surface (exposed dentin) cut flat on the cylinder’s base. The bonding surface was polished under water-cooling. MZ (BruxZir) cylindrical specimens were fabricated by CAD/CAM and sintered as recommended. Their cementation surface (A=2.54mm²) was mechanically polished and ultrasonically cleaned. Specimens were randomly divided into 8 groups (n≥10) depending on dentin sealing condition [IDS/DDS(Delayed Dentin Sealing)], ceramic pre-treatment method [Airborne Particle Abrasion with alumina particle grains of 50μm(APA)/ Tribochemical Silica-Coating with particles of 30μm(TBC)] and type of luting agent [(MDP composite resin (MDP-Panavia F2.0)/ resin-modified glass ionomer (RMGI-PermaCem)]: (1)IDS-APA-MDP, (2) IDS-APA-RMGI, (3) IDS-APA-MDP, (4) IDS-TBC-RMGI, (5)DDS-APA-MDP, (6) DDS-APA-RMGI, (7) DDS-APA-MDP, (8) DDS-TBC-RMGI.

Adhesion procedures were carried out with the aid of a bonding clamp. Specimens were water stored for 24h at 37ºC and subjected to Shear Bond Strength (SBS) at a crosshead speed of 1mm/min. SBS values were statistically analyzed (p<0.05).

**Results:** The highest SBS values were obtained when IDS and TBC were performed for both luting agents, while the lowest SBS values were recorded for Group (6), where DDS and APA were performed and the RMGI cement was utilized. IDS and TBC groups presented higher SBS values compared to their respective DDS and APA groups.

**Conclusions:** Adhesion strategies for MZ restorations could potentially benefit from IDS.

**Key words:** monolithic zirconia, immediate dentin sealing, surface treatment, adhesion
Marginal Adaptation and Wear Behavior of Monolithic Zirconia Crowns
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Purpose: The purpose of this study is to determine the marginal fit of different monolithic zirconia and metal-supported ceramics and their wear resistance after aging.

Material and Methods: The present study monolithic zirconias as Katana®UTML, Prettau®, Zenostar® T, InCoris® TZI, BruxZir® (0.5 mm, 1.5 mm occlusal thickness) and metal ceramic as a control group were used. A total of 7 groups (n=7) were formed. Before the cementation of the samples, marginal gap measurements were performed using a stereo microscope with a silicon replica technique. Samples were then aged with thermal cycling (5-55 °C, 10000 cycles). Wear tests were performed by using chewing simulator (50 N, 1Hz, 240000 cycles, lateral movement: 2mm, mouth opening: 2 mm) with metal antagonists in distilled water solution. The samples were evaluated using a laser scanner and a software program capable of three-dimensional registration. Statistical analysis was performed using one-way analysis of variance (ANOVA) and Tukey HSD or Tamhane T2 test for multiple comparisons (α=0.05).

Results: There was a significant difference between marginal gap measurements of the samples (p<0.001). In the measurements, the lowest marginal range value was found in BruxZir® (1.5 mm thickness) monolithic zirconia crowns (46±9μm) and the highest marginal range value was detected in Zenostar® (92±22μm). A significant difference was found between the wear measurements of the samples (p<0.05). In the measurements, the lowest wear value was seen in BruxZir® (1.5 mm thickness) monolithic zirconia crowns (1.29±1.06 mm2) and the highest one was found in metal ceramic crowns (4.59±2.08mm2).

Conclusions: Zirconia ceramics exhibited superior wear behaviors when compared to feldspar porcelain. The marginal gap measurements of metal supported and zirconia ceramics are within clinically acceptable limits.

Key words: Zirconia, porcelain, marginal discrepancy, chewing simulator, wear
**OP87**  Characterization on Resin\Resin Interface in Direct Composite Restoration Repair  
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**Purpose:** The aim of this study was to evaluate the resin-resin interface when a universal bonding agent applied in two different strategies was used as an intermediate layer in direct restoration repair.  

**Materials and Methods:** Two different composite resins (a micro-filled hybrid and a nano-filled hybrid) were aged by storing in artificial saliva. They were considered as old restorations that have to be repair. The same nano-filled hybrid composite resin was used as new material to repair the aged composite resins by using a universal bonding agent as a intermediate layer. Two different strategies (etch-and-rinse and self-etch) were used for universal bonding agent application. The samples were then aged by storing in artificial saliva. The non-aged samples obtained by using the same composite resins and the same bonding agent were considered as control. The old resin-new resin interface was evaluated by using SEM and the microleakage was assessed by scoring the dye penetration.  

**Results:** In non-aged samples was recorded a very good adaptation of the two composite resins placed in direct contact with the bonding agent applied in both strategies. After aging, gaps and defects of resin-resin junction appeared in most of the samples and a increased dye penetration was recorded.  

**Conclusion:** Irrespective of the strategy used for bonding agent application and the types of composite resins used for repair, a increased microleakage and deterioration of the resin\resin interface were obtained for aged materials.  

**Key words:** composite resin repair, universal bonding agent, SEM, microleakage

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**OP88**  SEM Evaluation of the Effect of Finishing Burs on Surrounding Dental Tissues of Composite Restorations  
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The **purpose** of this study was to analyze the surface characteristics of the enamel adjacent to composite resin after finishing the restoration with different diamond and tungsten carbide burs.
**Materials and Method:** V class cavities with gingival margin 1 mm below the enamel-cementum junction were prepared in 25 human molars. The teeth were restored with a microhybrid composite and a universal adhesive. The composite resin was polymerized against a Mylar matrix. Three types of finishing carbide burs and two types of diamond finishing burs were tested. The restorations were randomly divided in 5 groups, each group was finished using one of the tested burs. The topography of dental tissues at the margins of the restorations was observed by using a scanning electron microscope.

**Results:** Finishing with extra-/ultra-fine carbide burs, and extra-fine diamond burs resulted in smooth surfaces with few superficial scratches on enamel and no clinical relevance. In the cervical margin, the surface of the root showed more tissue loss. Deep grooves were observed when fine diamond burs were used.

**Conclusions:** Finishing of composite restorations with coarse burs should be avoided when there is a high risk of touching and scratching adjacent dental tissues during the procedure.

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**OP89**  
**Researches on the Properties of Resins with Silver Nanoparticles Incorporated**  
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**Purpose:** Acrylic resins are commonly used materials for removable prosthesis, due to their characteristics (good strength, good thermal conductivity, low cost). To ensure antibacterial properties, in the last decade, more attention has been orientated toward the incorporation of silver nanoparticles into polymers used as denture base, in order to avoid or at least to decrease the microbial colonization. A representative number of researchers noticed the antibacterial effect of silver nanoparticles, but the influence on the biomechanical properties is not very well defined. The purpose of our study is to evaluate the effects of silver nanoparticles incorporated in dental acrylic resins, on their mechanical properties.

**Material and Method:** Finite Element Analysis is a powerful tool in tackling many biomedical problems that are puzzling for conventional methods because of structural and material complexity. For objective results, the model has to be designed in such a way that it reproduces the real situation as closely as possible. This method was used to compare the tensions induced by different concentrations (5%, 10%, and 20%), and different sizes of silver nanoparticles (20, 40 and 80 nm) incorporated in dental acrylic resins. This work was financial...
supported by „Grigore T. Popa” University of Medicine and Pharmacy Iasi, under the research contract no.31588/2015.

**Results**: The highest values of stresses induced into the material have been registered for the biggest dimensions and concentrations of the silver nanoparticles (80nm and 20%). For the 5% and 10% we found similar values for all studied dimensions.

**Conclusion**: The biggest concentration of the smallest diameter, have the lowest effects on the mechanical characteristics of the resins. The optimal silver nanoparticles concentration is 5%, from biological and mechanical point of view.

**Key words**: silver nanoparticles, acrylic resins, Finite Element Analysis

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**OP90**

**Shear bond strength between fluorinated zirconia and resin cements**

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**Aims**: The aim of this study was to investigate the influence of a gas-phase fluorination method under different fluorination time through using two resin cements.

**Methods**: 84 zirconia samples were prepared and surface modified with 50 µm aluminum oxide particles or gas phase fluorination for 2 min, 5 min and 10 min. One specimen in each group surface was observed under SEM. Then samples were bonded to composite cylinders in dimensions of 2 mm diameter and 3 mm high with two different cements.

**Results**: The highest shear-bond strength values were observed in 5 min fluorinated samples which was cemented with Panavia SA Plus. Variolink N did not elicit any statistical differences between surface treatments.

**Conclusion**: The conclusion of this study, application of 5 minutes of fluorination with MDP containing resin cement increased the bonding ability of zirconia.
**OP91** Stress Induced by Bridge Design and Food Consistency – FEA Analysis  
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**Purpose:** The aim of our study was to evaluate the stress induced into the abutments by three different design of a metallic bridge using FEA analysis.  
**Materials and Methods:** The first case (A) was represented by a bridge with full crowns as retainers on 35, 36. The second case (B) was represented by a bridge with occlusal inlays on 35, 36 and the third one (C) was represented by a bridge with onlays applied on the oral faces of 35, 36. We surveyed the stress induced by different food consistency with elasticity modulus between 0 Mpa and 60000 Mpa.  
**Results:** A 6Mpa force was induced by the bridge A when the elasticity modulus was equal to 200 Mpa. For the maximal value of the elasticity modulus, the stress was 13,68 Mpa. For the bridge B for an elasticity modulus of 200Mpa the stress was 6Mpa. For the bridge C the stress value was 14,26Mpa.  
**Conclusions:** The highest values of stresses are registered for the maximal values of the elasticity modulus, the retainer design is an important parameter for the mechanical behavior, as well.  
**Key words:** *FEA analysis, bridge design, elasticity modulus*

**OP92** Structural and Thermal Analysis of Acrylic Resins with Silver Nanoparticles  
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**Purpose:** The purpose was to evaluate the effects of silver nanoparticles (AgNPs) incorporation into different dental acrylic resins (DARs) on their structural changes and thermal behavior, highlighting complete integration of AgNPs and stability of the modified DARs.  
**Materials and Method:** A heat-curing (HCR) and a self-curing resin (SCR) having 60 nm size colloidal AgNps (0.02 mg/mL Sigma Aldrich/USA) incorporated as 20% volume concentration were studied. To highlight possible changes in fracture surface three-dimensional morphology caused by AgNps addition, low magnification stereo microscopy and high resolution scanning electron
microscopy (SEM) were performed. Mechanical behavior (tensile strength, yield stress and strain at break) was revealed by tensile tests. Thermal characterization of the two modified DARs was performed by differential scanning calorimetry (DSC) and differential dilatometry (DD) giving valuable information on possible induced transformations up to 65°C. To understand how the size, shape, surface and aggregation state of AgNPs affect HCRs and SCRs, atomic force microscopy (AFM) investigation was also performed.

**Results:** Experimental fractography revealed a uniform structure of the modified polymers without obvious voids or AgNPs de-bonding. Complementary AFM investigation showed no adverse surface reaction of AgNPs during polymerization. Also, no glass transition or other phase transformation were revealed by DSC thermograms up to 65°C. Expansion coefficient given by DD investigation results in normal value. Predictable mechanical behavior as normal decreasing in tensile strength and yield stress was confirmed by tensile tests.

**Conclusions:** Structural and thermal investigations of the AgNPs-containing HCRs and SCRs revealed a complete integration of colloidal AgNPs and an appropriate stability of modified DARs. No significant phase transformations in DARs or AgNPs de-bonding were reported, optimizing AgNPs performance into specific target applications.

**Key words:** silver nanoparticles, dental resins, mechanical behavior, thermal behavior

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Metal free materials for partial removable dentures

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In restorative dentistry, metal alloys such as gold, cobalt-chromium, nickel-chromium alloys and amalgam (mercury alloy) due to their good working properties are the most used dental materials from which crowns and bridges, as well as frameworks for removable dentures are made. These materials can in sensitive patients lead to thermal effects, metallic taste, and allergic reactions. This is why metal free materials are being used increasingly more giving the patients dentures greater acceptability.

**Purpose:** The aim of this study is to investigate the odonto-periodontal support in a lot of patients wearing Biodentaplast partial dentures.

**Material and Methods:** We selected and investigated a lot of 16 patients, 9 female and 7 male, wearing partial dentures for more than 1 year, and analysed the sum of clinical-biological indices, intraoral lesions and color modification of the gingival gums under the mobile prosthesis.

**Results:** Regarding the odonto-periodontal support in this lot of patients, we found favorable support in 59% of cases, 24% presented color modification of gingival gums, only 9% had intraoral lesions caused by the prosthesis and according to what they answer, only 4% of them needed further retouching or adaptations of the Biodentaplast prosthesis after wearing.

**Conclusions:** Metal free materials and technologies used in modern dentistry is a real benefit to patients wearing mobile prosthesis. Biodentaplast prosthesis are biocompatible and are recommended to patients allergic to acrylates or metals, are lighter and therefore do not cause oral mucosal lesions, also the pressure on the periodontal support is smaller than the classic metal prosthesis.

**Key words:** metal free materials, removable prosthesis, intraoral lesions
Microbiota developed on soft materials used in implant overdenture treatment

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Romania

**Purpose:** To characterize microbiota developed on soft materials used as matrices in narrow-implant overdenture treatment.

**Materials and Methods:** Eleven complete edentulous patients treated with narrow implant mandibular overdenture were included in the study. In all patients soft acrylic or silicone-based materials were used as matrices during osseointegration phase, which were analyzed. Microbial strains were identified and studied as virulence potential.

**Results:** A total of 86 microbial isolates were recovered, of which 78 were biochemically identified. The oral microbiota developed on the soft materials was very diverse, dominated by aerobic Gram negative bacteria. Also, more than half of all bacterial isolates exhibited the ability to adhere to the cellular substratum and to produce siderophore-like compounds and exo-enzymes (gelatinases, pore-forming toxins, DN-ases) that could be involved in the peri-implant tissue injury, but also confer competitive advantages for growth and multiplication (amylase, caseinase).

**Conclusion:** Knowledge of the species composition of microbial biofilms adhered to materials adjacent to dental implants and their virulence features is a key aspect for the understanding of the disease process and for establishing proper therapeutic measures in order to prevent implant failure.
Purpose: Confirming that reconstructive surgery of mandibular bone defects with autograft from iliac crest with a satisfactory long term outcome, provide acceptable conditions for removable prosthetic rehabilitation. Evolution of bone resorption in the grafted area, seems to be related to the etiology of bone defect and preservation of occlusal and masticatory function.

Materials and Methods: There are reported two cases, presenting the anatomical features of the mandible, and their relation to the removable prosthetic treatment, of this patients, both with mandibular reconstruction with autograft done more than 40 years ago, but with different bone defect etiology, mandibular dysplasia and trauma/fracture, both having currently mandibular complete edentulism, being in need for prosthetic rehabilitation. These patients will be rehabilitated for mandibular restoration, with two different solutions, one of them an implant overdenture and the other, a conventional denture.

Results: Analyzing the two cases, at present time, difference regarding bone quantity and quality between the grafted mandibular side and the non-grafted side were noticed, that suggested a more severe resorption occurred in the grafted area in the first case, and in the non-grafted area in the second case. This different patterns of resorption are possibly related to the main two differences that exist between them – the diagnosis made before reconstructive surgery (i.e., bone dysplasia in the first case; mandibular fracture in the second), and the oral rehabilitation strategy previously used.

Conclusions: These cases confirm that reconstructive surgery of mandibular bone defects with autograft from iliac crest has a satisfactory long term outcome, providing acceptable conditions for removable prosthetic rehabilitation. Bone resorption in the grafted area, seems to be related to the etiology of bone defect and preservation of occlusal and masticatory function. Reconstructive surgery made decades ago has sequelae that increase the difficulty of prosthetic treatment of edentulous patient.

Key words: mandibular reconstruction, bone autograft, long term evolution, removable denture
Resilient Unilateral Dentures – Preliminary Study
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2) Department of Implantology, Faculty of Dentistry, "Victor Babes" University of Medicine and Pharmacy, Timisoara Romania

Purpose: Are the unilateral removable dentures a short or a long time treatment option?

Materials and Methods: The study was started in the Department of Prosthodontics, Faculty of Dentistry, University of Medicine and Pharmacy “V Babes” Timisoara Romania in 2016. 13 edentate patients were included in the study. Each patient has signed and informed consent in accordance with the Ethical Committee of the University. The inclusion criteria were: 1. Kennedy class II or class III; 2. the impossibility of realizing implant supported dentures; 3. recalls every 4 months; 4. direct reline every 12 months. The exclusion criteria were: 1. missing the recalls; 2. missing the reline appointments. The examined aspects were: maintenance of the occlusal contacts and the masticatory function; maintenance of the periodontal health of the abutment teeth; fractures of the removable dentures; fractures of the connectors; fissure/fracture of the denture and comfort of the patients (1- poor, 2 -acceptable, 3- good, 4- very good, 5 - exceptional).

Results: After the first 2 check –ups the situation was: 1. the masticatory function and the occlusal contacts were well for all the patients were; 2. the periodontium of the abutment teeth was healthy with no altered probing depth and no mobility; 3. there were no fissures/fractures of the ceramics, of the extra coronal attachment or of the removable denture; 4. in 2 cases the retentive caps of the special system was replaced; 5. the comfort of the patients was 4 (76%) and 5 (24%).

Conclusion: According to the follow-up period of our study, the unilateral removable partial dentures on extra coronal resilient attachments are viable treatment alternatives.

Key words: removable unilateral denture, resilient unilateral attachment
Salivary and Maxillary Mucosa Thermal Profile of Edentulous Patients
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Purpose: To assess salivary and palatal thermal profile of edentulous patients with various clinical and prosthetic situations (denture wearers with and without denture stomatitis, and non-denture wearers).

Materials and Methods: A cross-sectional study was conducted on a convenience sample of patients with the following clinical situations: edentulous patients with denture stomatitis, denture wearers without denture stomatitis, edentulous patients non-denture wearers, and dentate patients which were used as control. Salivary flow rate and salivary pH were evaluated by the Saliva Check Buffer kit (GC Corporation). Thermographic data on maxillary mucosa was collected using ThermaCAM PM350 (Inframetrics/FLIR). Statistical analysis was performed with SPSS v.15.0 software.

Results: Study sample included 66 patients. Salivary flow rate was decreased in denture wearers compared to non-denture wearers, regardless their dentate status. Salivary pH was decreased in patients with denture stomatitis compared to the rest, i.e. denture wearers without denture stomatitis, edentulous non-denture wearers or dentate patients. Significant but relatively low correlations were found between maxillary mucosa temperature and salivary flow rate ($r=0.274; p=0.041$), and salivary pH ($r=-0.288; p=0.031$).

Conclusions: Edentulous patients with different clinical and prosthetic situations register different salivary and maxillary thermal profile. These are aspects can be evaluated in clinical settings by non-invasive methods, and can guide the clinician in making the right diagnosis and conduct the proper medical intervention in accordance with patient’s features.

Key words: Maxillary mucosa, denture stomatitis, thermography, salivary flow, salivary pH
Specific Occlusal Scheme for Partially-edentulous Patients with TMD Signs
Srđan D. Poštić, Slobodan Dodić
Serbia

Purpose: This study was conducted to establish specific occlusal scheme and to reduce TMD signs and symptoms in therapy of partially edentulous patients by removable partial acrylic dentures.

Material and Methods: 34 partially edentulous patients, having unilateral free-end saddle in the mandible, with a history of TMD signs and symptoms were prosthodontically treated with the new removable partial acrylic dentures (NRAPD) for their lower jaws. Change of occlusal scheme was provided in their new dentures followed by the selective grinding of opposing teeth. The new specific occlusal scheme was established with tendencies to restrict mandibular functional movements partly, on the awkward side, but to continue unrestricted occlusal contacts in grinding and functional movements on the healthful side.

RDC-TMD clinical examinations and answers to questionnaire were provided with old dentures, and 9 weeks after delivery of NRAPD.

Results: After treatment, the patients had reduced painful symptoms and corrected mandibular movements. Statistically significant changes were obtained for opening pattern (Pearson Chi-Square=18.609; p=0001), for maximum unassisted opening (F=3.507; p=0.052), maximum assisted opening (F=4.299; p=0.042) as well as for the corrected position of midline (F=5.893; p=0.018) before and after the treatment with a NRAPD. Additionally, there were significant changes for questions on facial pain change to the ability to work (Pearson Chi-Square = 26.921; p=0.00), jaw’s click or pop when open, close the mouth or chew (Pearson Chi-Square = 6.227; p=0.013), jaw making a grating or grinding noise when it opens, closes or chew (Pearson Chi-Square=9.273; p=0.002) and if bite feel unusual (Pearson Chi-Square = 13.170; p=0.000). Characteristic pain intensity (F=19.311;p=0.000), points for disability score (F= 9.830; p=0.003), disability points (F=10.208; p=0.002) and chronic pain grade (F=7.961; p=0.006) were significantly different as the effect of the therapy by NRAPD.

Conclusion: Specific occlusal scheme in NPARD promoted improvement in the therapy.

Key words: occlusion, partially edentulous, removable partial denture
Introduction: Partial edentation represents a mutilating clinical entity, with a deep impact on the facial harmony, as well as on the balance of the loco-regional and general status. The purpose of this study was to determine the equation which includes the local, loco-regional and general status, an essential parameter that influences the selection of the treatment solution and its viability.

Material and Methods: The study lot is formed of 250 patients, diagnosed with different forms of edentation and various types of affectation of the general condition who showed up at the“clinical basis of dental medical education”, during 2014-2017 Within the statistic quantification of the parameters which influence edentation and its complications, as well as the type of therapeutic variant selected in agreement with the type and the amplitude of the edentation and social condition.

Results and discussions: The predominant type of edentation was that of class I Kennedy, with 36%, followed by class II Kennedy, with 31%, class III Kennedy with 19% and class IV Kennedy with 14%. The type of local and loco-regional complications influenced the specific therapy selected and the final therapeutic solution. The social fixed prostheses have concretized the desideratum of functionality over the esthetic one, while the skeletal prostheses using different types of special support and stability elements were represented by a smaller percentage, but equally combined the esthetic and the functional aspect. The skeletal prostheses using sockets as support and stabilization devices were correlated with a slight affectation of the odonto-periodontal support in the context of a well represented mucous bony structure.

Conclusions: The oral rehabilitation of patients using techniques of fixed prosthesis represents the therapeutic solution of choice when the social condition of the patients is not suited for more complex rehabilitation therapies. The restoration of the functionality affected by edentation is the essential criterion, accompanied by the correct mandible-cranial repositioning.

Key words: social cases, removable prosthesis, edentulous
The purpose of the study is the quantification of the main factors that influence the rehabilitation of the complications of partially edentation in view of choosing the best therapeutic solution from the field of both classic and modern prostheses, as well as the identification of the clinical and technological rehabilitation actions in agreement with the particularity of the clinical case.

**Material and Methods:** The study lot included a number of 120 patients diagnosed with partially edentation who reported to the Clinical Basis for Education of the Faculty of Dental Medicine in the period 2015-2017, the lot comprising 70 women, 50 men, aged between 38 and 73. The assessment of the patients was made by clinical and paraclinical exams.

**Results:** We notice a prevalence of the female sex, in a proportion of 58.3% of the lot, while the male sex represents 41%, this aspect being influenced more by esthetic reasons, being much stricter in case of the female sex. As far as the status of the local indices is concerned, of course in correlation with the other factors that decisively influence the therapeutic decision, we notice a proportional equality of 50% between the positive and negative clinical – biological indices, a very important aspect in the therapeutic decision to opt for a hybrid prosthesis that uses extra-coronary races as preservation, support and stabilization elements, which can only be used in case of a very good dental implantation.

**Conclusions:** The identification, using clinical and paraclinical methods, of the entire set of complications triggered by edentation is in fact, an essential condition of targeted therapy, but also a starting point for the rigorous selection of the therapeutic algorithm, of the dental materials used and of the requirements related to the recreation of a high—fidelity morphology.
Evaluation of oral stereognosis in relation to tactile ability and patient satisfaction
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Turkey

**Purpose:** Complete denture wearers have no periodontal receptors and their palatina’s are covered by their dentures, which suggests that their sensory functions in the oral cavity should be much lower than those with a natural dentition. The purpose of the study was to investigate the oral stereognostic ability of normal dentate individuals, conventional complete denture patients and implant-supported denture patients.

**Materials and Methods:** Stereognosis test was carried out for those and also the relationship between oral perception and patient satisfaction were assessed with satisfaction survey (OHIP-TR-14). In order to compare the differences of part of the oral sensory functions among natural dentition, complete denture wearers and implant-supported denture wearers, tactile (thickness perception threshold) and pressure awareness (threshold of lateral loading) were measured.

**Results:** The oral perception level of natural dentate patients is higher than the oral perception level of complete denture group and implant supported complete denture group, at the end of the study. There was not any statistically significant difference was found in OHIP-TR-14 scores between implant-supported complete denture and complete denture (p <0.05). The control group perceived the applied lateral and vertical forces statistically earlier than the other groups (p <0.001). There was no statistically significant difference determined between the groups of complete denture and implant-supported denture in terms of lateral pressure threshold and thickness tactile threshold (p> 0.05).

**Conclusion:** There was not any correlation between oral perception level and patient satisfaction in complete denture group and implant supported complete denture group. It is seen that the control group compared to the complete denture and implant-supported complete denture groups perceived the applied lateral tactile threshold values and thickness tactile threshold values statistically earlier.
**OP103**  
**Temporary Versus Permanent Prosthesis in Partially Edentulous Rehabilitation**  
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Romania

**Purpose:** The study aims to highlighting the biological aspects of mobile prostheses aiming to diminishing the alveolar ridge resorption.

**Materials and Methods:** The evaluation of the biological integration of the dentures was achieved through: the finite elements method, the therapeutical specific methods, different bio-materials.

**Results:** The close relationship between the structure of the bio materials from which the removable prostheses temporary or definitive are made and the particularities of the prosthetic field is an important key in individual prosthesis making.

**Conclusion:** The Prosthetic treatment must be correlated with clinical and biological aspects of each patient.

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**OP104**  
**Design of removable partial dentures: clinical study in a group of patients treated in Clinical Base of Dental Medicine Faculty, U.M.F. ”Grigore T.Popa” Iași**  
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Romania

**Aim of study:** The prevalence and distribution of design and components of removable partial dentures were investigated on a group of patients treated in Clinical Base of Dental Medicine Faculty, U.M.F. “Grigore T.Popa” Iași.

**Materials and Method:** The design and distribution of connectors, clasps and attachments were evaluated in relation to clinical and biological variables.

**Results:** The most used principal connectors are palatal plate (50%) for maxillary edentation and lingual bar (73%) for mandibular edentation. The most used metallic clasps are Ackers (47.2%) and “T” clasp (30.8%).

**Conclusion:** The distribution of major connectors and elements of support, retention and stabilization is related to the age group, class of edentation, number of absent teeth.
**OP105** | The oral health status of rural geriatric population- Pilot study results
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**Introduction:** The health status studies evaluating the oral health of rural geriatric population’s provide the information for the knowledge of the real situation. Our study was focused on the knowledge of the oral health status of the geriatric population from rural environment of Iasi County.

**Material and Methods:** The investigated group comprised 196 elderly persons (45.41% males, 54.59% females). Our study was focused on main indicators of oral health of rural elderly.

**Results:** The prevalence of the dental caries was: 58.67% in total group, 57.30% in male and 59.81% in female gender. Non carious dental disorders reflect a diverse pathology, having a high prevalence (37.59%). The prevalence of potentially malignant disorders was 6.12%.

In **conclusion**, by knowing the health status of the rural geriatric population, the decision makers can implement the health program at a rural community in order to solve the oral disorders as well can estimate the necessary health services, and the primary and specialized care.

**Key words:** public health, rural health, geriatric population, general and oral morbidity
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Purpose: The purpose of this poster is to introduce the Basic Emergency Kit for Dental Offices and important recommendations.

Material and Method: During internet searching with the title key word, your PC lists more than half million sites and items. Fortunately most of official sites such as ADA, have consensus on basic materials of an simple emergency kit. This study found and extracted the general agreement on it.

Results: The following medications are the basic and mandatory materials of an emergency: Epinephrine for anaphylaxis, bronchospasm, Benadryl for allergic reactions, anaphylaxis, Albuterol for asthmatic attack, bronchospasm, Nitroglycerin for angina, Aspirin for suspected myocardial infarction, Glucose source for diabetic emergency (hypoglycemia), Ammonia inhalants for syncope, Oxygen as supplemental adjunct. The important remarks are: Bring your office up to the proper standard of care by obtaining an emergency drug kit. Know the drugs and their actions within the emergency drug kit. Location of your emergency kit must be simply approachable. Practice monthly CPR. Also common emergencies that occur and you must know are: every 1.2 minutes someone dies of a sudden cardiac arrest, every 20 seconds someone has a heart attack, every 45 seconds someone has a stroke, every 3.3 minutes someone dies from a stroke, every 3 minutes someone has a seizure for the first time and every 6.6 minutes someone has an anaphylactic reaction.

Conclusion: Preparing a basic emergency kit and knowledge about their application are mandatory for a dentist and/or a dental office.
PP2 | Evaluation of different smile parameters in the Turkish population
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Turkey

**Purpose:** The purpose of this study was to evaluate the smile type, smile line, maxillary incisal line types, and buccal corridor widths related to the smile aesthetics that has not been evaluated until this time in the Turkish population.

**Material and Methods:** A total of 190 individuals (92 males and 98 females) aged between 18 and 25 years, living in different cities of Turkey were included in the study. In the study, the smile types, smile lines, maxillary incisal curvatures and buccal corridor widths of the individuals were examined.

**Results:** According to the results obtained from the study, 43.7% of the young Turkish population has commissural smile type, 35.8% has cuspid smile and 20.5% has complex smile. 45.3% of the population has average smile line, 36.3% has low smile line and 18.4% has high smile line. 63.7% of the population has convex incisal line type, 26.3% has straight incisal line, 10% has reverse incisal line. Last visible maxillary tooth during a smile is the maxillary canine in 3.7% of the population, the maxillary first premolar tooth in 32.6%, the maxillary second premolar tooth in 37.4%, the maxillary first molar tooth in 25.3%, and the maxillary second molar tooth in 1.1%.

**Conclusion:** In the young Turkish population, the most common smile type in both genders is the commissural smile (p<0.05). The most common smile line is the medium smile line, and the least common smile line is the high smile line, and it varies by gender (p>0.05). The most common incisal line type is the convex line in both genders (p<0.05). The last visible maxillary tooth during the social smile is mostly the maxillary second premolar tooth (p>0.05).

**Key words:** Smile type, smile line, maxillary anterior incisal curve, buccal corridor width

PP3 | Evaluation of laminate veneer preparations with 3D systems
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Turkey

**Purpose:** To evaluate difference between a trained professional prosthodontist (PP) and a postgraduate prosthodontics student (PPS) in the preparation depth of laminate veneers by scanning the tooth with a 3D scanner before and after the preparation.
Material and Methods: Twenty upper central incisor teeth selected and divided into 2 groups (GPP and GPPS). All teeth were divided into the parts (incisal, middle, and cervical) and then 5 points were randomly selected on the unprepared tooth and scanned with the 3Shape D750 laser scanner. Then teeth were prepared both PP and PPS using depth guide bur with similar techniques. After preparation, all teeth were scanned and lapped over portions were assessed. The total amount of enamel volume which the bur had removed was also calculated. The ANOVA test was used for statistical analysis at a significance level of 5% (P < 0.05).

Results: Incisal part: lowest value was 0.161, highest was 0.576 for GPPS and lowest value was 0.132, highest was 0.62 GPP. Middle part: lowest value was 0.193, highest was 0.639 for GPPS and: lowest value was 0.184, highest was 0.747 for GPP. Cervical part: lowest value was 0.278 mm, highest was 0.698 mm for GPPS and cervical lowest value was 0.253 mm, highest was 0.628 mm for GPP. There was no statistically significant differences between GPPS and GPP in all third measurements (P > 0.05).

Conclusions: This study showed that out of a total of 100 points examined 1 point was found to have a significant difference among the two physicians which in turn if a p<0.05 is used means in overall no significant difference was found between PPS and PP. It is concluded that with a depth guide bur a trained physician can attain a preparation depth which is in the adequate norms.

NEW TECHNOLOGIES

PP4 Behavior of CS-NPs on Prosthodontic Acrylic Copolimers
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Purpose: Complex hybrid biomaterials based on undoped or Ag-modified semiconductive zinc oxide, chitosan and acrylic copolymers have been obtained with the aim at improving the biocompatibility and antibacterial activity of the acrylic materials used in prosthodontics.

Materials and Methods: Hybrid biomaterials for prosthodontics based on commercial acrylic copolymers matrix modified with zinc oxide-based (ZnO and Ag:ZnO) or zinc oxide-based/chitosan composite (ZnO/Cs and Ag:ZnO/Cs) nanoparticles (NPs) have been prepared and investigated to improve their
biocompatibility, thermal stability and antimicrobial activity. The effect of NPs on the structure, morphology, thermal behavior and antibacterial activity of the obtained materials was investigated by Fourier transform infrared spectroscopy, scanning electron microscopy coupled with energy dispersive X-ray, spectroscopy, modulated thermogravimetry & derivative scanning calorimetry, and inhibition zone.

**Results:** The hybrid materials modified with nanoparticles show compact arrangement of acrylic copolymer microspheres with good contact between them, a relative good dispersion of the nanoparticles of sizes and a good adhesion of the nanoparticles to the copolymer microspheres. Smoother surface morphology was observed in the case of hybrid materials modified with composite NPs, in which chitosan molecules act as a cross-linking agent between the oxide NPs and the acrylic matrix. Higher activation energy values, compared to the case of the acrylic base material, explain the higher decomposition temperatures of the obtained hybrid materials and confirm interactions between their components. Good antibacterial activity against S. aureus and E. coli was obtained. The strongest activity being observed for material with Ag: ZnO against E. coli.

**Conclusions:** The hybrid materials modified with nanoparticles CS- NPs are improved in morphology, thermal stability and antibacterial activity. This work represents a first attempt to modify the dental acrylic materials obtained from commercial product Duracryl Plus, by adding nanoparticles of zinc oxide or zinc oxide doped with silver, as prepared or chitosan- grafted.

**Key words:** Acrylic copolymers, Chitosan (Ag)ZnO nanoparticles

**PP5**

**Effect of Femtosecond, Er:YAG and Nd:YAG Laser Systems on Bond Strength Resin Cement with Esthetic Post System**

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**Faculty of Dentistry, University of Atatürk, Erzurum Turkey**

**Purpose:** The aim of this study, to investigate the result and contributions of surface treatment with different laser systems on bond strength resin cement with esthetic post system made of different material.

**Material and Methods:** 3 different esthetic post systems (RelyXTM fiber post, C-Post® zirconium oxide post, EasyPostTM zirconia reinforced fiber post) including 40 from each system were used. On this posts, 3 different surface treatments (Er:YAG laser, Nd:YAG laser and Femtosecond (Fs) laser) including 10 pieces from each system were applied. The remaining 10 samples no action by the control group was created. The obtained posts were cemented used self-
adhesive resin cement (RelyXTM U200) into the 12 mm length and 4 mm diameter composite post slot. From each prepared sample’s coronal medial and apical regions 2 mm thick section were taken to make push out tests. Afterwards, the push out resistance was measured using 0.5 mm/min head speed universal testing machine.

**Results:** There are statistically significant different between glass fiber posts and zirconia reinforced glass fiber posts with zirconia posts. Zirconia post shows lower bond strength values. Etching procedure conducted on the zirconia posts the Fs lasers and Nd: YAG lasers are more effective.

**Conclusions:** Zirconium oxide posts that have lower bond strength than glass fiber posts may be applied surface treatments for increasing its bond strength. Nd: YAG lasers and Fs surface treatment are another surface treatment increases the value of one bond strength of zirconia post.

**Key words:** Femtosecond laser, glass fiber post, zirconium oxide post, push out test

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**PP6**  
Efficacy of SLM technology in individual Ti-6Al-7Nb implants manufacturing – in vitro study  
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Poland

**Purpose:** SLM technology (Selective Laser Melting) is the laser technology of micro-metallurgy of powders which allows to manufacture unlimited three-dimensional metal structures. They are created by the use of melting powder of metal layer by layer with a high power laser. Each of obtained layers have a contour marked with a cross-section by a 3D model. To check the efficacy of this technology the construction of individual dental implant was performed.

**Material and Methods:** Basing on CBCT (Cone Beam Computed Tomography) unique construction of dental implant made of Ti-6Al-7Nb alloy including porosity structure of intraosseous part was designed. For better osseointegration, the biocompatible alloy of intraosseous surface was covered
Results: Obtained dental implant had appropriate mechanical strength as well as it transferred the correct stress inside the mandibular bone.

Conclusion: SLM technology is useful in individual Ti-6Al-7Nb implants manufacturing however further studies concerning their osseointegration are necessary with animal models.

Purpose: The aim of the present study was to assess, in clinical environment, the characteristics of the newly obtained PMMA 0.4% TiO2nanocomposite with stereolithographic (3D printing) technique for a two-appointment complete denture manufacturing.

Materials and Methods: 35 fully edentulous patients were enrolled in this prospective clinical study, conducted according with ethical principles including the World Medical Association Declaration of Helsinki (ClinicalTrials.govIdentifier:NCT02911038). Written consent from all patients was also obtained.

A 4 % TiO2 nanoparticles reinforced PMMA composite with proved low adherence of microbial factors due to an induced photocatalytic production of oxygen radicals and improved mechanical strength was used according to an additive CAD-CAM protocol for complete dentures fabrication. The protocol proposed involved a two-step appointment process: impressions, jaw relation records, occlusal plane orientation, tooth mold, shade selection and maxillary anterior tooth positioning record registration in the first appointment. New denture design was sent to the patient/patient’s family via Email, to be approved and the second appointment was for insertion. Clinical follow-up was performed at 6 months assessing the following parameters: denture fit, occlusal scheme, vertical dimension and lip support and quality of life using Oral Health Impact Profile for Edentulous Patients (OHIP-EDENT).
Results: At 6 month follow-up no complications were registered, no adjustments for denture fit were needed and patients oral health related quality of life was better after wearing printed dentures.

Conclusions: The CAD-CAM technology proposed involves a short time treatment protocol, the new material to be used is able to eliminate manufacturing imperfections and deliver a product that is precision engineered to custom fit the patients edentulous ridges, is accessible to any dental laboratory and provide patients the functional and aesthetic features they demand.

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PP8 Prosthetic Rehabilitation With Laminate Veneers And Full Ceramic Crowns: A Clinical Report
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Purpose: The esthetic and functional demands of adult open-bite patients who don’t accept orthognatic surgery have always been a challenge to clinicians. The aim of this case report is to provide an esthetic outlook for patient with full porcelain fixed partial dentures and laminate veneers.

Materials and Methods: 22-year-old male patient who complains esthetic appearance, missing tooth and bleeding gums applied our clinic. After clinical and radiographical examination; open-bite, gingival inflammation and recession and missing right mandibular central incisor tooth were observed. After gingival rehabilitation; temporary restorations placed during gingival healing. To achieve maximum esthetic with minimal invasive approach, maxillary canine to canine IPS e.max ceramic laminate veneers and mandibulary canine to canine IPS e.max ceramic crowns with cut-back were planned. Restorations produced with CAD/CAM technology.

Results: When the patients came to control after 6 months, there wasn’t any problem gingival tissue and restorations.

Conclusion: Esthetic and function provided by preserving teeth with multidisciplinary approach.

Key words: IPS e.max, laminate veneer, CAD/CAM
A combination method for fabricating an implant supported provisional

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Purpose: The purpose is to present a clinical case of fabrication of an implant-supported provisional copying the existing one, with the combination method.

Materials and Methods: In a 25 year-old male patient three implants were placed in the upper jaw in order to restore the anterior region. The remaining posterior teeth needed fixed restorations and were used as abutments for a full arch fixed provisional during osseointegration. Due to the long term remaining, the acrylic resin provisional was metal reinforced. Following the second stage surgery, a replica of the existing provisional was used to load the implants. A combination method was used. The part of the provisional which would be connected with the implants was made with acrylic resin using a silicon matrix, taken from the existing provisional. The position of the implants was transferred on the provisional. After opening holes on these positions, the provisional was connected to the temporary abutments intraorally, finished and screwed to the implants.

Results: The implant-supported provisional satisfied the patient esthetically and functionally.

Conclusion: Provisionals are an important clinical procedure before the final restoration, especially when the rehabilitation involves teeth and implants or totally supported by implants. The proposed method needs less time of work intraorally, less discomfort for the patient and reduced financial costs. As the final step is made intraorally there is a low possibility of misfit. Because of this method’s advantages, after careful selection of clinical cases it is recommended for modifying fixed provisionals to implant-supported ones.

Key words: implant-supported provisional, combination method
Purpose: The aim of this pilot study is to analyze the influence of various types of rigid connectors on strength of zirconia frameworks, for lateral mandible fixed partial restorations.

Materials and Methods: Zirconia frameworks were obtained by CAD/CAM technology, using STL files which have been especially designed for flexural tests ("Solid Works" Software). The zirconia samples were designed as three unit bridge frameworks, replacing the first right lower molar. The cross sectional area of the connectors was established at 5 mm², respectively, 9 mm² and the connectors’ shape was designed to be circular or elliptical. The experimental zirconia samples were obtained with “VHF CAM 4-K4 IMPRESSION” milling machine and then sintered. Specimens were divided into two testing groups: one containing only sintered samples and a second group, whose sintered samples were immersed for three days in distilled water (37°C) and daily abraded with a diamond bur, according to a settled protocol. All experimental samples have been characterized by evaluating the average surface roughness and surface morphology; mechanical tests were then performed, fracture sites and morphology at connectors were determined and then analyzed.

Results: After flexural testing, representative samples were chosen to evaluate the failure mode, revealing different behaviors that depend on the tested group and on the connectors’ cross sectional area, shape or position.

Conclusions: An optimal cross section and a specific design for zirconia frameworks’ connectors are recommended for preserving zirconia restorations’ integrity in the oral environment, as well as better aesthetic results and maintaining the periodontal health.

Key words: connector design, zirconia, flexural strength, fixed prosthetic restorations
Purpose: This study investigated the efficacy of dental burs with different surface coatings on various reconstruction materials and evaluated surface changes microscopically after use.

Materials and Methods: Block specimens (N=20, n=4 per group) of different materials (CAD/CAM PMMA, Direct resin composite, Lithium Disilicate, CAD/CAM Nano-Hybrid Composite and Zirconia) (12x4x4 mm³) were randomly assigned to four different bur types namely, 1) Bur 1: FG1 Diamond coated (Diameter: 1.63, Intensive), 2) Bur 2: KO1 (Komet) Diamond coated (Diameter: 1.56), 3) Bur 3: FG2 (Intensive), 4) Bur 4: KO (Komet). Efficacy tests were conducted using a custom made device (The Dhriller). A handpiece under water coolant (50 ml/l) was used to cut the blocks (100,000 rpm) at a depth of 3 mm under 750 g and time was recorded until 3mm of working trace was completed. One bur was used 3 times and time was recorded again. Digital microscope pictures of unused, used and ultrasonically cleaned burs (distilled water, 10 min) were made. Data were analyzed using 2-way ANOVA, Tukey’s, repeated measures tests (alpha=0.05).

Results: Both the material (p<0.05) and the bur system (p<0.05) significantly affected the results. Bur 1 resulted in higher cutting efficacy for Composite and CAD/CAM specimens (19±7s and 24±3s) compared to Bur 2 (26±5s and 36±4s, respectively) (p<0.05). Bur 2 was more efficient for PMMA and Lithium Disilicate (76±32s and 61±14s) than that of Bur 1 (144±62s and 140±36s, respectively) (p<0.05). Ultrasonic cleaning did not completely remove the smear layer for PMMA on Bur 1 surfaces.

Conclusions: Among tested materials, Lithium Disilicate required more time of drilling compared to other materials where Bur 2 was more effective for this material. Up to 3 times of repeated use of the tested burs, decreased cutting efficacy for Lithium Disilicate and PMMA but not for direct resin composite and CAD/CAM composite materials.
PP12  Esthetic approach for the restoration of missing maxillary central incisor  
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**Purpose:** The purpose is to present two clinical cases focusing on the demanding anterior area. These cases report the rehabilitation of a missing maxillary central incisor following different type of procedures.

**Material and Methods:** In the first case a roll flap technique was used to cover the post extraction socket. After the healing period, the soft tissues were shaped using a fixed provisional supported on the adjacent teeth. The final restoration was fabricated only when the soft tissues of the two incisors- missing and existing- were esthetically acceptable.

In the second case the upper left central incisor was extracted due to a periapical cyst which has destroyed the buccal plate. The post extraction socket was therefore filled with bone graft and covered with a membrane. On a second surgery the implant was placed and an implant-supported provisional shaped the emergence profile of the tissues. Only then the final restoration was fabricated.

**Results:** Both cases’ outcomes are satisfying. However, the esthetic result was much better in the one that a soft tissue surgery was performed.

**Conclusion:** Restoring the anterior region and especially a maxillary central incisor is perhaps the most challenging case a restorative dentist will have to deal with. These cases cannot be all treated the same way. We have to examine carefully each one and select the best treating option.

**Key words:** central incisor, emergence profile, restoration

PP13  Esthetic Rehabilitation of Anterior Open-bite with Porcelain Veneers: A Case Report  
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Anterior open bite has a multi-factorial etiology comprising: Prolonged sucking habits, mouth breathing, tongue and lip sucking, abnormal swallowing habits. In mature patients with anterior open-bite; the treatment options are fixed orthodontic treatment, orthognathic surgery and prosthetic rehabilitation. In this case report, a 22-year-old male patient with anterior open-bite was presented with laminate veneer prosthetic rehabilitation. The patient applied to our clinic
because of esthetic complaints. The orthodontic, surgical and prosthetic treatment options were offered to the patient and he chose the prosthetic treatment due to the time constraint. The objective of this treatment was to restore esthetic and masticatory function with increasing the crowns length. The patient’s aesthetic and functional expectations were successfully attained and the dark space caused by anterior open-bite was closed with 6 porcelain veneers. The wax-up was prepared on the cast model and the preparations were made in the guidance of mock-up. Afterwards, e.max laminate veneers were fabricated and applied to patient with dual cure resin cement. There was no problem seen in the 6-month follow-up of the finished prosthesis.

**Key words:** anterior open-bite, porcelain veneer, esthetic rehabilitation

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**PP14 Evaluation of inlay/onlay restorations luted with pre-heated resin cements after 5 years**

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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°C 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 C, 37 C, 54 C) after 5 years in use.

**Material and Methods:** 50 patients (28 females / 22 males, mean age=33 years) were treated with one hundred IPS E-max inlay and onlay restorations (82 onlays, 18 inlays / 84 molars, 16 premolars). Three cementation temperatures (25 C, 37 C, 54 C) were tested with two resin cements; G-Cem Automix (GC; Tokyo, Japan) and Variolink N, high viscosity (Ivoclar Vivadent; Schaan, Liechtenstein). All restorations were evaluated after 5 years by two independent examiners using modified USPHS criteria.

**Results:** After 5 years of observation time, total survival rate of Variolink N high viscosity group was higher than G-Cem Automix group due to debondings. Secondary caries and endodontic complications were seldom. Increased clinical service time resulted in decrease of marginal adaptation for all G-Cem Automix groups.
Conclusion: Cementation with Variolink N high viscosity in all temperatures exhibited a reliable treatment option to restore posterior defects with indirect ceramic restorations in the long term.

PP15 Evaluation of the fracture strength of multilayer CAD/CAM Ceramic Crowns
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Purpose: The purpose of this study was to evaluate the effect of thickness of zirconia core and different resin cements on the fracture strength of veneered zirconia crowns designed by multilayer technique.

Materials and Methods: Forty metal dies were constructed. Forty zirconia cores (Sirona inCoris ZI) were designed and constructed (inLab 4.4) with the different thickness on metal dies. Half of the zirconia core thickness were 0.5 mm and the other half were 0.7 mm. Twenty-four feldspathic ceramic (VITABLOCS Mark II) veneers were fabricated (inLab 4.4) on to the zirconia cores. Zirconia cores were divided into two subgroups and veneers were cemented one of the resin cement: a light cure self-adhesive resin cement (Multilink Implant) and a dual cure resin cement (Panavia F 2.0). Then, crowns were cemented to the metal dies. All specimens were subjected to thermal cycling 2000 times (5°C-55°C±2°C, immersion time:30 s). A universal test machine was used for the fracture strength test at a crosshead speed of 1 mm/min. The data were analyzed with one-way ANOVA (α = 0.05). Stereomicroscopy was used to evaluate the failure modes and surface structure.

Results: Zirconia core thickness and resin cement material affected the fracture strength (P<0.05). Increase of core thickness increased the fracture strength of multilayer veneer crown (P<0.05). Higher fracture strength values were obtained with light cure self-adhesive cement in both core thickness.

Conclusion: Although 0.5 mm thickness zirconia cores showed lower flexural strength, it was higher than the maximum loads which may occur clinically (Fmax=600N on one tooth). Also, light polymerize self-adhesive resin cement advisable for increasing the fracture strength with different core thickness.

Clinical Relevance: The multilayer zirconia crowns can be applied successfully, especially in single-crown restorations.
PP16  | Long Term Successful Rate of Ceramic Veneers
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Bulgary

**Purpose:** Long term evaluation of success rate of ceramic veneers with minimal invasive preparation design.

**Materials and Methods:** Anterior teeth of 14 patients were restored with 82 ceramic veneers. Ceramic veneers were fabricated with IPS Empress and adhesively luted with composite cement Variolink Veneers, Ivoclar Vivadent. Clinical evaluation was performed according to the modified USPHS criteria. The failures were recorded by Kaplan-Meier success rate.

**Results:** After of 10 years observation time the success rate of ceramic veneers was 96% due to 2 debondings and one gingival recession.

**Conclusion:** Minimal invasive ceramic veneers are reliable treatment option for esthetic reasons.

PP17  | Optical Coherence Tomography applications in conventional fixed prosthesis
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Conventional fixed prosthesis is the most frequent therapeutic solution in oral rehabilitation. The survival rate of dental bridges is about 90% after 10 years. Most failures of dental bridges are of biological nature and are due to poor marginal adaptation of retainers.

The **purpose** of this paper is to demonstrate the applicability of the OCT in highlighting the cervical adaptation to fixed prosthetic restorations and the way in which the marginal closure is performed in the selected teeth group.

**Material and Method:** 10 teeth covered with various crowns were selected, which were extracted after their mobilization on the arch, due to the periodontal damage and loss of bone support, evidenced by a radiological examination. The teeth were washed under the jet of water, scraped to remove periodontal tissue fragments and dental plaque, and they were OCT scanned. For the experiment, we used an OCT system manufactured by Thorlabs (OCS1300SS) powered by a swept laser source with a central wavelength of 1310 nm and a spectral bandwidth of 100 nm and a mean power of 12 mW.
Results: The OCT examination revealed multiple sectorial defects in cervical adaptation of fixed prostheses to 3 teeth representing distal abutments, clinically or radiologically undetectable.

Conclusions: Application of OCT in dentistry was used for hard tissue but also for soft tissue, oral mucosa and periodontal tissue. Cervical adaptation of fixed prosthetic restorations is the cause of the most common biological failure of dental bridges.

Key words: dental bridges, Optical Coherence Tomography

PP18 Oral rehabilitation with mouthguards and phototherapy in patients with DSSS
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Introduction: In the last decade, Dysfunctional Syndrome of Stomatognathic System (DSSS) became an important problem of public health in the domain of Dental Medicine due to the increasing trend of this pathology of prevailing once with aging.

The purpose of our study was focused on the realization of functions of stomatognathic system that’s relies primarily on neuromuscular activity which provides static and dynamic balance, relaxation, mandibular and functional retraining required for a complex rehabilitation of the stomatognathic system.

Material: Our study was developed on a sample of 109 patients, which presented the affliction of muscular activity as a result of decreasing/increasing of muscular tonus or as a result of muscular contraction alterations. Distribution of this study batch included 58 (53.21%) female subjects and 51 (46.79%) male subjects which presented clinical signs of muscular dysfunction, a decrease or an increase of muscular tonus, with a keen interest regarding the affliction of stomatognatic system and a heighten concern regarding the recuperation of the diminished functions of this system.

Methodology: In our study, a clinic experiment type, we have applied various methods of treatment, in single or multiple therapy, through physical factors, addressed to stomatognathic system and cephalic extremity, along with other systemic elements, as a result of interconnections established at systemic and over systemic level.

Results: The procedures of Kinetotherapy was administered in 105 (96.33%) patients, the effect of augmentation on the local metabolic processes, the
analgesia of painful zones and muscular relaxation have positive effects on long, and short term, and we also use the phototherapy procedures in 56 patients (51.38%).

In conclusion, the establishment of stomatognathic system functions is based mainly on the neural muscular activity that ensures the mandible static and dynamics, relaxation, re-equilibration, and functional re-education being mandatory for complex rehabilitation of stomatognathic system.

**PP19** Prosthetic Rehabilitation In The Aesthetic Zone Using Customized Abutments (Atlantis™)
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The purpose of this study is to present two case reports concerning the treatment of patients with custom abutments (Atlantis™) and a fixed dental prosthesis in the aesthetic zone.

**Materials and Methods:** Both patients were referred to the Postgraduate Prosthodontics Clinic, Dental School of the University of Athens. The first patient, a 67-year old male with increased tooth mobility on maxillary incisors, reported history of periodontitis that had been previously treated. Prosthetic rehabilitation of his maxillary teeth included fixed dental prostheses. Clinical examination revealed periodontal compromised upper incisors with class III mobility, and upper canines that already supported FPDs. The second patient, a 42-year old male with increased tooth mobility on maxillary central incisors and absence of a canine and a lateral incisor, reported history of periodontitis that hadn't been treated. Clinical examination revealed periodontal compromised upper incisors with class II+ mobility.

**Results:** Following CBCT examination, in the first patient the treatment plan included extraction of the four upper incisors, followed by immediate placement of two implants in the region of the lateral incisors and immediate temporization. A temporary, screw-retained implant supported bridge was constructed. After 4 months of soft tissue management a custom impression was made. In the second patient, extraction of the two central incisors was decided. After the healing period two implants were placed one for #13 and the other for #21. Following second stage surgery a temporary, screw-retained implant supported bridge was constructed.

Final restorations for both patients included the fabrication of Atlantis patient specific abutments and a 4 unit cement-retained implant supported bridge.
Conclusions: The use of custom made abutments (Atlantis™) is an alternative method in cases of deep implant placement that ensures the correct emergence profile and elevates the margin of the restoration in an ideal position, reducing biological complications.

PP20  Prosthetic Rehabilitation of Patients with Amelogenesis Imperfecta: Case Series
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Purpose: Amelogenesis Imperfecta (AI) is a hereditary disorder that affects the enamel of both primary and permanent dentition. Complaints of patients with AI are often about esthetically and functionally because of tooth discoloration, hypersensitivity, and loss of vertical dimension of occlusion. The aim of these case series is presented the restore esthetic and functional requirement of two patients with AI.

Materials and Methods: At different times two young male patients presented with sensitive, discoloured and with a decreased vertical dimension of occlusion. Detailed dental, medical and social aspects of anamnesis were obtained from the patients. In the first patient, metal-ceramic restorations on anterior and posterior teeth were performed with considering the economic situation of the patient. Crown restorations were prepared separately from each other so that the teeth can be easily cleaned and not to accumulate plaque. In the second patient, firstly patient treated with scaling and root planning procedure and then a crown-lengthening procedure was applied, after healing of the gingival tissue approximately 3 months, metal-ceramic restorations on anterior and posterior teeth were performed. Again the restorations were prepared separately from each other. The patient was satisfied with the esthetic and functional outcomes of this treatment.

Results: This clinical report describes functional and esthetic aspects of therapy in two patients with AI and also, it shows that a carefully prepared treatment plan, good cooperation with the patient can bring excellent results and fulfill the patient’s expectations.

Conclusions: When the patients came to control after 12 months, there wasn’t any problem gingival tissue and restorations.

Key words: amelogenesis imperfecta, veneer, esthetic
Purpose: The aim of this study was to evaluate the effect of airborne particle abrasion and preparation order on the surface roughness, phase transformation and morphological changes of Y-TZP ceramic.

Materials and Methods: 50 zirconia specimens were prepared from Y-TZP ceramic blocks (Vita In-Ceram YZ) using a sectioning saw. The surface of each sample was ground using silicon carbide abrasive papers. Airborne particle abrasion was applied at 3 and 4 bar pressures to two groups (n=10) before sinterization (A3BS, A4BS) followed by surface roughness (Ra) measurements. Measured specimens were sintered (SA3BS, SA4BS) according to the manufacturer instructions. After sinterization, roughness of the surfaces was re-measured. Same surface treatment procedure was applied to other two groups after sinterization (A3AS, A4AS) and then measured for roughness. 110 µm Al2O3 particles were used for all surface treatments. For the control group, roughness of not treated specimens were measured before sinterization (C1 and then sintered followed by re-measurements of the surfaces (C2). For each specimen, 9 measurements were recorded from 3 different locations (perpendicular, oblique and parallel directions) using a profilometer. SEM and XRD analysis were performed to one specimen of each group. ANOVA and Tukey HSD tests (α=.05) were used for statistical analysis.

Results: SA3BS (1.95 ±0.16 µ) and SA4BS (2.04±0.19 µ) groups showed significantly higher mean Ra values than other groups (p<0.05). Mean Ra values of 4 bar airborne particle abrasion groups were higher than 3 bar groups. All treated surfaces were rougher than the C groups.

Conclusion: Sintering process decreased the Ra values of previously surface treated groups. Preparation order and the pressure of airborne particle abrasion are effective factors on the surface roughness of zirconia ceramics.

Key words: Airborne particle abrasion, surface roughness, Y-TZP ceramic, XRD analysis
**PP22**  
Static and dynamic occlusion rehabilitation through fixed prosthetic treatment  
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**Purpose:** Our aim was to standardize the occlusion parameters, static and dynamic reports in patients which receive fixed prosthetic treatment, especially in cases with temporomandibular disorders.  
**Material and Method:** Our study patients were diagnosed with TMD with occlusion predominance. We made a standard protocol for all patients concerning treatment approach, when they need fixed prosthodontics and we created a special chart which must be filed before and after proper treatment.  
**Results:** We applied this protocol to all patients and observed good functional integration of crowns and bridges. A standard approach of occlusion especially in situation with abnormal parameters and reports helps the specialists to obtain good functionality and esthetics in follow ups.  
**Conclusion:** Occlusal parameters must be restored according to the patient natural landmarks in permanent balance: cusps, anterior guidance, sagittal, transversal and frontal curves, occlusal arias, arch diameter, intercondylar distance, condyles inclinations and glenoid fossa morphology. Dynamic occlusion should be restored after natural occlusion principle and according with patient diagnosis.  
**Key words:** occlusion, fixed prosthodontics, rehabilitation, temporomandibular disorders

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**PP23**  
The influence of veneering process on in vitro marginal adaptation of FPDS constructed using CAD/CAM milling, laser sintering and conventional cast metal cores  
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**Purpose:** The purpose of this study was to compare the marginal adaptation changes between three and four unit’s metal ceramic fixed partial dentures (FPD’s) fabricated by three different metal framework techniques after veneering process.
Material and Methods: A total of 60 stainless steel three and four unit FPD’s models were fabricated. Specimens were randomly divided into three groups to fabricate metal ceramic FPD’s frameworks with LW, MM and DMLS techniques. Before and after veneer process, silicone replicas were obtained, sectioned, examined and measured with a light microscope. The statistical analysis was done with Mann-Whitney U and Kruskal Wallis and Wilcoxon Signed Ranks tests. Results were evaluated at 95 % of confidence interval and p<0.05 level.

Results: There was a statistically significant difference between the three and four unit of FPD’s, before PFC for LW and MM (p:0.000) and DMLS (p:0.019)’s groups and only DMLS (p:0.006)’s group was statistically significant after PFC. The mean marginal gaps of LW technique was higher than the MM and DMLS’s techniques before PFC. After PFC, DMLS’s technique results were higher than LW and MM technique but, no statistically significant difference was found between the marginal gap values of the three and neither for four units of DMLS’s FPD’s.

Conclusion: PFC decreases the mean marginal gap of the LW and MM group, controversy, there was a slight increase for DMLS group. However, all the marginal gap values obtained were in clinical acceptance level for three and four-units FPD’s for all tested specimens.

Key words: Marginal gap, lost wax, CAD/ CAM, laser sintering, porcelain firing cycles

PP24 Two Different Prosthetic Treatment Option of Class III Malocclusion with 5-Year Follow Up: Case Reports
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Prognatism is a serious social and functional impediment. Its correction is essential to restore function and esthetics in the oral and behavioral rehabilitation of prognathous patient. This clinical report describes the findings after 5 years about the two different prosthetic treatment option of a class III malocclusion combines with decreased occlusal vertical dimension. First patient is thirty-six-year old male patient who had a LeFort I Maxillary Advancement operation for replacing his maxilla 1 cm vestibully. After surgical procedures, the determined appropriate occlusal vertical dimension was reestablished with provisional fixed partial dentures for three months adaptation period. Final maxillary full mouth and mandibular posterior restorations were fabricated and cemented under the guidance of provisional restorations. Second patient is forty-seven-year-old male patient who declined orthognatic surgical procedures for oral rehabilitation. Instead of
orthognatic surgery, patient treated maxillar tooth-supported overdenture for supplying existent soft tissue deficiencies and mandibular removable partial denture without any preparation on supporting teeth. Five years after the completion of the cases, patients showed occlusal stability, as well as integrity of dentition and prostheses. Periodontal structures remained healthy. No bone loss around supporting teeth and fracture of prosthetic components or the prosthesis was detected.

As a result, patient satisfaction and clinical success in class III malocclusion depends on patient’s expectations and clinician’s experience for deciding to best treatment option for each different case to recover esthetics and function. Tissue stability and healthy conditions remain after a 5-year post-treatment follow-up, which confirms the usefulness of both approaches.

Key words: Class III, overdenture, malocclusion

PP25 Influence of Prosthetic Material and Connector Width on Stress Distribution
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Purpose: The aim of this study was to evaluate the biomechanical behavior of different prosthetic materials and connector widths in implant-supported mandibular bridge restoration in terms of stress distribution.

Materials and Methods: The mandibular model was constructed based on CT data of the mandible of a human cadaver. 3D models of restorations and implant-abutment complex were generated by scanning dental implants, abutments, and dental gypsum models. Implant-supported three-unit bridge restoration with different connector widths (2 mm, 3 mm and 4 mm) was located in the #44-46 region. The nodal points and the mesh of the models were generated. Cobalt-chromium ceramic, Zirconia ceramic, and Zirconia-reinforced PMMA were used as restorative materials. The basis, anterior and posterior edges of the mandible were created as fixed in all directions with zero displacements. 100 N axial loading from central fossa and 300 N oblique (30°) loading from buccal cusps were applied to each crown to calculate stress distribution.

Results: Zirconia-reinforced PMMA showed the lowest stress values in the framework and highest minimum principal stress values in the trabecular bone in axial loading condition. Zirconia-reinforced PMMA increased the stress values in all structures except the framework in oblique loading condition. Changes in the thickness of connector affected stress values in the framework in axial loading conditions. The lowest stress value in the framework of Cobalt-chromium model
was observed for 2 mm connector width in axial loading, whereas, the highest stress value in the framework of Zirconia-reinforced PMMA occurred in 4 mm connector width. The lowest stress values in oblique loading condition were observed in the models with 2 mm connector width for all materials.

**Conclusion:** Changes in prosthetic material and connector width affected stress distribution. Oblique loading condition led to higher stress values. Cortical bone showed higher stress values than trabecular bone.

**Key words:** dental materials, connector design, dental implants, finite element analysis

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**IMPLANTOLOGY**

**PP26**

A maxillary overdenture supported by two zygomatic implants

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*Turkey*

Severe maxillary defects resulting from surgical resection of oral tumors and extreme bone atrophy at sinus region are significant problems for prosthetic rehabilitation of the upper jaw. Conventional dental implants have been used in such cases but implant placement is often difficult because of excessive bone loss. Zygomatic implant is an alternative method for these patients to provide retention and stability. In this case report, maxillar overdenture prosthesis supported by two zygomatic implants applied due to insufficient bone tissue at maxilla posterior region is presented. A 66-year-old woman who applied to Gazi University Faculty of Dentistry Department of Prosthodontics for prosthetic treatment was diagnosed with anamnesis and clinical examination. It was observed that the lower jaw had two implants supported overdenture and the upper jaw had total prosthesis were prepared 10 years ago. There was no systemic disease that would constitute a contraindication to implant surgery. Two conventional dental implants and two zygomatic implants were placed and zygomatic implant was selected because of the insufficient bone at maxilla posterior region. After osseointegration process, the stabilizing bar was designed for maxillar overdenture prosthesis and mandibular overdenture prosthesis was prepared with locator attachments. After treatment, the patient was pleased with the esthetic and functional outcomes. The patient was recalled 6 months later and there were no complaints related to the implant-supported over dentures.

**Key words:** Zygomatic implants, overdenture
Aesthetic aspects of contemporary implant placement using the bone ring technique in the anterior maxilla
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**Purpose:** Aesthetic deficiency in the anterior maxilla is a very common problem caused by periodontitis, tooth fracture, root resorption or even worse by trauma. Surgical and prosthetic management of these compromised cases is challenging and controversial. A lot of techniques are developed to rehabilitate such deficiencies. The objective of this case presentation is the management of a deficiency in the anterior maxilla using the so-called bone ring technique and fixed provisional prostheses during the time of the healing period. The aesthetic outcome was evaluated through objective criteria and RFA was performed with an ISQ value of 65.

**Materials and Methods:** A 40 year old healthy male was referred with a chief complaint of aesthetic deficiency in the anterior maxilla at the site of right lateral incisor. The tooth was recently extracted due to root resorption, and replaced with a removable prosthesis. The patient had a digital volume tomography (Accuitomo, Morita). The radiological estimation was critical for the decision of using a bone ring from the chin area and transplanting it at the reception site. Before the grafting procedure a provisional Maryland bridge was fabricated to help the soft tissues recover from the pressure of the removable prosthesis and heal properly. Through the surgery the immobilization of the graft was performed via the implant by itself (Xive, OR, Dentsply 4,5x13 mm). Bone chips mixed with autologous blood filled the gaps and a resorbable collagen membrane covered the entire surgical site. The aesthetic outcome was evaluated through objective criteria and RFA was performed with an ISQ value of 65. Limiting the pressure of the pontic, the same provisional bridge was placed back. After a healing period of 16 weeks a conservative second stage surgery was performed and an ISQ value of 75 allowed us to load the implant using a screw retained laboratory acrylic crown constructed on an aesthetic cap. Every two weeks the crown was modified using flow light polymerized resin to improve its emergence profile by pressuring the papilla. Two months later an impression was taken using a customized impression coping, duplicating the collar of the crown. The final restoration was an E-max crown cemented on a prefabricated zirconia implant abutment.
Results: During the prosthetic management based on clinical evaluation the aesthetic outcome was improved and after an additional radiographic examination both the implant and the prosthesis were classified as successful. Furthermore the patient’s acceptance on function and aesthetics of the restoration’s design was high.

Conclusion: This case presentation demonstrates that the specific combination of surgical and prosthetic management drove to ideal rehabilitation of such a compromised case in clinical outcome and patient’s acceptance over one year follow up.

PP28 Atrophic maxilla and mandible rehabilitation with use of «All-on-Four» tilted implants
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Introduction: The “All-on-Four” concept is based on the placement of four implants in the anterior part of fully edentulous jaws to support a provisional, fixed, and immediately loaded full-arch prosthesis. Combining tilted and straight implants for supporting fixed prostheses can be considered a viable treatment modality resulting in a more simple and less time consuming procedure, in significantly less morbidity, in decreased financial costs and a more comfortable postsurgical period for the patients.

Material and Methods: A 55-year-old male patient admitted to our clinic due to complete edentulism. In the systemically healthy patient, due to the increased atrophy of the maxilla and mandible. All-on-4 treatment concept was approved by implanting 4 implants in the upper and lower jaws. In Mustafa Kemal University Surgical Department, maxillary and mandibular 12, 22, 32, 42 flat implants were placed. 14, 24, 34, and 44 implants placed at 30 degrees angle. Since the 35-45 Ncm insertion torque needed for immediate loading was not provided, it was decided to do the patient’s permanent prosthesis 4 months later. After 4 months the patient was placed under local anesthesia with multiunit abutment and gingiva styling pieces. After 14 days, transfer parts were placed in the mouth and the patient's impression was taken with polyvinyl siloxane impression material by open tray technique. A chrome-cobalt infrastructure was prepared. The prosthesis with the wax placed on the infrastructure and the acrylic teeth placed on it was done. The last visit patient was placed in acrylic hybrid prosthesis. After the occlusion checks were made, the screw holes were closed with a composite resin.
Conclusion: The “All-on-4” treatment concept seems to be an alternative option for rehabilitating edentulous jaws compared with advanced surgical approaches without using removable prostheses. It is a cost-effective procedure, the morbidity and allowing a higher patient quality of life.

PP29 | Clinical evaluation of the long-term performance of electroforming telescopic double crown removable prostheses
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Purpose: The present paper reports an analytical comparison and clinical evaluation of electroforming telescopic double crown removable prostheses (EF-RP), consisting of implants and natural teeth (Group I) and EF-RP consisting of implants only (Group II).

Materials and Methods: Subjects were 286 implants of patients who received EF-RP from September 2001 to December 2016 (mean age: 63 years, 23 males and 34 females, 32 cases involving the maxilla and 25 cases involving the mandible): 20 patients in a mixed group with implants and natural teeth in whom EF-RP were supported by inner caps placed on 41 natural tooth abutments and 95 implant abutment inner caps, and 37 patients in an implant-supported group in whom EF-RP were supported only by 191 implant abutment. Kaplan-Meier method was performed for these patients to evaluate complications of lost implants and natural teeth.

Results: In the group I, 2 natural teeth were lost. But there was no missing implant. In the implant-supported group, 2 implants were lost. In the Kaplan-Meier analysis, the cumulative survival rate fluctuated in the lower 90% range up to the 11th year of the observation period, but decreased thereafter. There was no significant difference between the 2 groups based on the Log-rank test or generalized Wilcoxon test.

Conclusion: The system is similar to implant support, and it is EF-RP that can be trusted long-term and the number of implants can be adjusted. The high survival rate is considered to be due to its simple structure and easy self-care, and the lack of mechanical stress on natural teeth and implants during placing and removing EF-RP.
PP30  Effect of different abutment materials on stresses in inner screws
Necati Kaleli, Duygu Saraç, Şafak Külünk
Turkey

Purpose: This finite element analysis study aimed to compare the effect of the use of different abutment materials on stress distribution in inner screws of implant-supported single restorations.

Materials and Methods: A bone-level implant system and a titanium base abutment were scanned by using an extra-oral scanner, and then 3D models were created from the STL data of original components. Thereafter, a customized abutment and a maxillary right second premolar crown were modeled over the titanium base abutment, and the implant was placed in a bone block with 100% osseointegration. Two different abutment materials were tested: polyetheretherketone (PEEK) and zirconia. In both models, implants were loaded vertically and obliquely, and the stress distribution in inner screws was evaluated by using the von Mises stress analysis.

Results: The oblique load generated more stress on the inner screw. Similar von Mises stress values were observed in PEEK and zirconia models.

Conclusion: PEEK and zirconia customized abutments showed similar biomechanical responses in terms of stress distribution in inner screws.

Key words: implant-supported restoration, PEEK abutment, inner screw

PP31  Effect of different irrigations on the osseointegration of dental implants
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Purpose: To investigate the effect of different irrigation temperatures during implant surgery on the osseointegration of dental implants.

Materials and Methods: Eight adult male New Zealand white rabbits were used in this study. Two implants were inserted in each tibia of each rabbit’s rear legs. Rabbits were randomly divided into 4 groups according to different irrigation procedures applied (370C, 240C, 100C, and 10C). Resonance frequency analysis (RFA) was performed on the implants to detect the degree of osseointegration. 5 measurements (following to implant surgery, 1th week, 2nd week, 3rd week, and 1th month) were carried out. In addition, removal torque values (RTVs) were measured from sacrificed tibias the end of 30 days. The data were analyzed with two-way ANOVA and post hoc Tukey-Kramer multiple comparisons tests.
No significant difference in implant stability quotient (ISQ) was detected between groups from the first measurement to 5th measurement. However, there was a statistically significant difference in RTVs between 10C and 370C, and 10C and 100C (p=0.024 and p=0.013, respectively).

Conclusions: Different irrigation temperatures during implant surgery were not effective on the osseointegration of dental implants or immediate implant placement.

Key words: Dental implant, irrigation temperature, RFA, reverse torque, osseointegration

Purpose: The aim of this study was to evaluate the treatment outcome of implants in the esthetically demanding regions.

Material and Methods: In this study, patients were treated with implant (Camlog Biotechnologies, Basel, Switzerland) supported all ceramic single crowns and followed for 3 year. Esthetic parameters were recorded to assess treatment outcomes. Pink esthetic score and white esthetic score (PES/WES) was applied for the objective esthetic outcome assessment of anterior single-tooth implants. The patients’ own appreciation was also evaluated by means of questionnaire.

Results: Thirty implants were placed in 25 patients. At the recall examinations, all implants were successfully integrated, demonstrating healthy peri-implant soft tissues as documented by standard clinical parameters. Esthetic outcomes confirmed pleasing results overall. WES values were slightly superior to PES values. None of these implants had mucosal recession. For the total PES, none of the prosthesis scored <6. For the WES, the mean total was 8.11 (range: 6–10).

Conclusions: In conclusion, objective as well as subjective evaluation of maxillary implants in the esthetic zone yielded satisfactory results. Of the 30 implant crowns examined, none of them scored below the threshold of 6. The follow up revealed pleasing esthetic outcomes and stable facial soft tissues.

Key words: Esthetic outcome, early implant placement, clinical research
The aim of this comparative study is to present the clinical parameters that interrelate with the screw retention mode. Impression procedure, soft tissue disturbance, verification of passive fit, path of draw, screw axes, biomechanics of prosthetic connection, type and rate of complications, cost and complexity of prosthesis fabrication and material choices, are some very important factors influencing the design and long term performance of the prosthesis. Clinical cases will be presented depicting the aforementioned points and their correlation to the retention mode. Full arch cases including all clinical steps will be compared in order to emphasize the advantages of one concept over the other and suggest guidelines depending on the clinical situation.

Screw retention on abutments with the help of a second smaller prosthetic screw, offers the advantage of easier access and angulation correction, but its performance varies a lot depending on the implant system. The abutment design is crucial for the biomechanical support of the prosthesis and developing leveraging vectors may be responsible for complications. Direct implant retention offers the advantage of a more stable connection, but its clinical application depends a lot on implant distribution and angulation. Working depth may be a problem for soft tissue maturation and confirmation of correct fit.

The clinician should customize the prosthetic treatment plan and select the retention design that is more advantageous for each implant system and every clinical case.

**PP34**

Optimum positioning of four implant supported bar attachment assembly within the mandibular overdenture

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**Purpose:** Purpose of this study is to explain the factors on the decision of adequate sagittal and vertical positioning of bar attachment assembly within the implant supported mandibular overdenture.

**Materials and Methods:** Implant supported bar retained mandibular overdenture is viable treatment alternative when patients are not satisfied with
stability and retention of the conventional complete denture. There are several factors that affect the decision making of adequate sagittal and vertical positioning of bar attachment assembly within the implant supported mandibular overdenture. These factors may include size and curvature of the dental arch, implant distribution within the arch, number of implants that support the bar, length of the bar between the two implants as well as interarch distance, distal extension to the bar, height of the bar, tooth set-up and oral hygiene maintenance.

**Results:** Bar supported mandibular overdentures when adequately planned provide the advantage of splinting of implants, which improves the retention and stability therefore the function and self-esteem, reduces forces on implants and crestal bone loss.

**Conclusion:** Patients gain better masticatory functions and esthetics when optimum positioning of bar attachment assembly within the prosthetic space established.

**PP35** Overdentures Using Newly Designed Metall Ball Attachment Containing Predetermined Gap

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Several types of attachments have been used for implant supported and/or retained overdentures. Recently, Locator®, one of the stud type attachments, has been generally used. However, the colored matrix is resilient and vulnerable to wear, so frequent post-insertion maintenance is needed. To solve these problems, it is necessary to introduce innovative attachment system. Overdentures using Air-Gap attachment (AGA) has improved masticatory function and facial esthetics. AGA is made from metal, so it could be more resistant to wear or friction than resilient attachments and could maintain the quantity of retention for longer period. Nevertheless, AGA plays a role in stress breakers because they have determined gap. In addition, pre-existing implants and natural teeth were successfully used for connection of AGA. AGA could replace other unsplinted type of attachments. Overdentures using AGA could provide satisfactory result in terms of function, esthetics and retention. However, long term follow up is needed.
Postoperative pain and swelling after receiving mini and standard implants
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Purpose: Our aim was to assess short term post-operative pain and swelling after insertion of mini dental implants (MDI) and standard size implants (SSI) in the same patients at different times.

Materials and Methods: Forty two patients (22 females, 20 males; 58-73 years old) participated. Half of the patients first received MDIs and the other half SSIs (4 week intervals between insertions). All MDIs were inserted without flap reflection and all SSIs by reflecting a flap. A total of 25 MDIs and SSIs were inserted in the mandible; 17 MDIs and SSIs in the maxilla. They assessed self-perceived pain and swelling on the 1st, 3rd, 5th, 7th and the 10th day by using a visual analogue scale (0-10).

Results: There was no significant difference throughout the observed period, neither for pain nor for swelling, no matter which type of implant was first received (P>.05). There was no significant difference between gender (P>.05). The SSI insertion led to moderate and the MDI insertion to low level of pain on the 1rst post-operative day. Low levels of pain were recorded afterwards for both implants. However, the implant type elicited significant effect (MDI insertion led to significantly lower levels of pain), while the jaw showed no significant effect. Very low level of swelling was reported after MDI placement, while SSI insertion elicited moderate swelling on the first post-operative day and low levels of swelling afterwards. The effect of the implant type on swelling was significant (significantly more swelling after the SSI insertion), while the jaw showed no significant effect.

Conclusion: Flapless insertion of mini dental implants led to significantly less intense post-operative pain and almost no swelling compared to insertion of a standard size implants.

Key words: mini dental implants, standard size implants, post-operative pain, post-operative swelling
Purpose: Ameloblastomas are rare, benign dental odontogenic epithelial tumours representing 1% of the oral tumours. The most common site for ameloblastoma is mandibular molar region. The purpose of this clinical report is to present a clinical case of implant placement at a post extracted area of ameloblastoma in a young female.

Material and Methods: A 19-year old female presented to the Postgraduate clinic to extract an oral tumour. The patient complained for facial deformity, difficulties in chewing and swelling of the left cheek. The patient had no past medical history. Clinical and radiographic examination revealed cystic radiolucent lesion in the left posterior segment of the horizontal ramus of the mandible, respectively to the teeth #34, 35, 36 and 37. Then the marsupialization of the tumour was scheduled and a histological examination was followed, which revealed the possibility of a cystic ameloblastoma. Two years later the patient relapsed. It was decided to proceed with the surgical resection of the lesion and preservation of the lower border of the mandible. During the surgical resection the affected teeth were extracted. The histologic examination revealed unicystic mural ameloblastoma.

Results: After one year and a half of follow up appointments, the patient had complete bone regeneration in the post extracted area of ameloblastoma, without the performance of any graft process, and the placement of three implants was decided, for the rehabilitation of the deficit. The patient was instructed not to use the removable interim restoration during the period of osseointegration of the implants.

Conclusions: In this clinical case, with a post extraction area of ameloblastoma, there were no contraindications to place implants. However, adequate clinical and radiological follow-up of patients and the detection of potential histological parameters which better describe the risk of recurrence, will further contribute to an improvement in the long-term outcome.
Purpose: The evaluation of bone loss around two-piece dental implants with immediate post-extractional restoration in comparison with conventional loaded ones.

Materials and Methods: Twenty seven partially edentulous patients from which 18 men and 9 women (mean age 41 y.o.) received 41 two-piece dental implants installed in esthetic zone of the upper and lower jaw. Control group - 22 implants installed in two surgical steps, Study group- 19 implants installed in one-step, with immediate restoration at 1 week postoperatively. The mean healing period was 24.42±4.04(Study) and 25.54±3.79(Control) weeks. The following parameters were evaluated: primary (Study Group) and secondary stability (both Groups, Periotest Classic), peri-implant bone modeling using Adobe Photoshop CC Program (at the end of the healing period, 1 year post-prosthetic and total bone loss – from the 1st step till 1 year post-prosthetic). Statistical analysis was made by calculating mean values, standard error, Mann-Whitney U tests.

Results: Primary stability was-4.05±0.21(Study) while the secondary were-3.97±0.04(Study, p>0.05) and-4.5±0.22 Control(p<0,05). Periimplant bone loss(Study) from mesial and distal aspects were: 0.87±0.17mm and 0.31±0.12mm at the end of healing period; 0.19±0.05mm (p<0.001) and 0.16±0.02mm (p>0.05) at 1 year follow up; 0.99±0.12mm and 0.47±0.12mm (total bone loss). The bone loss during healing(Control): 0.51±0.14mm and 0.33±0.14mm, at 1 year follow up–0.81±0.15mm and 0.6±0.12mm (p>0,05); total bone loss -0.92±0.15mm and 0.81±0.15mm.

Conclusion: One-year results demonstrate that the immediate post-extractional restored implants in the maxilla have predictable results. The total bone loss from placement till one year follow-up had no difference between groups.
PP39  Complications of Combined Tooth and Implant Supported Removable Partial Dentures
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**Purpose:** In the past, few remaining teeth in highly reduced dentition were used as abutments for removable dentures or more often extracted in favor of implant retained prosthesis an alternative method of rehabilitating partially edentulous arcs with severely reduced dentition is tooth-implant supported double crown retained removable prosthesis. The purposes of this study is to assess and summarize the probable complications of this treatment method.

**Material and Methods:** The data were collected based on an extensive electronic and hand searching from January 2005 to December 2016. The articles screened according to inclusion criterias: more than 2 years follow up, more than 10 patients in case series and clinical studies with combined tooth and implant supported removable prosthesis in partially edentulous patients.

**Result:** the complications were classified in two categories: technical and biologic. The most common technical complications were: need for denture reline, abutment screw loosening, chipping and fracture of acrylic teeth and implant component failure. Tooth caries, need for root canal treatment and preimplantitis were more prevalent among biologic complications.

**Conclusion:** findings across these articles suggested that use of teeth in combination with implants would be a proper solution in compromised physical, financial and psychological elderly patients. So it is important to find out the etiologies and associated factors of complications to prevent their incidence.

**Key words:** Double crown, long term results, telescopic crown, survival, implant

PP40  The Metal Ring Technique as an Alternative to the Open Tray Impression
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**Purpose:** The aim of this poster is to present an alternative technique for the impression of implants, where some metal rings are used, instead of the classical direct method with an open tray, through clinical cases.

**Material and methods:** In the metal ring technique, an impression of the position of the healing abutments is made, with a prefabricated metal impression
tray, using A type polyvinylsiloxane. An intermediate cast with the position of the healing abutments is fabricated in the laboratory. On this cast, rings surrounding the healing abutments are waxed and then cast with base metal alloy. The rings are connected with a metal bar over the edentulous spaces. The impression copings for open tray technique are fitted on the implants and the metal framework is passed over the impression copings. Autopolymerising acrylic resin is used to connect the impression copings and the framework. After the polymerization of the acrylic resin the impression copings are unscrewed, analogs are logged on and the metal-acrylic impression is ready for the fabrication of the master cast.

**Results:** The major advantage of this technique is the accurate impression of the implant position. The acrylic resin has the minimum dimensional changes. Also, the metal framework repeals the necessity of splinting the impression copings and ensures their uniform coverage with adequate thickness of resin. This technique can be most helpful in patients with limited mouth opening and in deeply placed implants. The higher cost, the necessity of a pick up impression with the framework in order to make a gingival mask and the more complex laboratory procedure are some of its drawbacks.

**Conclusion:** The impression with the metal ring technique could be advantageous in specific cases. The use of conventional impression techniques however, seems to be a reasonable approach for implant impression practice in daily routine.

**Key words:** Implantology, impression technique, fixed prosthodontics
A Prosthetic Treatment for Cleft Lip And Palate using Andrew’s Bar System

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Aim: In this case report, to enhance masticatory function and improve speech and esthetics of the 26 years old cleft lip and palate patient fixed-removable protheses is used.

Background: The Cleft Lip and Palate (CLP) is variation of a type of clefting congenital anomaly caused by abnormal facial development during pregnancy. The etiology of CLP is unknown. The CLP patient is mainly characterized by the presence of an oronasal communication, malformation or congenital agenesis of the teeth close to the cleft and deficient sagittal and transverse growth of the maxilla. CLP is needing complex treatment strategies scheduled in many years of duration. These patients require various treatments involving a multidisciplinary team, which may include a maxillofacial surgeon, an orthodontist, prosthodontist, an ear nose and throat specialist (ENT), speech therapist and all those professionals who can help provide functional and aesthetic improvement. CLP patients may reconstructed with conventional prostheses or (dental-zygomatic) implant retained prostheses.

Conclusion: Fabrication of the fixed removable prosthesis is obturator attached to Andrews bridge is a time consuming, labor intensive, artistic job. The art of replacing missing teeth, defect has been carried out for many years. Surgical reconstruction was not possible in this case and needed prosthetic rehabilitation. The technique has presented an Andrews bridge which was a fixed removable type of prosthesis the obturator was light weight which was attached to the removable part of the Andrews bridge. This promotes the physical and psychological healing for the patient and improved the esthetics.
**PP42**  
Additional retention/support of conus-crown retained prostheses with mini implants  
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**Purpose:** In a conus crown supported denture, the longevity of the abutment teeth depend on their localization and number; the incidence of further abutment teeth loss is greater in a small number of abutments and linear support. Additional implants in strategic positions can provide better support, better force distribution and can change linear support into a triangular or a rectangular support. In narrow alveolar ridges standard diameter implants can not be inserted without augmentation. We tested if mini dental implants (MDIs) with O-ball retention can be used as strategic implants for additional support and retention of removable prosthesis in patients having narrow ridges.

**Material and Methods:** Ten patients with removable dentures retained with 1 to 2 conus crowns received 1 to 2 MDIs in order to change the linear support into triangular or rectangular. The insertion torque was > 35 N/cm² for all MDIs and they were immediately loaded. Patients completed the OHIP-EDENT and the Chewing Function Questionnaire (CFQ) prior to MDI insertion, after MDI loading and up to 4 years. Ten patients with only 1 or 2 conus crown retained dentures were controls.

**Results:** Ten patients have been successfully wearing the prostheses supported with one or two conus crowns and one to two MDI over 4 years; no MDI or tooth was lost, no tooth showed mobility. The OHIP-EDENT and the CFQ questionnaire’s scores were significantly reduced after MDI loading and remained low throughout the 1 to the 4 year observation stages. Control subjects showed increased abutment teeth mobility.

**Conclusion:** Although further research for clinical validation of the described treatment is needed, preliminary clinical results indicate the effectiveness of MDI insertion as additional retention, stabilization and support of partial removable prosthesis otherwise supported by only 1 or 2 conus crowns, thus protecting abutments from overloading.

**Acknowledgment:** Croatian Science Foundation for funding project: 1218, Acronim: Mini dental implants
**PP43**

**Comparative study between nutritional status of different denture wearers**

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**Purpose:** The purpose of this study was to prove that each denture wearer needs detailed counseling to have a correct and complete diet, thus avoiding the risk of nutritional and digestive problems.

**Material and Methods:** This study was performed on 14 patients, 7 of which had a maximum of 5 remaining teeth but did not form mastication units and get complete dentures after extraction of the remaining teeth and 7 complete denture wearers for at least 5 years, incorrectly adapted. The study followed up the masticatory pattern and nutritional status of the two groups of patients.

**Results:** Diets and eating habits of the people are important throughout life, particularly in the elderly in whom an unbalanced diet can lead to serious illness.

**Conclusions:** This paper, through the determinations and comparative studies made between the two groups of patients, emphasizes that new denture wearers would be advisable to consult a physician regarding the quality and quantity of the food consumed in order to gain and conserve the general health, avoiding malnutrition and other illnesses.

**Key words:** diet, denture wearers

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**PP44**

**Complete Removable Prosthesis and Oral Health Related Quality of Life**

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**Purpose:** Oral health related quality of life (OHRQoL) is affected by many factors. The purpose of this research was to examine if length of complete removable dental prosthesis (CRDP) wearing period as well as “day–night” or just “daily” wearing of CRDP affect patient’s OHRQoL.

**Materials and Methods:** The study included 301 participants who wore mandibular and/or maxillary CRDP. The questionnaire used in this study consisted of the Croatian version of OHIP-49 questionnaire and data about age and gender of participants. Also, each participant was asked about the CRDP wearing habit (“day–night” or just “daily”), and about the total time of CRDP
wearing period (period of edentulism). The results obtained were statistically analyzed with a significance level of 0.05.

**Results:** The participants were of an average age of 74 ± 12.1 years. The study group consisted of 202 female (67%) and 99 male (33%) participants. According to the denture wearing habit (“day–night” or just “daily” CRDP wearing), no statistically significant differences were revealed (p>0.05). With regard to the length of denture wearing period (previous and current CRDP), statistically significant differences were revealed in each OHIP domain (p<0.05) with higher mean OHIP values among participants wearing CRDP for 5 or 10 years (shorter period).

**Conclusion:** According to the obtained results it could be concluded that the length of denture wearing period significantly correlates with OHRQoL with higher OHIP values among participants with shorter period of CRDP wearing. During a longer denture wearing period (10 years and more), most participants learn to accept functional limitations of CRDP and establish a certain satisfaction level.

**Key words:** prosthesis, oral health, OHRQoL

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**PP45  Managing Gag-Reflex during Final Impression: A Case Report**

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**Purpose:** This poster reports a successful management of a partially edentulous patient with an exaggerated gag reflex, starting from the impression-making stage till the special design of the final prostheses.

**Material and Methods:** A 61-year-old man with a dentist-phobia syndrome reported for replacement of posterior missing teeth. His main complaint was a hyperactive gag reflex. Behavioral management techniques such as the use of table salt, were necessary to improve patient’s tolerance during each subsequent appointment. Mouth preparation was made and final impressions were taken using a single impression material, a medium-viscosity silicone. Special-designed light-cured custom acrylic trays and the final removable partial dentures (RPDs) were fabricated.

**Results:** Gagging is a physiologic protective reflex, nevertheless it can become very disturbing to some patients, especially to females and cause anxiety and dental fear. Our case is interesting, because this reflex is exaggerated in a male patient, which is not so common in everyday dental practice.
Managing it appropriately by a partial denture’s special design and combined to the table salt method, increased patients’ daily comfort and self-confidence. It also helped us during prosthodontic treatment till the final restoration by extending our working time.

**Conclusion:** In conclusion, the stimulation of a hypersensitive vomit reflex is a frequent incident and a special problem in prosthodontics. It prevents the dentist from carrying out critical clinical stages and a less satisfactory final prosthesis. Following this well organized procedure and the impression techniques by using the suitable materials can not only eliminate the gag reflex but also promote the patients’ behavioral adjustment to dental care. Except for other key-causes, aware and well educated specialists, trained suitably to face the gag reflex problem, are needed to manage it. Modifying treatment approaches enhance patients’ acceptance and result in a successful treatment outcome.

**PP46**

**Mini dental implants as additional support of removable partial dentures**

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**Purpose:** The proportion of patients dissatisfied with their chewing function and esthetics due to ill fitting removable partial dentures (RPDs) retained by clasps, attachments or double crowns can reach up to 40%. Placement of standard size implants for retention and better stability of RPDs has already shown benefits. However, placement of slim implants (Mini dental implants, MDIs) in strategic positions could ensure change from linear into a polygonal more favorable denture support. The results of a clinical study on that matter has not been reported yet.

**Material and Methods:** Thirty eight patients, previous RPD wearers with slim alveolar ridges and a need for new partial denture participated. Each patient received 2 MDIs (diameter varied from 2-2.9 mm and the length from 10-14 mm). The MDIs were placed posteriorly from the last tooth in the dental arch, adjacent to it or at a distance of approx. two tooth width posteriorly. If the insertion torque was over 35 N/cm2 the implants were immediately or early loaded. Twenty eight patients received MDIs in the mandible and 10 in the maxilla. Patients filled in 3 questionnaires: Oral health impact profile (OHIP14), chewing function questionnaire (CFQ) and orofacial esthetic scale (OES) at baseline, at the one-year control exam, and in 24 patients at the 3-year appointment.
Results: Seventy three implants were placed. Patients improved significantly esthetics, chewing function and OHRQoL (p< 0.05) with consistent results through the first year, as well as through the 3-year observation period. There was almost no bone loss or periimplantitis and none of the remaining patients’ teeth was lost. No denture fractures or matrices loosening were reported.

Conclusion: Insertion of MDIs to provide RPD with more favorable support and retention seem to be a viable and reliable clinical procedure, however more years of observation are necessary to approve the protocol.

Key words: mini dental implants, removable partial dentures, slim implants, denture retention, patients perception

Acknowledgement: To Croatian Science Foundation for funding project No. 1218 (Mini Dental Implants)

PP47  Modern Technological Possibilities of Complex Rehabilitation in Total Edentulous Patients
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Romania

Purpose: The aim of this study was to present modern technological possibilities of complex rehabilitation by using complete removable dentures obtained by injection technique in total edentulous patients.

Material and Methods: A number of 8 total edentulous patients (5 female and 3 male), aged between 65-79 years were included in the present study. After clinical and complementary examinations, the patients received a prosthetic treatment represented by complete removable dentures made of thermoplastic materials. By respecting the specific clinical and technological phases, 16 prosthetic appliances were made of Polyan IC using the Thermopress 400 injection moulding system (Bredent).

Results: The Polyan IC material, based on modified polymethyl methacrylate, gives optimal tissue compatibility, high precision of fit with great suction effect, easy, safe and homogeneous material processing, a highly cross-linked smooth surface with the possibility of a fast surface cleaning, a high breaking and bending strength, a great color stability for years.

Conclusion: The choice of the best treatment option in the case of the total edentation is made after a rigorous analysis of the situation of each patient, from the state of health to the age, the anatomical particularities of the prosthetic field, the possible medication administered, the lifestyle, and the dental hygiene habits.
In the last decades, the treatment of total edentation has undergone major changes by introducing new techniques, methods and materials. The thermoplastic resin processed through injection moulding system represents a modern possibility of prosthetic therapy that can be used in edentulous patients and especially in case of allergic patients.

**Key words:** total edentation, complex rehabilitation, thermoplastic materials, injection moulding system

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**PP48**  
**New Dentures-Patients Demands And Expectations**  
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The World Health Organization defines health as the perfect state from physical, psychological and socio-cultural point of view.  
**Purpose:** This paper aims to evaluate whether there are differences between how women respond to removable dentures compared to men and if they exist under what aspect of adaptation are manifested strongly.  
**Material and Methods:** The study group consisted of 116 denture wearers who presented in the Faculty of Dental Medicine in Iasi, within the time 2012-2014. These were represented by 55 men and 61 women. Patients completed a questionnaire before treatment. The questionnaire was drawn up from five characteristics of dentures, correlated with success in adapting patients to removable prosthetic treatment (after PV Smith, Mc Cord JF.). After six month of treatment the same questionnaire was completed again.  
**Results:** As a general matter, women are less satisfied than men in almost all aspects of stomatognathic system restoration of functions, but especially in terms of physiognomy, phonation and chewing. It is a feature that can and should guide the practitioner in understanding the needs and behavior of patients and to assess correctly the influence that complete denture can have on the lives of patients.  
**Conclusions:** Removable acrylic dentures for the patients, especially women generally must provide comfort, no pain, to obtain prosthetic stability and last but not least, do not adversely affect phonation.
Aim: To correlate removable dentures and oral hygiene in developing oral lesions in relationship with age, gender, educational level, origins, general diseases, smoking, salivary pH, denture hygiene habits and denture-wearing behavior in type 2 diabetic patients.

Material and Methods: The group study included 54 patients, aged between 55-80 years, both sexes (22M/34 F), with type 2 diabetes, randomly selected from Prof.Dr.N. Paulescu Hospital, Bucharest, Department of Diabetes. Data were obtained by direct clinical examination, questionnaire-interview and complementary pH salivary test. Descriptive statistical analysis was performed, we used bivariate correlation and Student-t test.

Results: Along with type 2 diabetes, the most common diseases were heart (hypertension 64.3%) and the psychological disease (depression 14.3%). The level of education (58.9%) was medium, the income low (51.9%) and smoking present in 41.1% of the patients. In terms of prosthetic status, of all the restorations (78.6%), the number of removable prosthesis was higher (58.9%). The average number of oral changes in type 2 diabetes is rated to 5, the most common is stomatitis (56.6%), alone or combined with other changes (32%). The patients use the toothbrush for denture cleaning (64.3%), only a small number clean their oral mucosa (7%) and the antiseptic tablets are rarely used (8.9%). A positive relationship was observed between oral mucosal lesions and low salivary PH, sex, smoking status, the age of prosthesis and denture-wearing behavior. This can be explained by structural mucosa changes due to reduced local immunity, vascular changes and also by improper use of prostheses.

Conclusions: To prevent or to reduce the number of oral lesions, denture wearers should be recalled regularly for oral examination, to educate them to maintain good oral hygiene and if needed to correct or change old, improper dentures.

Key words: oral hygiene habits, removable dentures, type 2 diabetes, prosthetic lesions, oral mucosa changes
PP50 | Prosthetic Reconstruction of An Non-Congenital Maxillary Defect: A Case Report
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Maxillectomy causes esthetic, phonetic, functional and psychologic problems in patients diagnosed with tumor. Hollow bulb obturator prosthesis restores masticatory function, improve speech, deglutition and cosmetics for maxillary defect patients. In this case report, a prosthetic rehabilitation with hollow bulb obturator is presented in the 57-year-old female patient who had a maxillary resection surgery.

In the anamnesis of the patient, it was determined that the mucoepidermoid carcinoma in posterior left sinus cavity was resected in March 2013. In extraoral examination, the left nasolabial sulcus was sagging downwards and the comissura was sagging left and upwards due to the scars on the soft tissue. In intraoral examination, it’s determined that maxilla was edentulous and there was only the left canine in mandible. In order to rehabilitate the functional, esthetic and phonetic loss of the patient; a hollow bulb obturator for maxilla and a metal framework partial denture for mandible were constructed. Oral function of patient was restored also appearance and psychology of patient improved.

Key words: hollow bulb, maxillary resection, prosthetic rehabilitation

PP51 | Prosthetic Rehabilitation in the Presence of Inadequate Occlusal Distance
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Purpose: In this case reports describe treatment approaches for prosthetic rehabilitation in the presence of inadequate occlusal distance in two cases.

Material and Methods: Patients common chief complaints were inadequate chewing and speaking function and poor aesthetics and there was inadequate occlusal distance for prosthetic rehabilitation. Case 1; age 60, man has short clinical crown in the anterior maxillary and the mandibular teeth. Common cause of short clinical crown was bruxism. The necessary anterior maxillary teeth were treated with endodontic treatment by placement a fiber post to the canals to overcome the short clinical crown length. The clinical crown length of the fiber post teeth were increased by restoration with dental composite. Removable
partial denture with precision attachments for maxilla and metal supported fixed partial denture for mandible was planned for him. All the teeth that provided occlusal contact were prepared. In this way, both the vertical dimension and the aesthetic appearance were improved. Case 2; age 38, woman has deep bite malocclusion and there was inadequate occlusal distance for prosthetic rehabilitation. First, removable partial denture with precision attachments for mandibular jaw and metal supported fixed partial denture for maxilla was planned for her. However, cantilever bridges were applied to prevent the increase in extremely high vertical dimension.

**Result:** The patients were happy with the aesthetics of the prosthesis. Post placement checkup was done after 1 week, 1 and 6 month. They were able to chewing. There was no pain at the temporomandibular joint.

**Conclusion:** It may be necessary to increase the vertical dimension at the level that will not damage the temporomandibular joint in the presence of inadequate occlusal distance.

**Key words:** fixed partial denture, inadequate vertical dimension, precision attachment

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**PP52**

Prosthetic Rehabilitation of Fixed and Removable Partial Dentures in a Patient with Progeria: A Case Report

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**Purpose:** Progeria is a rare genetic condition where symptoms resembling aspects of aging are manifested at an early age. Characteristic clinical findings of progeria disease include abnormalities of the skin and hair in conjunction with characteristic facial features and skeletal abnormalities. Appearance of the characteristic face is protruding ears, beaked nose, thin lips with centrofacial cyanosis, prominent eyes, frontal and parietal bossing with pseudohydrocephaly, midface hypoplasia with micrognathia and large anterior fontanel. The other reported anomalies are dystrophic nails, hypertrophic scars and hypoplastic nipples. The findings that are nearly interested in dentistry are delayed dentition, anodontia, hypodontia, or crowding of teeth.

**Material and Methods:** In this case study, the dental treatment of a 22-year-old male patient who suffers chewing malfunction and unsatisfactory appearance related to missing teeth was described. Missing teeth are 12,11,21,22 in the upper jaw, and 31,32,33,34,35,41,42,43,44 and 45 in the lower jaw. Firstly, tooth
number of 13, 23 and 24 were restored with metal-ceramic fixed partial dentures (FPDs). Then removable partial dentures were prepared for maxilla and mandible.

**Results:** At the completion of placement, oral hygiene was re-emphasized, and the patients were given a control appointment.

**Conclusion:** At the control appointments after 6 months, there were not found any discomfort or clinical inflammation around the tissues. With this treatment it is achieved the patient satisfaction who has lower life quality because of progeria.

**Key words:** progeria, removable dentures, hypodontia

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**PP53**  
Prosthetic Rehabilitation of Patient After Maxillectomy: A Clinical Report  
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Dicle University Faculty of Dentistry  
Turkey

**Purpose:** Acquired and/or congenital maxillary defects cause communication between the maxillary antrum and the oral cavity and oropharynx or nasopharynx, which results in impaired facial esthetics, compromised mastication, swallowing, and speech, and significant reduction in the quality of life. Prosthetic rehabilitation of patient who has maxillectomy operation can be managed according to the quality of supporting tissues, such as adjacent tissues, the residual palatal base, and the remaining dentition. In this case report, it is aimed to prosthetic oral rehabilitation of patient with Aramany Class II defect.

**Material and Methods:** A 54-year-old man referred to our clinic with the complaint of aesthetic, phonetics and chewing disorder. Aramany Class II defect was observed in the left maxillary region because of oral cancer history one year ago. There was no other systemic health problem of the patient. Considering the economic situation and the expectation of the patient, a metal-based acrylic prosthesis was planned to cover the defect region.

**Results:** In this case report, aesthetic, function, phonation and psychological rehabilitation of the patient were provided. It shows that a carefully prepared treatment plan and good cooperation with the patient can bring good results and fulfill the patient’s expectations.

**Conclusion:** The problems that were present in the control of the patient one week later were eliminated and the patient was called to control after 1-3-6 months.

**Key words:** maxillary defect, obturator, aesthetic
PP54  Rehabilitation of a maxillar defect using removable prosthesis; a case report
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**Purpose:** Maxillofacial defects refer to any tissue loss of the face caused by trauma, burns, tumoral lesions or malignant disease. Loss of structural continuity in the face can compromise speech, eating, swallowing, esthetics, and social relationship. Patients with cured midface malignancies but no reconstruction of defects is not considered successfully treated. Treatment options commonly consist of surgical reconstruction, removable prosthesis fabrication or some combination of the two modalities. However, in certain clinical scenarios, removable and/or fixed obturator prosthesis can be the only option available.

**Material and Methods:** A 46 years old male patient who had a surgical maxillary defect because of cancer was referred to our clinic. He had a chief complaint of difficulty in mastication, swallowing and speech. Intra oral examination showed missing teeth and palatal part in the left side of maxilla. After thorough examination and detailed discussion with the patient, a removable prosthodontic rehabilitation was planned. Maxillary defect was restored using an acrylic palatal obturator with a metal framework.

**Results:** After the reconstruction of the defect prostheses prevent communication between nasal and oral cavities and restore adequate mastication and speech function, as well as to achieve acceptable aesthetics.

**Key words:** maxillofacial defects, removable prosthodontics

PP55  Rehabilitation of maxillary-defects with bar supported prosthesis: two case reports
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**Purpose:** Patients with maxillary defects can alternatively be rehabilitated with dental obturators or microvascular flaps. This case reports describe the recreating the functional separation of the oral and nasal cavities, and the rehabilitation of function, phonation and aesthetics of two patients using maxillofacial prosthesis including bar and precision attachments.

**Material and methods:** A middle-aged female patient with partial maxillary resection due to oral cancer and a middle-aged male patient with congenital cleft lip palate were referred to our clinic for the prosthetic rehabilitation. For the
patient with maxillary defect due to oral cancer, a bar attachment was applied between the support teeth with the Andrew’s bridge design after the tooth preparation and a precision attachment applied to the terminal tooth adjacent to the maxillary defect. For the patient who has cleft the lip palate, three implants (Strauman) were placed to the left maxillary toothless area and after the osseointegration period custom made CAD/CAM milled titanium bar was designed and a precision attachment was applied to the terminal tooth adjacent to the maxillary defect at the cross arch. The prosthetic rehabilitation of the two patient were obtained with partial removable prosthesis including bar and precision attachments.

**Results:** After the prosthetic rehabilitation, function, phonation and aesthetic requirements of the patient were restored at acceptable level. The patient expressed being comfortable while eating and speaking without compromised palatal seal of the obturator. No technical and biological complications were observer during the clinical and radiological follow-up period

**Conclusions:** These case reports describes a combined approach for the management of maxillary defects with different bar attachment designs and precision attachments, as a result better retention, stabilization, patient comfort and aesthetic results were obtained.

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**PP56**

**The effect of double-milled crown in indirect retention of removable denture**

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**Purpose:** The aim of this work is to present the effect of specially milled metal-ceramic crown and balanced occlusal arrangement in upper removable partial denture to improvement of indirect retention of a denture.

**Case report:** Woman patient (BD) aged 56 years, had central incisors, lateral incisor and canine on the left side with two large terminal edentulous areas in her maxillary jaw.

The first procedure regarded to shoulder margin tooth preparation of canine, and impressing using A-silicone (Hydrorise-light body, Zhermack). Master cast and detachable refractory die was provided. Waxed (GC inlay wax, medium, GC Europe) model of coping was designed on the die and double milled on the oral-palatal side, with two separated milling chambers and interlock positions.
mesially and distally. Milled coping was casted using alloy (DAMCAST CC, Yadent Zhengzhou, China). Marginal accuracy of milled coping has been proved clinically. Ceramics (Vita, Europa) was built on metal coping and sintering of ceramics was provided. Metal-ceramic crown MCC was cemented to canine using “temporary” cement. MCC and partially edentulous maxilla was impressed using low viscosity silicone (Oranwash L. Zhermack). The master cast was duplicated in silicone (Duplicating Silicone-Dentaurum), waxed form of a framework was designed on refractory duplicated cast and processed to metal framework (Wisil M, Germany). After establishing of maxillo-mandibular jaw relationship and arranging of acrylic artificial teeth in semiadjustable articulator (Artex CT, Amann Girrbach), according to the principles of balanced occlusion, construction was tried-in. MCC was cemented in the mouth in common with fabricated partial denture. After 1 to 6 years recalls there were no changes in a mouth of the patient.

**Conclusion:** Positioning of specially milled MCC on canine tooth and settings of artificial teeth according to the principles of balanced occlusal arrangement in removable partial denture, successfully elucidated the problem of secondary retention of terminal saddles.

**Key words:** Milled crown, partially edentulous, removable casted partial denture

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**PP57 The Removable Gingival Veneer Denture: a novel treatment approach**

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**Purpose:** Periodontal disease progression results in soft and hard tissue defects that can present with aesthetic problems, including loss of interdental papillae, gingival recession, exposed root surfaces, tooth mobility and tooth loss. Whilst a gingival veneer is well-known for achieving optimum anterior gingival aesthetics the presented case describes a novel approach introducing the Gingival Veneer Denture which can be used to simultaneously provide improved gingival appearance and tooth replacement in the aesthetic zone.

**Material and Methods:** A 61-year-old Caucasian woman presented to the restorative department with an aesthetic concern of gingival recession affecting the upper anterior sextant and mobility affecting her upper left canine (UL3). Because of a marked gag reflex she did not wear an upper denture replacing her missing UR6,7 and UL5,6,7. She did not report to have impaired masticatory function. The medical history was unremarkable. She smoked 15 cigarettes per day for 30 years. Her oral hygiene regime at the time consisted of daily brushing without any regular interdental cleaning. Clinically, the patient had a high smile line. Her oral hygiene was inadequate. Diagnoses of generalized moderate-to-severe chronic periodontitis resulting in compromised anterior gingival
aesthetics, Grade II mobility of UL3 and acquired tooth loss were made. Following oral hygiene instructions and periodontal treatment the loose UL3, which tended to catch the patient’s lip, was extracted and an immediate gingival veneer denture was provided to improve gingival aesthetics and replace the extracted UL3. The clinical and laboratory stages are presented.

Results: The immediate gingival veneer denture camouflaged the gingival recession and replaced the UL3 providing the patient with a satisfactory aesthetic result without inducing an adverse gag reflex.

Conclusion: The immediate gingival veneer denture is a predictable, inexpensive, alternative prosthesis to treat advanced gingival recession with simultaneous anterior tooth loss, achieving aesthetic and functional results and patient satisfaction.

PP58 Effect of telescopic partial dentures on survival of remaining tooth
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Purpose: This study examined impact of telescopic partial dentures on single and two remaining teeth in the period of 10 years.

Material and Methods: Two partially edentulous patients with single and two remaining teeth in their jaws were examined. One patient with the first and the second premolar in a lower jaw and the second patient with single molar in the upper jaw were selected for the fabrication of telescopic metal-framed partial dentures. Dentures were retained on residual dentition utterly by cylinder telescope crowns. Inner telescopic crowns and metal fundament of outer telescopic crowns was fabricated using golden precious alloy (Orplid TK, C. Hafner GmbH, Germany). Outer crowns were mechanically retained (Palavit G, Heraeus-Kulzer, Germany) for specifically designed boxes in metal framework of cobalt–chromium–molybdenum alloy (Remanium 2000, Dentaurum, Germany) of partial dentures. Indirect light-cure composite (Sinfony™, 3M, USA) was used for the fabrication of aesthetic axial and occlusal portions of outer telescope crowns. Acrylic-resin anatomic cross-linked artificial teeth (Optognath, Galenika, Serbia) were used in the set-up procedure in semi adjustable articulator (Artex CT, Amann Girrbach, Austria). Patients were controlled yearly.

Results: Vital abutment teeth survived for 10 years. There were no changes on periodontal status. Patients had no complains.
**Conclusion:** Telescopic dentures provided aesthetically pleasing and comfortable effects with prevention of bone loss and longer life span of exclusively positioned remaining premolar and molar teeth.  
**Key words:** telescopic partial denture, outer telescope crown, inner coping

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**PP59**  
Prosthetic maintenance of tooth retained versus implant retained mandibular overdenture with ball attachments  
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**Statement of problem:** Mandibular overdentures provide improved treatment outcome than conventional denture therapy, but there are no guidelines to select which overdenture treatment is the best choice in cases with at least two remaining mandibular roots: extraction and implant retained mandibular overdenture or tooth retained overdenture.  
**Aim:** The purpose of this pilot study was to evaluate mechanical and biological complications of the two types of ball retained overdentures in order to assist the clinical decision-making process in selecting the most appropriate treatment for the individual patient and to anticipate future complications.  
**Material and methods:** A pilot survey enrolling patients who received tooth retained and implant retained mandibular overdentures, using the same retention system and the same type of metal reinforced framework, was conducted. A total of 20 patients, 10 with tooth retained and 10 with implant retained overdentures, were evaluated in order to compare the occurrence of complications of the two treatment modalities.  
**Results:** The study revealed an incidence of sixteen complications in the overdenture tooth retained group (one broken denture, two dislodged housings, four wear and replacement of matrices, two ball attachment post decementation, six need of denture relining, one rooth loss with need for changing the overdenture type to implant retained overdenture) and only six prosthetic complications in the group of implant retained overdenture (five wear and replacement of matrices and one need implant abutment replacement) of over a five years period.  
**Conclusions:** Incidence of complications was higher in the root-supported overdentures group comparing to implant-supported group. The two implant retained overdenture may be the first choice of treatment for the partially edentulous mandible with two retained teeth. However, patient choice should be taken into account and the preservation of the teeth to be used as retentive
attachments to support an overdenture can be considered a short term procedure till the implant therapy can be performed.

**Key words:** mandibular overdenture, tooth retained overdenture, implant retained overdenture

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**PP60**  
**Dental management of elderly edentulous patients-challenges and expectations**

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**Purpose:** In the present study, we wanted to analyze clinic and statistic a sample of 106 denture wearers about their individual psychosomatic coping methods with removable dentures.

**Material and Methods:** Our study was conducted on a sample of 76 elderly patients who received complete dentures as therapy in Dental Faculty in Iasi. Eligible patients showed a satisfactory health status, that does not affect in any way the acceptance of removable treatment. All patients were treated with complete dentures, checked up and programmed rigorously and successively at regular checkups to assess the degree of adaptation to this therapeutic solution, according to the phase out scheme of Iasi school. Our patients responded to a standardized questionnaire, including a series of questions about how dentures restore one of the main functions -mastication and a questionnaire on the emotional and social problems involved in denture mastication.

**Results:** Patient awareness of the need for prosthetic treatment should also be correlated with the general somatic state of the patient. This desideratum is possible only through interdisciplinary collaborations on the one hand and education sessions carried out in all pre and post prosthetic stages.

**Conclusions:** The results of this study highlight the need to promote more effective oral health and the existence of effective prevention programs. It should provide motivation for the creation and sustainability of awareness-raising programs in rural areas or areas where access to oral health care is a problem.
Evaluation of integrative periodontal, surgical - orthodontic and prosthetic treatment in generalized aggressive periodontitis

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Aim of the study: Evaluation and improving of periodontal status through alignment of the molars in mesial tipping.

Material and Methods: We studied a sample population of patients, affected by aggressive periodontitis, with age between 26-35 years old, with extracted 3.6 and 4.6 from different reasons and second molar rotated and mesialized.

Results: Periodontal clinical exam revealed thin gingival tissue of 3-4 mm (21 cases, 80, 7%) on the mesial surface of the second molar. Radiographic exam revealed the enlargement of the periodontal space and the resorption of the interproximal mesial bone. The treatment for the second molar consisted in fixed orthodontic devices and different uprighting techniques depending on the periodontal status of the patient: 50% with uprighting spring, 30% with orthodontic implant and 20% with tip back technique. After treatment it was noticed an improving of the gingival tissue status, the reduction of the periodontal pockets with 2 mm and the reshaping of the bone.

Conclusions: Orthodontic treatment applied to partial toothless aims to create optimal conditions for prosthetic treatment to represent elements of support for future prosthetic reconstruction

Key words: aggressive periodontitis, second molar, uprighting spring technique, prosthetic treatment
**Purpose:** Digital technologies are rapidly advancing over the recent years, covering several aspects of modern dentistry, from computer-navigated implant surgery to computer-aided design and manufacture of prosthetic restorations. Utilisation of these contemporary technologies is shown to have a positive effect on patients’ satisfaction, reduction of chairside and laboratory working time, while demonstrating acceptable accuracy and esthetics.

The **aim** of this clinical report, is to present a fully guided prosthodontic approach for the surgical placement of 4 implants in the mandible and the immediate loading with a pre-milled fixed implant-supported restoration.

**Material and Methods:** A 50-year-old male patient presented for the restoration of his partially edentulous mandible. Pre-operative CBCT was performed and digital impressions were obtained using an intraoral scanner. Based on the DICOM data from the CBCT scan, selection and initial positioning of 4 implants took place, through the implant planning software. Superimposition of the DICOM data with the STL file from the intraoral scan allowed the CAD of the provisional restoration and the optimization of implant positions.

Two 4.1mm/10mm Straumann BLT implants were chosen for the posterior areas, and two 4.1mm/12mm Straumann BLT for the anterior areas of the mandible. A CAD/CAM surgical template with metallic sleeves and inspection windows was manufactured based on the surgical and prosthetic digital virtual plan to be used during surgery.

Before the surgery, antibiotic treatment was administered and local anesthesia was performed. A full thickness mucoperiosteal flap was raised, ranging from tooth 47 to tooth 36, and the procedure was conducted by strictly following Straumann guidelines.

**Results:** The implants were immediately-loaded with the pre-milled fixed restoration, demonstrating passive fit and acceptable esthetics.

**Conclusion:** The aim of this clinical report was to present a fully guided digital workflow for the prosthodontic rehabilitation, with a pre-milled full-arch fixed implant-supported restoration. Digital technologies are shown to increase safety, predictability and decrease the working time needed concerning prosthodontic restorations. The use of digital implant planning software gives the ability to accurately plan the entire procedure, by using features from both the CBCT and the digital impression.

Owing to this, advantages and disadvantages of possible treatment plans can be determined leading to the optimal approach. Moreover, patient-clinician
communication is enhanced. Following a fully digital workflow for a prosthodontic treatment reduces significantly the operative and laboratory time, but requires a great amount of time spent in the digital planning before the operation.

To ensure a good surgical and prosthetic result, a learning curve for the digital software and knowledge of the conventional methods of surgery and prosthodontics, are inevitable.

PP64  Considerations on Endodontic Retreatment in Teeth With Crown-Root Restorations  
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Introduction: The retreatment of root canals is often necessary when the original treatment has failed. In such cases, the complete removal of obturation material is required in order to facilitate the cleaning, disinfection and re-obturation of the canal. Many times, the re-intervention requires the removal of the metal posts placed in the root canals in case of significant destruction of the clinical crown. The aim of this study is to analyze the evolution of several clinical cases that have included the removal of intraradicular posts, followed by endodontic retreatment.

Material and Methods: This study is based on the monitoring and investigation of a number of 32 teeth with posts and chronic periapical lesions or acute symptoms, which were previously treated endodontically and then retreated. For these teeth, we have evaluated the results recorded over time through a monitoring period of up to 2 years. Several options for removing the radicular posts have been taken into consideration.

Results: From the 32 studied teeth, 19 (59.37%) were maxillary and 13 (40.63) were mandibular teeth. The first upper premolars and the first lower molars were in this study the teeth with crown-root restorations the most affected by the failure of the endodontic treatment. The results of this study do not support the statement according to which mechanized instruments reduce retreatment time when this type of approach is taken into consideration.

Conclusions: The main concern when removing the post from the canal is not to affect the root resistance and to remove obturation materials from curved canals using Nickel Titanium controlled memory files, without altering the integrity of the canal walls. Curves of over 30° can generate complications and technical
errors. Therefore, choosing the right instruments is sometimes extremely difficult.

**Key words:** endodontic retreatment, crown-root restoration, post removing instruments

**PP65** Impact of immune system disorders on children’s susceptibility to dental caries

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**Objective:** The comparative study of the immune system indicators in carioreceptive and caries-free children.

**Material and Methods:** To achieve the objective of the paper, 224 children aged between 7 and 16 years were clinically examined in the case-control study. In the research group (L1), were included 112 children with moderate and severe carious activity, and 112 caries-free children formed the control group (L0). Mean DMFT index was subsequently computed for each academic year. Immunoglobulin levels and cytokine content in oral fluid (OF) and blood serum were determined by the method of immunoenzymatic analysis using the reagents of Vector-Best (Russia). The written consent of children’s parents was taken for the study.

**Results:** In children in L0, the levels of the immune system indicators studied were within the limits of the norm. In children with moderate and severe carious activity in the serum there was a significant reduction in IgA, IgG, IgM, statistically significant increase in proinflammatory cytokine levels (TNF-α, IL-1β and IL-6) and the relative incomplete concentration of cytokines anti-inflammatory IL-4 and IL-10 in relation to caries-free children. In OF of the children in the L1 group there was a decrease in the concentration of sIgA, IgA, IgG, and cytokine profile disorder, characterized by a statistically significant increase in the level proinflammatory cytokine. In children in the research group, a strong direct relationship was established between the DMFT index value and the pro-inflammatory cytokine concentration in serum and OF, compared to children in the control group, L0.

**Conclusions:** The cytokine profile disorder and immunoglobulin insufficiency in oral fluid and blood serum found in children with moderate and severe carious activity is one of the major factors of carious risk and an unfavorable indicator of aggressive evolution of dental caries that must be taken into account when planning cariopreventive measures individualized.

**Key words:** dental caries, immune system, immunoglobulins, cytokines
PP66 | Periodontal status evaluation in dental prosthesis patients with rheumatoid arthritis
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Aim of the study: This study aimed to analyze the periodontal status and the association between the wearing of fixed/removable partial dentures and periodontal disease in rheumatoid arthritis patients.

Material and Methods: The study was conducted on 36 patients with rheumatoid arthritis. Data were obtained by clinical examinations, which included the Community Periodontal Index and dental prosthesis exam. A descriptive analysis and the chi-square statistic were performed.

Results: In total, 69.44% of the individuals wore fixed dental prosthesis and 11.11% wore partial dentures. The prevalence of periodontal disease was 100%. A high percentage of the subjects presented calculus (86.11%) but only a small proportion was recorded as having deep pockets (8.33%). All denture wearer displayed periodontal problem in the sextant where the denture were recorded.

Conclusion: The periodontal status of the study population can be considered unsatisfactory. The wearing of dental prosthesis was associated with periodontal disease, with a high importance on the plaque control.

Key words: periodontal disease, dental prosthesis, oral hygiene

PP67 | Semiological Aspects of the Geriatric Patient Prosthetic Field
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As eyes are the windows for the soul, mouth is the mirror of entire body health. The effect of ageing on oral health includes effect on oral mucosa, lips, teeth, temporomandibular joint and all the associated structures of stomathognatic system.

The aim of the study was to identify from semiological point of view the aspects of geriatric prosthetic field changes that occur in elderly patients.

Material and Methods: The study group was formed by 35 geriatric patients. We evaluated by clinical examination, panoramic radiography, study models and temporomandibular joint tomography the changes in prosthetic filed.
Results and discussions: Most of the changes are due to physiological senesence but also to the geriatric pathology and medication in accord with the general pathology. The most common oral problems in the elderly are important edentulous spaces as a consequence to increased tooth loss post periodontal disease and dental caries. After the extraction of the teeth the alveolar bone is gradually and continuously reducing which has the clinical consequence the difficulty in providing treatment. Resorption is often associated with mucosal modifications and changes in present teeth position.

Conclusions: The changes in prosthetic filed of elderly patients are complex and the implicated factors that we could mention are age, gender, length and time of edentulism, provided treatment or not, correct/incorrect treatment, nutrition, disease, medication.

Key words: prosthetic filed, geriatric patient, general pathology

PP68 Splint Therapy in Temporomandibular Dysfunctions
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Purpose: To determine the splint therapy's effectiveness in reducing symptoms for patients with temporomandibular dysfunction.

Material and Methods: Were examined 12 patients with temporomandibular dysfunctions. The common complaints include headaches, neck aches, face aches, ear aches, tinnitus, ear fullness and perceived hearing losses. The clinical examination revealed the following signs and symptoms: pain in preauricular area, temporomandibular joint (TMJ) or masticatory muscles, especially in the lateral pterygoid muscles palpation, limitation or deviation in mandibular range of motion, TMJ sounds during mandibular function. The para-clinical examination was performed, including: study models, electromyography and CT of TMJ. The deprogrammer splints were constructed after taking the impression of the upper and lower dental arches, face bow registration and recording of centric relation.

The patients were instructed to wear the appliance, constantly, for 1 month.

Results: The performed clinical and para-clinical examinations after the splint therapy have revealed:
* pain relief – the lateral pterygoid muscle palpation was painless;
* the mandible kinematics reestablishment was obtained.
Conclusion: The splints do allow a relaxation at the muscles and ligaments level, therefore decreasing the pain, bruxism and releasing the muscle tension.

PP69 | Current Ergonomic Trajectories in Dental Medicine
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Purpose: In Romania the medicine based on proofs has underlined the fact that the dentist’s profession is accompanied by several musculoskeletal disorders. 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. 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.

Material 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 splenius capitis ones.

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.

Key words: ergonomics, electromyography, muscles, musculoskeletal disorders
**PP70**  
**Shoulder or Vertical Preparation for Periodontal Health? A Literature Review**  
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**Purpose:** The aim of this study was to evaluate the advantages, disadvantages, indications and long-term success rates of two types of prosthetic preparation junctions: the shoulder preparation and the vertical/feather-edge preparation.

**Material and Methods:** This review was conducted on studies found on PubMed. The database researched for relevant studies by combining each of the following terms: periodontal health, shoulder preparation, vertical preparation, shoulderless preparation, feather-edge preparation. A manual database search and review of bibliographic references were also done in order to find more conclusive studies.

**Results:** Although, for many years, the shoulder preparation was considered the “gold standard” for maintaining periodontal health, newer studies seem to conclude that a feather-edge, vertical preparation for prosthodontic reasons can be as good and as safe in the long-run, if done properly.

**Conclusions:** The marginal junctions of prosthodontic restorations should not invade the biological width and should be chosen to best suit the clinical situation.

**Key words:** periodontal health, shoulder preparation, vertical preparation, biological width

**PP71**  
**Orthognathic and Prosthetic Rehabilitation of Class 2 Patient With Amelogenesis Imperfecta: A Case Report**  
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Amelogenesis imperfecta is a hereditary disorder which causes developmental changes in the structure of enamel. In addition; tooth sensitivity, missing or impacted tooth, taurodontism, impaired dental aesthetics and anterior open-bite can be associated with amelogenesis imperfecta. This case report describes the ortognathic surgery and the prosthetic rehabilitation of a 21-year-old female patient diagnosed with amelogenesis imperfecta and severe Class 2 malocclusion. The patient who suffered from the yellow coloration on teeth with the vertical
dimension loss throughout the time due to the tooth enamel wear, applied to our clinic with the request to enhance her loss of function and aesthetics. Cephalometric analysis designed and orthognathic surgery was applied to the patient, who refused the tooth band application for orthodontic treatment due to the aesthetic concerns. Then the prosthetic procedures were started. Except for the molar teeth, the teeth with no occlusal contact were made to have a somewhat contact with the help of prepared wax-up and the dark space caused by the anterior open bite was closed by increasing the length of incisor teeth. After that, in the frame of pink-white aesthetic principles the crowns were fabricated individual for each tooth abutments with the zirconium oxide material in order to protect the gingival embrasure forms and the proximal contacts. **Key words:** *amelogenesis imperfecta, rehabilitation, anterior open-bite, orthognatic surgery, zirconia*

**PP72**  
Osseous Resorption in Patients with Implant Supported Removable/Fixed Prosthesis  
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**Purpose:** Evaluation of osseous resorption in dental implants supporting two different types of prosthesis: fixed and removable.  
**Material and Methods:** In this study where included 46 osseointegrated dental implants inserted in patients with complete edentulism of the maxillary or mandible. In all cases primary stability was achieved at the moment of implant insertion. Two steps surgical technique was used for all patients and occlusal loading was achieved 4-6 months post implant placement. Patients were divided in two groups: first group received fixed dentures while the second one was rehabilitated with removable dentures. In all cases the principles of functional occlusion where respected while creating the prosthesis. Post loading the osseointegration was checked by mean of probing and radiograph. In both groups GBI,PCR,BOP where recorded in the same session as pocket probing.  
**Results:** Patient satisfaction increased significantly for implant supported teeth. The mean value of implant length was 10 mm for the patients with removable dentures and 10.25 mm for those with fixed bridges. At the same time the mean diameter for the implants supporting dentures was 4mm while the implants supporting fixed prosthesis had a mean diameter of 3.79 mm. There was no implant lost during the survey period and no major modification of the prosthetic work needed.
Conclusion: In the osseointegrated implant system bone resorption once achieved cannot be reversed, thus all occlusal forces should be directed in the long axis of the implant hence is the only kind of loading implants can tolerate without bone resorption. Regardless of the prosthesis used to load implants, occlusal adjustment should be the most important criteria to perfectly respect.

Key words: implant, osseous resorption, prosthesis

PP73 Restoring the Atrophic Maxilla: The Importance of the Interdisciplinary Approach
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Purpose: Cases that require implant treatment in atrophic maxillae are often challenging. Inadequate bone volume for implant placement, or severe vertical or lateral defects, requires bone augmentation procedures. To ensure the success and longevity of the restoration, proper diagnosis and treatment planning are vital. The aim of this clinical report was to present the considerations and prosthetically guided treatment planning of a particularly challenging case.

Material and Methods: A 64-year-old female patient presented requesting implant rehabilitation of her upper jaw. Over the past decade she had been treated repeatedly with complete dentures, with unsatisfactory retention and stability. Clinical and radiographic examination revealed a severely resorbed alveolar ridge combined with sinus pneumatization, which would necessitate extensive pre-prosthetic surgery.
The diagnostic procedure began by determining the optimal tooth positions in relationship to the alveolar ridge and the opposing dentition. A diagnostic set up was performed on acrylic base plates with denture teeth. Diagnostic casts were mounted on an articulator in the desired vertical occlusal dimension. The distance between the crest of the alveolar ridge and the labial and occlusal surfaces of the teeth permitted rehabilitation by either a fixed screw-retained implant-supported restoration, or an implant-supported overdenture. After examining all the factors affecting the rehabilitation, a hybrid fixed implant-supported restoration was decided upon, after bilateral sinus lifting in the posterior area and lateral bone grafts in the anterior.
Conclusions: Detailed treatment planning and communication between the restorative dentist, the surgeon and the patient’s pathologist are necessary to ensure success of the treatment plan and longevity of the restoration.

PP74 Simplify VDO determination through ssEMG
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Considerable changes in the distribution of the occlusal supports may result after the installation of new dental prostheses with possible modification the jaw position in case of complete dental rehabilitations. New morphological conditions may otherwise re-distribute the masticatory forces, thus requiring muscles adaptation. The present work proposes a simple technique to define the three-dimensional mandibular position with the aid of standardized surface electromyography of masticatory muscles (ssEMG).

Material and Methods: In order to rehabilitate the masticatory units of a 55 years old woman a fixed prosthesis anchored on osseointegrated implants was performed. To dynamically modify in a three-dimensionally way the intermaxillary relationship, the Authors (RP and FR) proposed a solution named Vertical Tester consisting of a resin tool reproducing the mandibular interim prosthesis embedding four screws in contact with the antagonist first premolar and first molar centric cusps. This custom-made system allows the clinician to three-dimensionally alter the intermaxillary relationships changing the height of each screw. A ssEMG examination with the Vertical Tester then permits to quantify the functional response to the occlusal proprioception depending on the height of the screws.

Results: Before the fabrication of the final mandibular prosthesis, ssEMG acquisitions with the Vertical Tester were performed in order to find the optimal muscular performance. The Vertical Tester setting allowing the best muscular recruitment during clenching was freezeed fixing the screws by light-curing composite and the corresponding three-dimensional relationship was transferred to the articulator for the final mandibular prosthesis fabrication. An additional ssEMG exam was performed at the delivery of the final prosthesis to verify the masticatory function achieved with the new mandibular position. The ssEMG results showed a good neuromuscular balance that reduced muscular adaptation to the new oral condition.
**Conclusions:** Using the Vertical Tester facilitate clinicians during prosthesis functionalization under ssEMG reducing the muscles adaptation needs.

**PP75 Smoking Associated Complication During Implant Treatment in a Periodontal Patient**

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**Purpose:** The purpose of this poster presentation is to demonstrate the impaired wound healing after hard and soft tissue augmentation procedures, to a patient with a history of periodontitis and smoking.

**Material and Methods:** A 26 year old, male patient presented to the clinic with the chief complaint of loose crowns on the two central maxillary incisors (#11, 21). An interdisciplinary treatment plan was presented to the patient with all the risks including possible impaired healing. After periodontal treatment, tooth #11 was extracted and a hard and soft tissue augmentation procedures were performed simultaneously, in combination with a frenectomy. A fixed two-unit acrylic temporary restoration was placed, supported on tooth #21. An implant was placed 8 months later, in a combination with a hard tissue augmentation to enhance the thickness of the alveolar ridge facially to the implant. At the uncovery surgery, a roll flap technique was used to augment also the soft tissues facially. After temporization phase a screw-retained implant supported prosthesis was delivered to the patient and an all-ceramic crown was designed on tooth #21.

**Results:** After healing of the first surgery, tissues reacted with a severe amount of recession, although care was taken for their passivation and complete closure of the wound. Although it was asked to the patient to quit on smoking for 3 months pre-operatively and during treatment, he had been smoking regularly, as he revealed at the end of treatment. The final result was pleasant, due to his low smile line and also himself was satisfied, because all the complications that might occurred were explained to him thoroughly initially.

**Conclusion:** Patients information regarding possible complications during treatment, especially in high risk patients, is essential for them so that they can be familiar with unforeseen events that might occur and lead to a compromise final result.
The assessment of mental and emotional state of young adults with the symptoms of functional temporomandibular disorders
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One of the problems accompanying functional temporomandibular disorders includes deviations of patients’ mental and emotional state from a normal condition.

Purpose: The objective of the paper was to examine correlation between the presence of symptoms of functional temporomandibular disorders and the mental and emotional state in young adults.

Material and Methods: A group of 30 people without any symptoms of functional temporomandibular disorders (TMD), 30 people with myofascial disorders (group IA according to the Research Diagnostic Criteria for Temporomandibular Disorders questionnaire (RDC/TMD)), 23 people with disk displacement with reduction (group IIA according to RDC/TMD) and 10 people with arthralgia of TMJ (group IIIA according to RDC/TMD) was selected randomly for the study. The study group was selected out of 260 volunteers aged between 17 and 18 years old of both genders, attending three different secondary schools in Cracow. The mental and emotional state was evaluated using forms: Beck Depression Inventory and Perceived Stress Scale PSS-10. The Polish version of the RDC/TMD form was used to diagnose TMD. The results were subjected to statistical analysis using the Kruskal–Wallis test and the analysis of variance ANOVA.

Results: In the group without any TMD symptoms, the mean scores were 5.63 on the Beck Depression Inventory and 10-17.27 on the PSS. The scores were 7.07 and 19.7 in the group IA, 4.96 and 15.96 in the group IIA, and 8.3 and 20.3 in the group III, respectively. The statistical analysis showed no significant differences between the study groups.

Conclusion: In young adults with temporomandibular disorders associated with pain, higher values of psychoemotional status indicators are observed.

Key words: young adults, temporomandibular dysfunction, psychoemotional status
**PP77** The Assessment of Prevalence of Dental Erosion in Permanent Teeth in Young Adults
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**Purpose:** The objective of the paper was to assess the prevalence and severity of dental erosion in young adults.

**Material and Methods:** Dental casts from 251 volunteers (183 women, 68 men) 18 years old, were evaluated. The casts were examined using the 4-point BEWE index. The analysis was performed for the entire group and with the study subjects divided by gender.

**Results:** In the entire study group, the symptoms of occlusal wear were found in 109 study casts pairs, which accounted for 43.43% of the study group. Dental wear in the form of minor tissue loss in one of sextants examined were found on the majority of casts with enamel erosion symptoms. The prevalence of erosion on teeth was slightly higher in men (45.59%) compared to women (42.62%). The same tendency was noted in particular groups of wear severity. The cumulative BEWE scores for individual subjects were between 0 and 3: 0 in 56.57% of cases, 1 in 35.06% of study subjects, 2 in 6.37% of people and 3 in 1.99%, respectively. It corresponded to no risk (in 98.01%) and very low risk (in 1.99%) of dental erosion in the study group.

**Conclusion:** There is no risk or low risk of dental erosion among the study's young people. Although the majority of observed dental wear were in the early stages, the young age of the study group and the possibility of progression of early wear should be taken into consideration.

**Key words:** erosion, young adults

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**PP78** Finding contours on facial images: difficulties, solutions and utility in aesthetic dentistry
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The image processing is an important study field in Computer Science, with significant practical applications in many other domains, among which the dentistry, and particularly the aesthetic dentistry, has a special place. A special topic concerns the finding contours problem, which is not very easy to solve when we are dealing with irregular shapes, like the human faces.
In order to find as accurate as possible the human face contour starting from a standard portrait photo there are available a few techniques:
- the contour tracing by hand (which can be very accurate, but has an important degree of subjectivity, being strongly influences by the user's attention and patience);
- the automated contour detection based on color differences (usually available in any professional software for image processing, like Corel PhotoPaint or Adobe Photoshop – it does not work very good on human faces because there are too many unexpected variations);
- hybrid approaches, manual and automated as well, in professional advanced software like Matlab or Autocad (provide the best results because deal better with the particular aspects inherent to any human face, which is a highly personalized anatomic structure).

It is important to find the best solution for this problem, because we intend to investigate a more complex research hypothesis, which claims that there is a certain match between the face contour and the front teeth contour at the average people. We intended to check this through mathematical calculations in order to obtain a valid demonstration – which can have certain applications in the design of well-fitted dental crowns for the superior central incisive.

**PP79** Comparative Study of Biofilm Behavior for Ceramic and BIOHPP Material in Fixed Prosthesis
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The **purpose** of a prosthodontic treatment is to replace a certain number of lost or damaged teeth in order to achieve a functional and esthetic rehabilitation of the stomatognathic system. Tooth decay, gingival inflammation and periodontal disease are quoted as the most common biological complications of fixed prosthodontic appliances. Among this, tooth decay is the most frequent reason of failure. It is well known that these conditions are caused by bacteria settled in the dentogingival plaque accumulated due to insufficient oral hygiene, and consequently, for oral health the appropriate hygiene regime is crucial. The aim of this study was to compare the quantity of bacterial biofilm accumulated around fixed prosthetics made by ceramics and BioHpp material, using ATP meter system.
**Material and Methods:** 20 patients with fixed prosthesis (age of prosthesis >1 year) was investigated and the values of ATP was recorded.

**Results:** The results showed that the quantity of biofilm around BioHpp was smaller than in ceramics.

**Conclusions:** The dental technician and practitioner are mainly responsible for the structural durability, while the patient himself can have a great influence on the biological performance.

**Key words:** fixed prosthesis, BioHpp, bacterial biofilm

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**PP80 Dental hard tissues changes induced by excessive occlusal forces**

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The **purpose** of this study was to detect dental hard tissues changes induced by excessive occlusal forces.

**Material and Methods:** The sample was an upper left incisor tooth of an adult female, with incisal wear surface and a cervical carious lesion, extracted for periodontal reason. After removing any remaining calculus and soft tissues, the extracted tooth was stored in 1% chloramines solution. After 72 hours, the dry tooth was embedded in black acrylic resin (Vertex Orthoplast, Netherlands). The sample was sectioned along the longitudinal axis of the incisor, using a manually operated device, Labotom 5, STRUERS, with 250 mm diameter abrasive cutting disc, in continuous coolant medium. The exposed dental surfaces were washed with 3% Sodium hypochlorite solution (Parcan 3%, Septodont, France). The samples were washed with deionised water, dried and examined with a metallographic microscope BX51M - OLYMPUS configured for bright field, dark field and polarized light and equipped with STREAM ESSENTIAL image analysis software.

**Results:** Microscopic images revealed a thicker enamel layer on labial surface than the palatal surface, a hyper mineralization on incisal wear surface, an interruption of the enamel layer continuity in the cingulum area, a loss of the hard tissues on a large area than of the carious lesion in the cervical region. The occlusal forces effects were observed at the application point (incisal wear surface presence, interruption of enamel continuity) and at the distance (loss of hard tissues in cervical area induced by static or fatigue (cyclic) stress biocorrosion associated with metabolic biocorrosion). The cracks lines observed
in the enamel and dentine had a parallel and perpendicular orientation, to the enamel-dentine junction (DEJ)

Conclusions: On the tooth surface, the occlusal forces had effects at the application point and at the distance. The cracks were propagated in both the dentin and enamel parts, along and perpendicular on DEJ.

GERONTOSTOMATOLOGY

PP81 Oral Health Related Quality of Life among Edentulous Patients
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In recent years we have laid focus on the quality of life concept which is related not only to the physical dimensions of the oral disorders, but also the psychological and social ones.

The aim of our paper is to evaluate the life quality correlated to the oral health for a group of partially edentulous patients of Iasi, Romania.

Material and Methods: The group study contained 73 patients whose age ranged between 65 and 74 years old: 41 (56%) aged between 65 and 70 and 32 (44%) aged between 70 and 74. According to their distribution by genders, 39 (53.4%) were females and 34 (46.6%) males. The clinical aspects comprised partial reduced edentation, 21 (28%), partial extended edentation, 37 (50%), subtotal edentation, 15 (22%). Before receiving their prosthetic treatment, the patients filled in the Geriatric Oral Health Assessment Index (GOHAI) questionnaire specially validated for this purpose. The statistical data were processed by means of SPSS.18 software by calculating the risk (OR) of a low life quality according to the demographic and clinical indicators.

Results: Most patients, namely 49%, mentioned masticatory issues when consuming certain foods with the limitation or even the avoidance of the hard ones; 43% of the subjects were unhappy with the esthetic appearance of teeth; 38% declared they were worried about their oral-dental problems; only 13% considered that the oral status affects their social life. The results of the logistic regression analysis showed that the risk to have a low life quality is much higher in the female patients (OR=2.11, CI=1.256-5.211), the ones aged between 70 and
74 (OR=2.31, CI=1.604-6.332), as well as for those having subtotal edentation (OR=3.33, CI=2.114-8.665).

Conclusion: the results of the study highlight the fact that the most severe negative impact on life quality correlates first of all with the depreciated oral status followed by the demographic indicators such as the advanced age and the female gender.

Key words: quality of life, partial edentulous, GOHAI indicator

PP82  Ring Clasp Design for Obturator Prosthesis. A Case Report
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Purpose: Oral cancers can cause serious aesthetic and functional deficiencies for many patients. In the case studied, 83 years old female patient had the middle of the maxilla removed by surgery and the patient has gone through a radiotherapy session first. The defect is classified as Class III according to the Aramany classification and Class IV according to the Kennedy classification.

Material and Methods: The only teeth left for retention were 16 and 26. There have been three possible options for retention. The first option was the classic simple circllet clasp, the second option was a telescopic crown, and the third option was the ring clasp. The first choice has been valued as not suitable because of the presence of sharp edges. Additionally the patient observed to be not well coordinated. The second choice has been regarded as the best solution for retention but it was too expensive for the patient. The third choice has been seen as the easiest, the fastest and the cheapest as well as the most functional.

Results: Metal crowns have been used to achieve the desired retention and the stability. A hollow bulb design has been preferred to make the obturator prosthesis lighter.

Conclusion: Ring clasp design is suitable for geriatric patients whose coordination seems to be deteriorating.

Key words: ring clasp design, obturator prosthesis, geriatric patient
**Purpose:** This report describes a telescopic overdenture rehabilitation of the lower jaw of an elderly woman with poor aesthetic and chewing deficiency due to missing teeth.

**Material and Methods:** A 65-year-old female patient reported to the Department of Prosthodontics, Gaziosmanpasa University, with the chief complaint of missing teeth. On intraoral examination, teeth present were 33, 34, 43, 45. Upper jaw was edentulous. The periodontal prognosis of the remaining teeth was not very good to be retainers of a removable partial denture, but the patient did not want to lose her teeth. After consideration of all the factors involved, it was deemed advisable to resort to a mandibular telescopic partial denture and a maxillary complete denture. In the mandibular arch, tooth preparation was done to receive primary copings. Impression was made using C-silicone impression by single step double mix technique. Primary copings were fabricated and evaluated in the mouth. Then the copings were cemented. An impression was taken to obtain the secondary copings. The secondary copings were fabricated and evaluated in the mouth. Impression was taken while the secondary copings were inserted in the mouth to obtain the metal framework included the secondary copings for the telescopic denture. The secondary copings were soldered to the metal framework and porcelain was veneered to secondary metal copings. The framework included the secondary copings was tried in the mouth and maxillomandibular relation was recorded. Acrylic teeth were arranged. The prosthesis was finished after the relationships in the mouth were checked.

**Result:** The patient was happy with the aesthetics of the prosthesis. Post-placement checkup was done after 24 hours, 1 week and 1 month. She was able to masticate and speak.

**Conclusion:** Telescopic prosthesis can be chosen as an appropriate treatment option, in the presence of poor periodontal prognosis teeth for removable partial prosthesis.

**Key words:** overdenture, telescopic denture, double crown, telescopic overlay denture
PP84 Correlations of full edentulism with psychosocial aspects. A pilot study
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Purpose: The study goal is to correlate some of the psychosocial aspects related to full edentulism status with age, gender and general health status.

Material and Methods: The study was conducted on 18 patients (8 female, 10 male) aged between 54-77 years old, all in treatment in the Complete Denture Chair of the Faculty of Dentistry” Carol Davila” University of Medicine and Pharmacy.

A questionnaire was applied to all patients included in the study. The questionnaire was divided on 6 sections, 24 questions were elaborated to highlight the psychosocial aspects associated with full edentulism status.

Results: The obtained data analysis for gender and age showed statistic relevant results in correlations to general pathology, medication and patients perception on the etiology of teeth loosening. Psychosocial relevant aspects were related to their fear and discomfort caused by full edentulism and also by alcohol and tobacco addictions.

Conclusions: The negative impact of full edentulism on the quality of life is a matter of public interest which needs to be supported by all medical specialties. There is a strong correlation between general health status and oral health status with implications on the quality of life. The study showed the necessity of detailed investigation of all aspects implied beside the classical anamnesis of the full edentulous patient in order to restore together with the functional aspects, the quality of life and comfort for the elderly edentulous patients. As the studied lot was pretty reduced, we intend to continue these observations on a bigger sample.
Behavior of Co-Cr-Mo Alloys to Electrocorrosion in Afnor Artificial Saliva

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Purpose: The goal of this study consists in the determination of structural modifications produced in a Co-Cr-Mo alloy intended for metal components of the removable partial dentures following electrocorrosion in Afnor artificial saliva.

Material and Methods: For the experimental researches we made cylindrical specimens from Sismo-Dentaurum alloy (Co-Cr-Mo alloy). The behavior to electrocorrosion was shown by the microstructural and chemical analysis by means of an electron scanning microscope fitted with an EDAX electron detector.

Results: We noticed that on the analyzed surface of SISMO alloy that the Co and Mo elements lost their initial mass percentages, whereas others like Si increased their mass percentages with a very small quantity, a fact indicating the corrosion of Co and Mo elements and a better resistance of silicon. As compared to its initial mass, Cr maintained its mass percentage. To complete the lost percentages of Co and Mo, O appeared in a high percentage while C and P appeared on certain areas.

Conclusions: Following the determinations made, we may affirm that SISMO dental alloy has a behavior to electrocorrosion in artificial saliva of generalized type and preferential by phases, with oxidization on the entire surface of the material and the formation of a superficial corrosion layer on the phase of matrix type.

Key words: dental Co-Cr-Mo alloys, corrosion, Afnor artificial saliva
**PP86  Effects of Different Treatment Methods on Color Difference of Zirconia**  
Rifat Gozneli, Tutku Cakir-Omur, Yasemin Ozkan  
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*Turkey*

**Purpose:** The physical and chemical features of yttrium-stabilized zirconia are trying to be improved to make it reliable against fracture, chipping and inadequate bonding problems. The objective of this study was to evaluate the effects of Physical vapor deposition (PVD) silica coating and the number of firings on color stability of a Y-TZP ceramic.

**Material and Methods:** Forty disc shaped zirconia specimens (LAVA Frame Multi, 3M ESPE, Seefeld, Germany) 15 mm in diameter and 1.2 mm thickness were divided in to 4 groups as; control, PVD silica coating, 3 times firing, 5 times firing. The silica coating technique was performed by using “electron beam physical vapor deposition (EB-PVD)” system for deposition of a silica thin layer (~500 nm). The firing group specimens were subjected to heat treatments either 3 or 5 times firing recommended by the manufacturer. The clinical situations were simulated by steam autoclave aging. The color of each specimen was measured by using a spectrophotometer (VITA Easyshade; VITA Zahnfabrik). The data of ∆E values of 4 groups were evaluated both before and after the accelerated aging. In addition to calculation of mean value and standard deviation, Kruskal Wallis test and Dunn’s Multiple Comparison test was used at significance level of 0.05.

**Results:** Highest color changes were detected between silica coating and control group before the aging (3.65±1.46), while the lowest ∆E value was between 3 times firing and 5 times firing group after the aging (1.28±1.08). There was no significant difference between the ∆E values of the groups according to accelerated aging (p>0.05).

**Conclusion:** Consequently, multiple firing and silica coating affected the color of Y-TZP. Both PVD silica coating and multiple firing made visually perceivable but clinically acceptable color changes on Y-TZP core.

**Key words:** Color difference, multiple firing, PVD silica coating, zirconia
**PP87 Investigation of Surface Roughness of Denture Base Materials**  
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²) Recep Tayyip Erdoğan University, Faculty of Dentistry  
Turkey

**Purpose:** The purpose of this study was to compare the effects of different denture cleansers on the surface roughness of denture base and repair materials.

**Material and Methods:** One hundred and twenty specimens were fabricated from polyamide resin, heat-polymerized acrylic resin, and autopolymerizing resin. The specimens were divided into 5 groups according to the stored denture cleanser: distilled water (control group), sodium perborate, chlorhexidine, chloramine-T, and sodium hypochlorite. The surface roughness (Ra) was measured before and after the storage of denture cleansers. Data were analyzed with a 2-way analysis of variance followed by Tukey test, and paired sample t-test (α=0.05).

**Results:** The Ra values were significantly different among the denture base materials (p<0.05). The sodium perborate, chlorhexidine, and chloramine-T significantly affected the Ra value of polyamide resin (p<0.05).

**Conclusion:** Denture cleansers can be used for heat-polymerized acrylic resin, and autopolymerizing resin. In addition, sodium hypochlorite can be used for polyamide resin.

**Key words:** Surface roughness, denture base material, denture cleanser

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**PP88 In-vitro Assessment of Mechanical Properties of Prepolymerized PMMA CAD/CAM Base Materials**  
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Turkey

**Purpose:** This in vitro study, compared flexural strength and flexural modulus of 3 different prepolymerized PMMA CAD/CAM denture base materials with flexural strength/modulus of a PMMA heat-polymerizing acrylic resin. Besides, effects of thermal cycling on mechanical properties of materials were also evaluated.

**Material and Methods:** Three different prepolymerized PMMA CAD/CAM denture base materials (Polident, Merz, Avadent) and, as a control, a conventional heat-polymerized polymethyl methacrylate (PMMA), were tested. Specimens of each denture base material were prepared according to ISO 20795-
1:2013 and assigned to two groups (n = 10): control (C) - not thermocycled - and T -thermocycled (5000 cycles between 5 and 55°C). Specimens of each material were tested for flexural strength and flexural modulus (MPa, n = 10) by using three-point bending test. The data were analyzed with one-way ANOVA and Student t Test ( p<0.05).

Results: In all material groups (not thermocycled - and thermocycled), highest mean flexural strength was found for Polident whereas lowest value was found for control material (p<0.01). Highest mean flexural modulus was found for control whereas lowest value was found for Merz (p<0.01).

Conclusion: The tested denture base materials fulfilled the requirements regarding flexural strength and modulus (65 MPa, 2000 MPa respectively). In generally, thermocycling changed adversely flexural strength/ flexural modulus values of materials.

PP89 Staining Resistance of Restorative Materials Against Nicotine and Beverages
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Purpose: Color stability is a vital factor that must be considered about material chose especially in the esthetic zone. Smooth surfaces are essential for avoiding staining of esthetic restorations. This study aimed to compare the effect of smoking cigarettes and drinking beverages on the discoloration of ceramic-based dental materials according to topographic features.

Material and Methods: Thirty-six square specimens were prepared using resin nanoceramic (LavaTM Ultimate, 3M ESPE, USA), Feldspar ceramic (Cerec Blocs, VITA Zahnfabrik, Germany) and Lithium disilicate glass-ceramic (IPS e.max®, Ivoclar Vivadent AG, Liechtenstein) CAD-CAM materials. Baseline surface roughness (Ra) were measured with a profilometer (Perthometer M2; Mahr GmbH, Germany) and the pre-staining color values of the test specimens (L*, a*, b*) were measured using a chroma meter (CR-321; Minolta Inc, Japan). The specimens were exposure nicotine, coffee and red wine at random. The discoloration values were measured. The total color changes (ΔE*) between the colors were calculated.

Results: Statistically significant total color changes were observed for LavaTM Ultimate (8.26 ± 1.55) and Cerec Blocs (7.69 ± 1.52) for nicotine in the staining
group. There was no significant change in the coffee group associated with the staining procedure. The smallest color changes were observed for the IPS e.max® (3.67 ± 2.09) at nicotine. IPS e.max® (0.09 ± 0.04) also demonstrated the lowest Ra, and Cerec Blocs (0.43 ± 0.24) showed the highest degrees of roughness. A positive correlation was determined between the roughness values and staining with nicotine and coffee with Cerec Blocs.

Conclusions: Dietary and habitual factors caused staining of the test materials. Different colorants were presented different efficiency depend on material type. It was observed that nicotine staining is far stronger than beverage staining.

PP90 Testing the Abrasion and Wear Resistance of Materials for Occlusal Splints
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The study consisted in the evaluation and testing the various materials used for occlusal splints, either as such or in the construction of orthodontic appliances, in order to determine the abrasion and wear resistance of these materials – the self-curing and heat-curing acrylic resins (with PMMA), and light-curing resins (without methyl-methacrylate). Experimental tests consisted of evaluating the abrasion and wear resistance rate of eight splints at the initial time, after one month, two and three months, by applying the splints on a special digital measurement device. The results highlighted an ascending degree of abrasion in accordance with the time of assessment (abrasion and wear resistances correlated with time in specific charts) and a higher wear resistance for light-cured resins compared with PMMA resins. For tested appliances there were no statistical significant differences (p<0.05), and were registered high wear resistance values for light-cured resin splints. The study revealed and supported the conclusion that the abrasion and wear resistance of occlusal splints are features essential to be assessed and determined during the treatment stages to ensure the efficiency and functionality of these appliances.

Key words: splints, acrylic resins, wear resistance, abrasion
The İn-Vivo Evaluation of the Effects of Shade Guides Having Different Arrangements on Clinical Performance and Shade Matching Through Spectrophotometric Analysis
Semra Yıldız, Gökhan Özdemir, Ali İhsan Zengingül
Turkey

The aim of this study is to evaluate the effect of different arrangements of a shade guides on the precision and accuracy of visual shade selection. The other aim of our study is to investigate the variables such as time needed in shade matching and light source that influence clinical performance of shade selection.

Maxillary right central incisor of thirty-six subjects was evaluated by six observers. Visual shade matching was performed under each of the 2 different illuminants (natural daylight and color corrected daylight fluorescent lamp) with the use of VC, TG-3D Master and LG-3D Master shade guides. The selected shade tabs and the needed time for color matching was recorded. The L*, a*, b* values of the natural teeth and shade tabs were measured with the Vita Easyshade spectrophotometer. The color difference (ΔE) values between the natural teeth and selected shade tabs were calculated.

In this study, there was no statistically significant difference between the ΔE values of the three shade guides (p>0.05). There was no statistically significant difference between the ΔE values of VC shade guides under the two different light sources. However, the ΔE values of the TG-3D Master and the LG-3D Master shade guides was found at statistically significant lower level under the color corrected daylight fluorescent lamp (p<0.001). Mean time needed for matching of tabs for each shade guides was obtained higher with the TG-3D Master shade guides under the two different light sources, and a significant differences was found between the groups (p <0.001). However a significant difference between VC and LG-3D Master shade guides wasn’t observed (p>0.05). When time needed for matching of tabs the two different light sources was examined, it was found at statistically significant lower level under the color corrected daylight fluorescent lamp (p<0.001). Linear increase in relation between ΔE variables and time needed for matching of tabs was not statistically significant (p>0.05).

According to this study’s results, it is observed that the light source is the most important variable that affects the clinical performance in visual shade selection.
Thrombogenicity and bioactivity of the Ti-13Nb-13Zr alloy after surface modification

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Purpose: Modification of the surface of a titanium implant by anodic oxidation guarantees good adhesion of the homogeneous oxide layer to the substrate. The surface of the material should assure balance between bleeding and thrombosis. Thus the results of in vitro investigations concerning influence of microstructure, roughness and chemical composition on the thrombogenicity of the anodised titanium alloy surfaces are presented.

Material and Methods: The material was subjected to mechanical and electrochemical treatment to obtain smooth TNZ-ANO-80 and porous TNZ-ANO-150 oxide. Materials were incubated in vitro with full human blood and with cell line. Hemolytic activation was determined by hemolysis and morphological evaluation of blood cells. In the plasma partial thromboplastin time after activation (APTT) was determined as well as prothrombin time (PT). Thrombin time and fibrinogen concentration were marked. Cytotoxic effect study was performed on L929 fibroblasts.

Results: The haemolytic activity of the titanium alloy surface was not altered much by the anodisation. The hemocompatibility investigations shown that the Ti-13Nb-13Zr (TNZ) alloy and anodised titanium alloy surface do not induce haemolytic reaction. No significant difference was observed in blood coagulation between the non-treated and the Ti alloy anodised at lower of the voltages (80 V). Whereas, the anodisation performed at 150 V resulted in a formation of a surface which exhibited faster blood coagulation, as well as, shorter thrombin and prothrombin time, after 24h of incubation. At the same time, the fibrin concentration was similar for all of the investigated samples. No toxic reaction was observed during cytotoxic investigations using the L-929 mouse fibroblast cells.

Conclusion: The proposed treatment might be appropriate for the preparation of the modified Ti-13Nb-13Zr surfaces intended for dental bone reconstruction (TNZ-ANO-150) or cardiovascular implants depending on process parameters (TNZ-ANO-80).
A Comparative FEA Study of Zirconia-customized Abutment with PEEK-customized Abutment
Omar Sarahneh, Hakan Arinc
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Purpose: The aim of this study was to compare the biomechanical behavior of different customized-abutment materials with implant-supported posterior three-unit translucent zirconia (TZI) restoration in terms of stress distribution.

Material and Methods: Three-dimensional Finite Element Analysis (FEA) was employed. The models were created, homogenized, meshed and analysed by using a computer (Intel Xeon ® R CPU 3.30 GHz processor, 500GB hard disk, 14 GB RAM, Windows 7 Ultimate Version Service Pack 1) via using Activity 880 (Smart Optics Sensortechnik GmbH, Sinterstrasse 8, D-44795 Bochum, Germany), 3D scanner, computerized tomography (CT) (ILUMA, Orthocad, CBCT, 3M Imtec, Oklahoma, USA), Rhinoceros 4.0 (3670 Woodland Park Ave N, Seattle, WA 98103 USA), 3D-Doctor (Able Software Corp., MA, USA), VRMesh (VirtualGrid, 1400 112th Ave SE, Suite 100, Bellevue, WA 98004 USA) and Algor Fempro (ALGOR, Inc. 150 Beta Drive Pittsburgh, PA 15238-2932 USA) software. The CT data of the mandible of a human cadaver was used to generate the mandibular bone model. Dental implants, abutments and dental gypsum models were scanned by Activity 880 to construct 3D models of restoration and implant-abutment complex. Implant-supported three-unit bridge restoration with customized abutments was located in the #44-46 region. The model was transferred to the Fempro software to generate the nodal points and the mesh. Polyetheretherketone (PEEK)-customized and Zirconia-customized abutments were used with TZI restoration. 200 N loading was applied to each crown in the condition of mastication with a foodstuff to calculate stress distribution.

Results: The zirconia-customized abutment model exhibited higher stress values in abutments (174% higher) and abutment screws (13% higher), whereas, the PEEK-customized abutment led a higher stress value (32% higher) in TZI restoration. Similar stress values were observed in Ti-base part of the abutments, implants, and bone.

Conclusion: Changes in customized abutment material did not affect stress distribution in the implant and peripheral bone.

Key words: polyetheretherketone, zirconium oxide, dental abutments, finite element analysis
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