



# 27<sup>th</sup> Congress of the **Balkan Stomatological Society (BaSS)**

“ Past, Present and Future of  
Dental Implants and Gerodontology ”

November 9-11, 2023  
Istanbul Atlas University  
Istanbul, Türkiye



[www.e-bass.org/27thcongress](http://www.e-bass.org/27thcongress)



**ISTANBUL ATLAS UNIVERSITY**  
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### Invitation Letter

Dear friends, respected colleagues,

On behalf of the Balkan Stomatological Society, I am most pleased to extend a warm welcome to the 27th BASS Congress – “Past, Present and Future of Dental implants and Gerodontology”, to our members, followers and everyone involved in our society.

This exceptional congress will be held from 9th to 11th of November 2023 in Istanbul, Turkey and hosted by Istanbul Atlas University.

I have no doubt that this congress will certainly be a special occasion for those involved in research and professional development. It will be an opportunity to meet, to listen, to discuss and to share information since an exciting line-up of expert speakers including top practitioners, opinion leaders and researchers will be included.

Herewith, I wish to invite you to make plans to join us at this 27th BASS Congress in the hospitable environment that our Turkish colleagues have prepared. You will have magnificence lucky chance to enjoy the famous Bosphorus Strait cuts through the city, allowing for a vibrant melting pot of cultures, architectural styles, and cuisines.

Yours sincerely,

**Prof. Ana Minovska,**  
President of the Balkan Stomatological Society (BASS)



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Dear participants,

As Istanbul Atlas University, the host of the 27th International Balkan Congress on behalf of the Balkan Stomatology Society, we are pleased to invite you to Istanbul. We will host you in a family atmosphere at our distinguished campus located in the center of Istanbul. The city of Istanbul, famous for its centuries-old history, art, and natural beauty, will be waiting for you.

BaSS 2023 Annual Congress's scientific program will consist of high-level keynote lectures, round table meetings, and “Expert sessions” with topics of great importance for our specialty. Distinguished international speakers will honor the Annual Congress with their presence and will share with the around 800 participants knowledge, experience, and expertise. A plenty of oral presentations and posters will be presented.

We take great pleasure to welcome you to Istanbul for BaSS 2023.

Yours sincerely,

**Prof. Dr. A Bülent KATİBOĞLU**

President of the 27th BaSS Congress





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## Committee

### President of the 27th BaSS Congress

Prof. Dr. A. Bülent KATİBOĞLU

### Scientific Committee

#### President of the Scientific Committee of the 27th BaSS Congress

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Dr. Jale TUNÇER

Dr. Canan DUMAN

Dr. Oktay DÜLGER

Dr. Ayşe KARKAÇ

Dr. Nilay BUDAK

Dr. Tuğçe BÖREKÇİ

Dr. Gamze KAVUNCU

Dr. Berna İZMİRLİ EVRENOL

Dr. Selim ÇÖMELEKOĞLU

Dr. Zeynep ÖZTÜRKMEN

Dr. Alev Eda OKUTAN SARİBEYLİLER

Dr. Begüm GÖK ÇOBAN

Dr. Erkin ÖZCAN

Dr. Beril ŞAHİNER

Dr. Mustafa Orkun ERTUĞRUL

Dr. Elif ÖZÇELİK



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### Organizing Committee

#### President of the 27th BaSS Congress Organizing Committee

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#### 27th BaSS Congress Organizing Committee Vice President

Prof.Dr. İbrahim Bülent ŞERMET

#### 27th BaSS Congress Organizing Committee Members

Prof. Dr. Mehmet Kamil GÖKER

Prof.Dr. Nurgül KÖMERİK

Assoc. Prof. Seda AYDEMİR MUTLU

Assoc. Prof. Muammer Çağrı BURDURLU

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### Scientific Program

## November 9<sup>th</sup>-11<sup>th</sup>, 2023, Istanbul Atlas University - Türkiye Scientific Program

### November 9<sup>th</sup>, 2023

#### VADI AUDITORIUM HALL - MAIN HALL

#### COURSE HALL

Time	Sessions	Speakers	Subject	Chairs	
11.00 11.40	Session 1	Prof. Dr. Mehmet Baybora Kayahan	The Determinants of Outcome in Retreatment	Prof. Dr. İlgi Tosun	
11.40 12.20		Prof. Dr. Mustafa Sancar Ataç	PIEZO <sup>9</sup> - Surgery in Corrective Dento-Maxillofacial Surgery		
12.20 13.00		Prof. Dr. Tunç Akkoç	The Use Of Stem Cells in Dentistry		
13.00 13.15	Discussion				
13.15 13.45	Break				



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November 9 <sup>th</sup> , 2023					
VADI AUDITORIUM HALL - MAIN HALL					COURSE HALL
13.45 14.15	Session 2	Prof. Dr. İlgi Tosun	Quality of life and prosthetic Dental Treatment Approaches in Geriatric Individulas	Prof. Dr. Hülya Koçak	<b>COURSE - 13:45-16:15</b> <b>Prof. Dr. Filiz Namdar Pekiner</b> DIAGNOSTIC EVALUATION METHODS IN ORAL DISEAS-ES:Cytological and histological examination <b>COURSE PROGRAM 13.45-14.15</b> General informa- tion about the characteristics of the oral mucosa and the criteria for reaching the diagnosis <b>14:15-14:45</b> Lesions of ben- nign character in the oral mucosa <b>15:15-15:45</b> Malignant and potentially malignant le- sions in the oral mucosa <b>15.45-16.15</b> Cytologi- cal, Vital Stain- ing and Biopsy Methods
14.15 14.45		Prof. Dr. Gühan Dergin	Trigeminal Neuralgia Treatment with Long Lasting Local Anastetics and Infusion Pump		
14.45 15.15		Dr. Theodoros Lillis	Dental Implants in Patients on Antithrombotic Medication. Contemporary Clinical Considerations		
15:15 15:30	Discussion				
15:30 15:45	Coffee Break				





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### November 9<sup>th</sup>, 2023

#### VADI AUDITORIUM HALL - MAIN HALL

15.45 16.15	Session 3	Prof. Dr. Çağrı Delilbaşı	Management of bleeding risk in Oral Surgery	Prof. Dr. Firdevs Şenel
16:15 16.45		Assoc. Prof. Bruno Nikolovski	Applications and Merits of Conscious Sedation in Adult and Geriatric Dentistry	
16:45 17:15		Dr. Mihael Stanojevic	Locator -Protocol and Experiance	
17.15 17:30	Discussion			
18:30 20:00	Opening Ceremony			



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November 10 <sup>th</sup> , 2023						
VADI AUDITORIUM HALL - MAIN HALL					EXECUTIVE HALL	COURSE HALL
Time	Sessions	Speakers	Subject	Chairs		
10.00 10.40	Session 4	Prof. Dr. Tolga F. Tözüm	Advanced Periodontal and Implant Surgeries: Evidence Based Clinical Tips	Prof. Dr. Leyla Kuru	BaSS Meeting	
10.40 11:20		Dr. Aleksandar Jakovljevic	Apical Periodontitis and Low-grade Inflammation - Link with Systemic Diseases			
11:20 11:30	Discussion				BaSS Council Meeting	COURSE 2
11.30 12:00	Session 5	Prof. Dr. Sirmahan Çakarar	Management of TMJ Ankylosis	Dr. Vlademir Filipovski		11:30-13:30 Application of CBCT in dental implant planning and practical Course -
12:00 12:40		Prof. Dr. Leyla Kuru	Periodontal Regeneration: From Molecular and Cellular Basis to Clinical Reality			Dr. Z. Zuhal Yurdabakan Assoc. Prof. Gaye Sezgin Keser Assoc. Prof. Özlem Okumuş
12:40 13:20		Prof. Dr. Vassiliki Anastassiadou	Current Views Linking Oral Health with Nutrition in Older Adults			
13:20 13:30		Discussion				



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VADI AUDITORIUM HALL - MAIN HALL					EXECUTIVE HALL	COURSE HALL
Time	Sessions	Speakers	Subject	Chairs		
13:30 14:30	Break					
14.30 15.00	Session 6	Dr. Fisnik Kasapi	A Natural Synergy in Sinus Lift Surgery “PRP - Plasma - Therm Protocol” Dental Implants & Blood Derivates	Prof. Dr. Tolga Tözüm		COURSE 2 -Pratic 14:30 16:30
15.00 15.30		Prof. Dr. Paula Perlea Asist.Prof. Dr. Cristina Nistar	Age-Specific Endodontics			Application of CBCT in dental implant planning and practical Course
15.30 16.00		Prof. Dr. Ana Minovska Dr. Zoran Shushak	How Well Do We Understand The Concept Of Difficult and Complex Dental Case?			Dr. Z. Zuhal Yurdabakan Assoc. Prof. Gaye Sezgin Keser As-soc. Prof. Özlem Okumuş
16.00 16.15	Discussion					
16.15 16.30	Coffee Break					



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VADI AUDITORIUM HALL - MAIN HALL					EXECUTIVE HALL	COURSE HALL
Time	Sessions	Speakers	Subject	Chairs		
16.30 17.00	Session 7	Prof. Dr. Norina Consuela Forna	A Natural Synergy in Sinus Lift Surgery “PRP - Plasma - Therm Protocol” Dental Implants & Blood Derivates	Dr. Fisnik Kasapi		
17.00 17.30		Assoc. Prof. Radmila Dimovska	We are All Artists - Orthodontic Anomalies From Different Point of Viuwe			
17.30 18.00		Dr. Vlademir Filipovski	Study of Dental Implants Osseointegration - Placed in Patients with Type 2 Diabetes Mellitus			
18:00 18:30		Assoc. Prof. Erol Cansiz	The Role of Maxillofacial Surgeon in the Treatment of OSA			
18:30 18:45	Discussion					





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November 11 <sup>th</sup> , 2023					
VADI AUDITORIUM HALL - MAIN HALL					EXECUTIVE HALL
Time	Sessions	Speakers	Subject	Chairs	
09.00 09.40	Session 8	Dr. Marijan Denkovski & Assoc. Prof. Aneta Mijoska	Significance of contemporary Non Invasive Methods for Assessing Oral Mucos Lesionas in Geriatric Patients	Prof. Dr. İlknur Özcan	
09.40 10.20		Prof. Dr. Ingrid Różyło-Kalinowska	Diagnostic Imaging in Gerodontology		
10:20 10:30		Discussion			
10:30 11:00	Coffee Break				
11:00 11:40	Session 9	Prof. Dr. Filiz Mediha Namdar Pekiner	Approach to Erosive and Ulcerative Lesions in the Oral Mucosa	Prof. Dr. Elif Sepet	BaSS Council Meeting
11:40 12:20		Dr. Alba Koshovari	Systematic Review of Some Prosthetic Risk Factors for Periimplantitis in Monophasic and Bifasic Dentals		
12:20 12:50		Doç. Dr. Aslı Günay Bulutsuz	Exploring Modeling and Design Criteria for Dental Implants and Stents Using Various Metallic Materials		
12:50 13:00	Discussion				
13:00 14:00	Break				



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## November 11<sup>th</sup>, 2023

### VADI AUDITORIUM HALL - MAIN HALL

### EXECUTIVE HALL

Time	Sessions	Speakers	Subject	Chairs	
	Session 10	Round Table: Diseases of the Salivary Glands: New Insights into Diagnosis and Management			BaSS General Assamblay
14:00 14:30		Prof. Dr. Nikolas Nikitakis	New Insights into Diagnosis of Diseases of the Salivary Glands		
14:30 15:00		Prof. Dr. Athanasios Pouloupoulos	Management of the Diseases of the Salivary Glands.		
15:00 15:30		Prof. Dr. Kaan Orhan	Cureent Imaging modliaties of Salivary Glands		
15:30 15:40	Discussion				
15:40 15:50	Coffee Break				
15:50 16:30	Session 11	Prof. Dr. Aleksa Markovic	Immediate Placement with Immediate Loading in the Esthetic Zone	Dr. Zoran Vlahovic	BaSS Congress Awards
16:30 17:00		Prof. Dr. Kaan Orhan	Current Imaging and Recent Advances of Temporomandibular joint ( TMJ ) Disorders		
17:00 17:30		Dr. Milan Vucetic	Benefits Behind Piezosurgery		
17:30 18:00		Prof. Dres. Klaus and Yvette Draenert	Replica-Based Bone Formation		
18:00 18:20	Discussion				

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## ORAL PRESENTATIONS

November 9<sup>th</sup>, 2023

### HALL B - ORAL PRESENTATION-Zaha Hadid Hall

Time	Sessions	Chairs	Oral Presentations
11.00-12.10	Session 1	Dr. Begüm Gök Çoban	OP-1, OP-2, OP-3, OP-4, OP-5, OP-6, OP-7
12.10-12.30			Discussion
12.30-13.20	Session 2	Dr. Oktay Dülger	OP-22, OP-23, OP-24, OP-25, OP-26
13.20-13.40			Discussion
13.40-14.30	Session 3	Dr. Nilay Budak	OP-27, OP-28, OP-29, OP-30, OP-31
14:30-14:50			Discussion

## ORAL PRESENTATIONS

November 9<sup>th</sup>, 2023

### HALL C -ORAL PRESENTATIONS - Harezmi Hall

Time	Sessions	Chairs	Oral Presentations
11.00-12.10	Session 1	Dr. Selim Çömelekoğlu	OP-8, OP-10, OP-11, OP-12, OP-13, OP-14
12.10-12.30			Discussion
12.30-13.40	Session 2	Dr. Jale Tunçer	OP-15, OP-16, OP-17, OP-18, OP-19, OP-21



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## ORAL PRESENTATIONS

November 10<sup>th</sup>, 2023

### HALL B - ORAL PRESENTATION-Zaha Hadid Hall

Time	Sessions	Chairs	Oral Presentations
10.00-11:00	Session 4	Dr. Gamze Kavuncu	OP-32, OP-33, OP-34, OP-35, OP-36, OP-37
11.00-11.20			Discussion
11.20-12.40	Session 5	Dr. Canan Duman	OP-49, OP-50, OP-51, OP-52, OP-53, OP-54, OP-55, OP-56
12.40-13.00			Discussion
13:00-13:50	Session 6	Dr. Ayşe Karkaç	OP-67, OP-68, OP-69, OP-70, OP-71
13:50-14:10			Discussion
14:10-15:00	Session 7	Dr. Canan Duman	OP-72, OP-73, OP-74, OP-76
15:00-15:20			Discussion



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## ORAL PRESENTATIONS

November 10<sup>th</sup>, 2023

### HALL C -ORAL PRESENTATIONS - Harezmi Hall

Time	Sessions	Chairs	Oral Presentations
10.00-11:00	Session 3	Dr. Zeynep Öztürkmen	OP-38, OP-39, OP-40, OP-41, OP-42, OP-43
11.00-11.20			Discussion
11.20-12:10	Session 4	Dr. Zeynep Öztürkmen	OP-44, OP-45, OP-46, OP-47, OP-48 - OP109, OP-111
12:10-12:30			Discussion
12:30-13:20	Session 5	Dr. Elif Özçelik	OP-57, OP-58, OP-59, OP-60, OP-61
13:20-13:40			Discussion
13:40-14:30	Session 6	Dr. Elif Özçelik	OP-62, OP-63, OP-64, OP-65, OP-66, OP-110
14.30-14.50			Discussion

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## ORAL PRESENTATIONS

November 11<sup>th</sup>, 2023

### HALL B - ORAL PRESENTATION-Zaha Hadid Hall

Time	Sessions	Chairs	Oral Presentations
9.00-10.10	Session 8	Dr. Erkin Özcan	OP-86, OP-87, OP-88, OP-89, OP-91, OP-92
10.10-10.30			Discussion
10.30-11.50	Session 9	Dr. Alev Eda Okutan Sarıbeyliler	OP-93, OP-94, OP-95, OP-96, OP-97, OP-98, OP-99, OP-100

### HALL C - ORAL PRESENTATION-Harezmi Hall

Time	Sessions	Chairs	Oral Presentations
9.00-9.50	Session 7	Dr. Tuğçe Börekçi	OP-77, OP-78, OP-79, OP-80, OP-81
9.50-10.10			Discussion
10.10-10.50	Session 8	Dr. Tuğçe Börekçi	OP-82, OP-83, OP-84, OP-85
10.50-11.10			Discussion
11.10-12.20	Session 9	Dr. Elif Özçelik	OP-101, OP-102, OP-103, OP-104, OP-105, OP-106, OP-107, OP-20



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## Scientific Program - Poster Presentations

November 11<sup>th</sup>, 2023

**POSTER HALL-Vadi Auditorium Hall Lobby**

	GROUP 1	GROUP 2	GROUP 3
<b>11:00-12:30</b>	P01-P02-P03-P04-P05- P06-P07-P08-P09-P10	P31-P32-P33-P34- P35- P36-P37-P38- P39-P40	P51-P52-P53-P54- P55- P56-P57-P58- P59-P60
<b>12:30-14:00</b>	P11-P13-P14-P15- P16- P17-P18-P19-P-20	P41-P42-P43-P44- P45- P46-P47-P48- P49-P50	P61-P62-P63-P64- P65- P66-P67-P68-P69
<b>14:00-15:30</b>	P21-P22-P23-P24-P25- P26-P27-P28-P29- P30 - P70-P71		

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**Oral Presentations**

**[OP-001]**

**Evaluation of the effect of etiological factors on caries in individuals aged 12-13**

Jale Tunçer, Mustafa Orkun Ertuğrul

Department of Restorative Dentistry, Istanbul Atlas University, Istanbul/Türkiye

**Objective:** The aim of this study is to correlate the prevalence of DMFT to sociodemographic data, oral hygiene status, and diet of 10-12-year-old school-children in one of the low socio-economic regions in Istanbul.

**Materials-Methods:** The study design was cross-sectional and included 31 school children aged 10-12 (21 boys-10 girls). They were selected from 120 students who agreed to complete the questionnaire form and be examined. The data was collected by a questionnaire and dental examination by a single dentist and evaluated by the DMFT Index.

**Results:** Children are divided into high and low DMFT groups according to the mean DMFT score (4.5). Although there was no statistically significant difference between the education levels of the fathers in both groups ( $p=0.014$ ), there was a statistically significant difference between the education levels of the mothers ( $p<0.001$ ). Also, both groups had a statistically significant difference in monthly income ( $p<0,001$ ). Sugar consumption of children in the low DMFT group was statistically significantly higher than in the high DMFT group ( $p<0.001$ ). The onset of toothbrushing before age three was 62.5% in the low DMFT group and 27.2% in the high DMFT group, which was found to be statistically significant ( $p<0.001$ ).

**Conclusion:** The age of onset of tooth brushing and socioeconomic status significantly affect the prevalence of caries in children, and this effect needs to be further investigated with a higher number of participants.

**Keywords:** DMFT, Socioeconomic status, Sugar consumption



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### [OP-002]

#### **Caries Prevalence and Tooth Surface Distribution in a Cohort of 5 to 8-Year-Old Turkish Children**

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**Objective:** Dental caries remains a significant global public health concern, especially among young children in their primary dentition and early mixed dentition phases. This study aims to investigate the prevalence of dental caries and the distribution of affected tooth surfaces among a cohort of Turkish children aged 5 to 8 years. Understanding the prevalence and distribution patterns is crucial for developing effective preventive and treatment strategies.

**Materials-Methods:** A cross-sectional study design was employed, involving a representative sample of 104 Turkish children (52 girls, 52 boys) aged 5 to 8 years who attended Istanbul Gelisim University Faculty of Dentistry between October 2022 and January 2023. Caries detection was performed using the Decayed, Missing, and Filled Teeth (dft/DMFT) and International Caries Detection and Assessment System (ICDAS) II indices, following a predefined protocol. A single examiner evaluated participants in a dental operatory using a plain dental mirror and artificial light. Data was then recorded. Tooth surfaces were categorized into proximal (mesial/distal), smooth (buccal/lingual), and occlusal surfaces. ICDAS scores were grouped based on histological depth as follows: 1-2:1, 3-4:2, 5-6:3. Pearson's chi-square test for inter-group comparisons and the Wilcoxon signed-rank test were used to analyze the distribution of dft scores and ICDAS scores between pairs of contiguous molars.

**Results:** Only 9.6% of the children were caries-free. The DMFT index was  $0.59 \pm 1.37$ , and the dft index was  $7.43 \pm 5.02$ . A total of 830 primary molars were examined, identifying 969 surfaces affected by dental caries. Notably, the proximal surfaces (43%) of primary molars exhibited a higher susceptibility to carious lesions compared to smooth surfaces (27%) and occlusal surfaces (29%). Histologically, the deepest caries were predominantly found on the proximal surfaces of both upper and lower first primary molars. Upper first primary molars exhibited deeper caries compared to other tooth surfaces. Additionally, the grade of caries on smooth surfaces was lower than that on occlusal and proximal surfaces.

**Conclusion:** The prevalence of caries was notably high in the primary and early mixed dentition phases. Caries distribution primarily localized on primary molars, particularly on their proximal surfaces. These findings emphasize the necessity for preventive measures and early intervention strategies to address this oral health challenge.

**Keywords:** dental caries, primary molars, mixed dentition, primary dentition, caries prevalence



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### [OP-003]

#### Evaluation of the Opinions and Attitudes of Medical Doctor and Dentist Mothers about Teething Symptoms and Pacifier Use

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**Objective:** Tooth eruption is a physiological process involving the movement of teeth through the alveolar bone until they reach their functional position in the oral cavity. The beginning of the teething period in babies is usually between 4-10 months, and the eruption of a total of 20 deciduous teeth, 5 in each half jaw, is completed in approximately 30-36 months. The signs and symptoms of tooth eruption vary from child to child and can be local or systemic. These findings, which are seen in babies due to tooth eruption, may cause anxiety in parents. Considering the existing literature, applying pressure and cold to the gums and the use of analgesics are relief applications for teeth eruption symptoms. The pressure created as a result of massaging the gums or chewing the textured teethingers available in the market provides temporary relief of pain. The dental literature has focused more on the malocclusion effect of pacifier use. However, it is known that pacifier use is a method that alleviates pain and discomfort in infants and children, especially during tooth eruption, reduces stress and facilitates the transition to sleep. The aim of the study is to determine the effects of limited pacifier use in infants on the symptoms observed during teething period by asking medical doctors and dentists mothers with 12-36 months old babies, based on the experiences of their own babies.

**Materials-Methods:** A web-based cross-sectional survey study was directed using a “Google Form” to obtain responses from medical doctors and dentists during July and August 2023. The criteria for inclusion in the study are living in Turkey and being volunteers to participate in the study. The survey was composed of 3 parts including: 1.socio-demographic data, 2.questions measuring the level of knowledge about tooth eruption, and 3.questions evaluating knowledge and attitudes about pacifier use. In the statistical evaluation of the data, descriptive statistics (mean, standard deviation, frequency distributions, percentage, frequency tables) and t-test for the analysis of independent binary variables and ANOVA test for the analysis of more than two variables were used. Tukey HSD test was used for multiple comparison. The statistical significance level in the analyzes was accepted as  $p < 0.05$ .

**Results:** A total of 311 medical doctors(55%) and dentists(45%) participated in the study. The majority of mothers stated that the lower incisors erupted first (88%). While 69% of babies used a pacifier, 31% do not. It has been stated that the use of pacifiers or the desire to suckle increases in the majority of babies (82%) during the teething period. Restlessness, loss of appetite, sleep disturbance, desire to bite and chew, increased desire to suck, and gingival inflammation were the most common findings. Most of the mothers (77%) stated that their babies were relieved with the use of pacifiers during the teething period.

**Conclusion:** Participants reported that the use of pacifiers provided a short-term relief for the problems encountered during teething. It is thought that the use of pacifiers may be a more beneficial and risk-free method, especially during the first teething periods in early infancy.

**Keywords:** Pacifier use, Signs and symptoms, Teething, Tooth eruption

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**[OP-004]**

**Endocrown Restoration Of The Endodontically Treated Teeth By Using CAD/CAM: Case Series**

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**Objective:** The purpose of this study is to assess the clinical follow up of computer-aided design and manufacturing ceramic endocrowns for restoring endodontically treated and damaged posterior teeth.

**Case:** All 21 patients consulted the department of endodontics at the dental clinic of Medipol University, to treat and restore damaged posterior teeth. The CAD/CAM IPS E.MAX CAD blocks were selected. The Omnicam Intraoral scanner was employed for the acquisition of digital impressions. Subsequently, the endocrowns were digitally fabricated, machined, and cemented via multilink. After one year, the modified FDI classification-based clinical evaluation revealed that the aesthetic, functional, and biological properties were outstanding. Throughout the follow-up examination, the endocrowns exhibited no signs of cracking, caries, or decementation.

**Conclusion:** Endocrown is a trustworthy option for restoring a non-vital, root canal-treated molar. Inside the pulp chamber are a circular butt-joint margin and a central retention cavity. The objective is to accomplish minimally invasive preparations and preserve the extant tooth structure. Endocrown was an effective and satisfactory treatment for the rehabilitation of the masticatory and aesthetic function of non-vital posterior teeth requiring excellent occlusion and long-term stability in these clinical case series. Therefore, the utilization of endocrowns has emerged as a viable therapeutic modality for the restoration of posterior teeth, serving as a potential alternative to post-core supported crowns.

**Keywords:** endocrown, endodontics, restoration

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[OP-005]

**Sem edx analysis of remineralization potential of different toothpastes on sound and artificial carious enamel surfaces**

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**Objective:** The objective of this study was to assess the remineralization potential of different toothpastes that contains arginine, potassium nitrate and calcium sodium phosphosilicate on sound enamel artificial carious enamel surfaces.

**Materials-Methods:** Extracted forty caries free permanent molars were cleaned from adhered tissue remnants and stored in thymol solution at 4oC. To form initial carious lesions, demineralization solution was prepared and all samples were stored in it atn37oC. The specimens were allocated as 4 groups as: Group A is the control group (sound enamel), Group B is the group that contains the samples brushed with potassium nitrate based toothpaste (Concentrate Smile, USA), Group C is the group that contains the samples brushed with calcium sodium phosphosilicate based toothpaste (Sensodyne Protect and Repair, USA) and Group D is the group that contains the samples brushed with arginine based toothpaste (Colgate Pro, Poland). Elemental mapping done by the SEM EDX analysis was performed to assess the penetration of calcium (Ca), fluoride (F) and Phosphate (P) into the tubules. **Results:** SEM images were obtained for the purpose of the evaluating the alteration between the sound enamel and artificial carious surfaces. Based on the results of EDX analysis, minerals already existing in the tooth structure and adhered due to the of toothpastes were detected. SEM EDX Analysis on enamel showed a significant difference between the groups except the control group ( $p < 0,05$ ). Elemental analysis showed significant differences in Ca weight percentage among the first and second observation levels in all groups ( $p < 0,05$ ). Following the normality analysis of data using Shapiro Wilk Test. The groups were compared with one way analysis of variance (ANOVA). Least significant difference (LSD) Test was utilized for comparisons of Calcium values in alterations of sound and demineralized enamel surfaces. ( $p < 0,05$ ) SPSS 22,0 program was used for the analyses. **Conclusion:** Within the experimental conditions of this study, the following conclusions were drawn: Tested toothpastes exhibited similar effects in terms of alteration in tubules on artificially demineralized enamel. Based on mean values without statistical significance, the lowest remineralization potential in the demineralized enamel samples were detected in the Group D (Arginine based toothpaste group)

**Keywords:** Arginine, remineralization, potassium nitrate, scanning electron microscope



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**[OP-006]**

**The relationship between dental anomalies of number in Syrian refugee children and adolescents**

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**Objective:** Little is known about the oral diseases and dental anomalies of Syrian refugees and their treatable risk rates. This study aimed to explore tooth number abnormalities observed in the Syrian child refugee home. **Materials-Methods:** Syrian refugee children who applied to Ondokuz Mayıs University Faculty of Dentistry between January 2018 and August 2023 were scanned. Children between the ages of 0-18 participated in the study. Of these children, those whose panoramic x-rays were recorded in the system were included in the study. Dental number anomalies were evaluated by examining panoramic x-rays. **Results:** It was determined that 1244 Syrian refugee children applied to Ondokuz Mayıs University, Faculty of Dentistry between January 2018 and August 2023. 843 of these children had panoramic x-rays. Panoramic x-rays were examined to evaluate dental number anomalies. A total of 129 children (15.30%) were found to have number anomalies. It was observed that 43.41% of these anomalies were impacted teeth, 20.93% were congenital missing teeth, and 35.66% were supernumerary teeth. The average age of these 129 children was 9.71. When the gender distribution was examined, it was determined that 45.7% were girls and 54.3% were boys. **Conclusion:** Impacted teeth were the most common tooth number anomaly in Syrian refugee children.

**Keywords:** Dental Anomalies, impacted teeth, syrian child



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### [OP-007]

#### Body mass index, smoking and vitamin D deficiency as possible caries risk factors among dental students of University of Prishtina

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**Introduction:** Vitamin D deficiency, smoking, and BMI (Body Mass Index) can indeed be considered possible risk factors for dental caries (tooth decay), although the strength of their association may vary among individuals. It's important to note that these risk factors may interact with each other, as well as with other factors such as dietary habits, oral hygiene practices, genetics, and overall health.

**Objective:** the assessment of general caries risk factors and its prevalence among dental students at University of Prishtina.

**Materials-Methods:** This was a pilot cross-sectional study that included 108 dental students. Dental examination was performed at the Endodontic and Operative dentistry department, at the University Dental Clinical Center of Kosova. The dental examination was also combined with the questionnaire that assessed the possible caries risk factors. The statistical analysis in this study utilized the Statistical Package for Social Sciences (SPSS) version 17.0 for Windows, along with the 13.0 Program Package. To facilitate analysis, prevalence proportion rates, mean values, and standard deviations were computed. Descriptive statistics were applied, and for group comparisons, the independent sample Chi-square test and Fisher Exact test were employed. Additionally, one-way ANOVA tests were used to compare the means of DMFT (Decayed, Missing, Filled Teeth) index.

**Results:** Among the smoking group, the mean of DMFT index value was 6,68., which was higher comparing to the non-smoking group. As for the BMI-index, forty-eight students were at normal range with the mean of DMFT index at 3,66. Thirty-two students were overweight according to their BMI index values, and the calculated mean of their DMFT index was 5,06., which is higher comparing to the normal group, but still lower than the obese group, the mean DMFT value of which was 5,84., what suggests a strong correlation between obesity and caries. Thirty-six students declared about their low vitamin D status, while the calculated mean of their DMFT index was 6,88.

**Conclusion:** This study has shown a possible connection between smoking, vitamin D-deficiency and Body Mass Index (BMI) as possible risk factors in the occurrence of dental caries. Further studies are necessary, since this study was only a pilot study that included only a modest sample.

**Keywords:** Dental Caries, BMI index, Vitamin D, Smoking

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### [OP-008]

#### The effect of hybrid CAD/CAM materials in different thicknesses on the microhardness of resin cements and color stability of resin cements

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**Objective:** The aim of this study is to evaluate the effect of two hybrid CAD/CAM materials of different thicknesses on the microhardness and color stability of resin cements. **Materials-Methods:** In this study, two different hybrid CAD/CAM materials were evaluated: resin infiltrated ceramic(Enamic, Vita Zahnfabrik, Bad Sackingen, Germany)(RIC) and composite resin nanoceramic(GC Cerasmart, GC, Tokyo, Japan)(CN).Sections of 1mm, 2mm, 3mm, 4mm and 7mm thick were taken from each block.200 specimens were prepared using dual cure conventional resin cement(G-Cem LinkForce, GC,Tokyo,Japan)(CRC) and dual cure self adhesive resin cement(G-Cem One, GC, Tokyo, Japan)(SARC)(n:200). The cements were placed in a stainless steel mold(6 mm diameter 1 mm height).With the transparent tape placed on the cement, the cement was isolated from the blocks and its adhesion was prevented. Ceramic specimens were placed on the cement and polymerized with an LED light device(Valo Cordless, Ultradent, South Jordan, USA).Color and microhardness measurements were made 24 hours after the resin cement samples were prepared(T1) and after 10,000 cycles of thermal aging(T2).Vickers microhardness measurements were made three times for each surface by applying force on both the lower and upper surfaces of the resin cement, and the measurements were averaged.Color measurement of the samples was performed on a spectrophotometer device(Vita Easyshade Advance 4.0, Vita Zahnfabrik, Bad Sackingen, Germany), using color parameters and CIE Lab color system, 24 hours after polymerization(T1) and after thermal aging(T2).Data were analyzed by ANOVA and Bonferroni test was used for pairwise comparisons( $p<0.05$ ). **Results:** In the findings of this research, in the comparisons made between composite nanoceramic and resin infiltrated ceramic, T1;CRC(1mm, 2mm, 3mm), SARC(1mm, 2mm, 4mm), T2;CRC(2mm), SARC(1mm, 2mm, 3mm, 4mm) groups observed statistically significant difference in lower microhardness values in( $p<0.05$ ).In comparisons made between composite nanoceramic and resin infiltrated ceramic, no statistically significant difference was observed in the upper microhardness values( $p>0.05$ ).In the comparisons made between composite nanoceramic and resin infiltrated ceramics, in CRC(7 mm), SARC(1mm-7mm) groups statistically significant difference was observed in  $\Delta E$  values( $p<0.05$ ).In comparisons made between different material thicknesses, a statistically significant difference was observed in the microhardness values of the resin cements( $p<0.05$ ).When the ceramic thickness increased from 1 mm to 7 mm, the microhardness of the resin cement decreased on both the upper and lower surfaces in both ceramic types.In comparisons made between different material thicknesses, a statistically significant difference was observed in the  $\Delta E$  values of self-adhesive resin cements polymerized on resin-infiltrated ceramics( $p<0.05$ ).There was no statistically significant difference in microhardness values in comparisons between conventional resin cement and self-adhesive resin cement( $p>0.05$ ).In comparisons between conventional resin cement and self-adhesive resin cement,CN(1mm, 2mm, 4mm),RIC(1mm, 2mm,4mm) groups showed a statistically significant difference in  $\Delta E$  values( $p<0.05$ ). **Conclusion:** As a result of this research, the microhardness values measured from the lower and upper surfaces of the resin cements showed a tendency to decrease with the increase of the thickness of the ceramic material.After the thermal cycle application, the microhardness values of the upper surface did not change.There was no difference between the use of composite nanoceramic and resin infiltrated ceramics in terms of upper microhardness values of the cements.

**Keywords:** Hybrid ceramic, self adhesive resin cement, microhardness

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**[OP-010]**

**Effect of Three Different Surface Treatment Methods on the Surface Roughness of PEEK Material**

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**Objective:**

Nowadays aesthetic expectations of patients led dentists seek for new ways to make provisional crowns over implants especially in the anterior region. Research showed that, abutments produced from PEEK material are regarded as an alternative material for temporary abutments because they are less expensive and may be effortlessly adjusted in the mouth. However, PEEK, which is an inert material needs surface treatments to improve the surface roughness and bonding to dental materials. Therefore, the aim of this study was to evaluate and compare the surface roughness values of three different surface treatment methods. Materials-Methods:

Sixty disc-shaped PEEK specimens were randomly divided into four main groups according to surface treatment protocols: no surface treatment, sandblasting, acid etching and laser irradiation (n= 15 per group). After surface treatment protocols, specimens were examined using an atomic force microscope (AFM). The Surface morphology in 3D and numerical values of roughness measurements as Root mean square (RMS), square root of mean roughness (Sq) and average roughness (Sa) were obtained from AFM images. Results:

3DAFM images showed that the morphology of PEEK surfaces was affected by various surface treatments. Surface roughness measurements showed that the control group has the lowest surface roughness values for both Sq and Sa (Sq: 190.44 µm and Sa: 151.92 µm), whereas the sandblasting group revealed the highest (Sq: 471.23 µm and Sa: 379.95 µm). No significant difference was detected among control, sulfuric acid and laser groups (p>0.05). Conclusion:

Surface treatment methods have an influence on the surface roughness values and the morphological changes of the surface of PEEK materials. Sandblasting (with 110 µm Al<sub>2</sub>O<sub>3</sub> particles) resulted the highest surface roughness values among the surface treatment methods applied to PEEK materials (p=0.000).

**Keywords:** Surface treatment methods, surface roughness, PEEK



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### [OP-011]

#### Evaluation of Color and Translucency Change After Polishing in CAD-CAM Ceramic Materials of Different Thicknesses

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**Objective:** The aim is to evaluate the change in color and translucency after polishing different thicknesses of CAD-CAM lithium disilicate ceramic materials.

**Materials-Methods:** Cerec Tessera (Dentsply Sirona, Germany) lithium disilicate ceramic blocks were used to produce samples of different thicknesses for the study. Using a water-cooled precision cutting instrument (Metkon Micracut 151, Turkey), a total of 36 samples (n=12) with different thicknesses (0.8 mm, 1.0 mm, and 1.2 mm) were produced. All samples were sanded with increasing grit silicon carbide sandpapers (#600, #800, and #1200) to ensure uniform thickness at every point of the obtained samples. After this process, one sample was subjected to an XRD test. A Cu (copper) tube was used as an X-ray source. The measurement parameters were 2 degrees per minute and 0.002 step size. Subsequently, according to the manufacturer's recommendation, crystallization was carried out by waiting for 2 minutes at the maximum temperature of 760 °C. When the samples were cooled, color values were measured and recorded with a clinical spectrophotometer device (Vita Easyshade, Vident, Brea, California, USA). Color and translucency values were recorded according to the L\*, a\*, and b\* parameters. After crystallization the same sample was subjected to the XRD test. Then, all samples were polished equally using the porcelain polishing set (Drendel+Zweiling DIAMANT, Germany) for a total of 180 seconds (60 seconds with each polishing bur). After this process, L\*, a\*, and b\* values were recorded using the Vita Easyshade V device. The sample was subjected to final XRD testing. All obtained data were statistically analyzed.

**Results:** According to the XRD test, the amorphous structure turned into a crystal structure. It was observed that the structure transformed into a mono clinical phase. According to TP analysis, there was a statistically significant difference between 0.8 mm polished and 1.2 mm unpolished groups (p<0.001), 0.8 mm polished and 0.8 mm unpolished groups (p=0.02), and 1.0 mm polished and 1.0 mm unpolished groups (p=0.041). Also, the differences between polished groups according to the thickness were statistically significant (p<0.001).

**Conclusion:** Thickness of the specimen affected the TP values in polished groups. Polishing increased the TP values in 0.8 mm and 1.0 mm specimens.

**Keywords:** Ceramics, CAD/CAM, Dental polishing



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**[OP-012]**

**Effect of starbucks' soft drinks on composite resins' optical properties**

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**Objective:** This study was aimed at investigating color and translucency change in 2-different composite resins after staining with Starbucks' soft drinks. **Materials-Methods:** Twelve specimens were prepared from each composite resins [microhybrid (Herculite, Kerr), bulk-fill (Sonic-fill, Kerr)]. Following baseline color measurements, the specimens were randomly divided into 4 groups according to immersion solutions (distilled water, cold brew, cool lime, and dragon fruits). At the end of 1st, 7th and 14th day test periods, color measurements were repeated, and color change values ( $\Delta E$ ) and translucency parameters (TP) were calculated. Data were analyzed using the Kruskal–Wallis, Friedman and Bonferroni tests at a significance level of 0.05. **Results:** The highest level of translucency observed for the Herculite ( $5.1 \pm 2$ ) specimens immersed in dragon fruit was on the 7th and 14th day. The lowest level of translucency observed for the Sonic-fill ( $22.7 \pm 7.9$ ) specimens immersed in distilled water was on the 7th day. The highest level of discoloration observed for the Herculite, and Sonic-fill specimens on the after-14th day was cold brew ( $p < 0.05$ ). For the Sonic-fill specimens immersed in cool lime statistically significant difference in  $\Delta E1$  and  $\Delta E14$  values were detected ( $p = 0.003$ ). For the Herculite specimens immersed in dragon fruit statistically significant difference in  $\Delta E1$  and  $\Delta E14$  values were detected ( $p = 0.002$ ). **Conclusion:** The Sonic-fill materials were less translucency than the Herculite resin composites. Coffee caused more staining than other soft drinks generally.

**Keywords:** Bulk fill, Color change, Translucency, Soft-Drinks



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### [OP-013]

#### Assessment of antibacterial efficacy of novel remineralizing varnishes on dentin caries

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**Objective:** The aim of this in vitro study is to evaluate the antimicrobial effects of a novel varnish containing boron nitride nanoparticles, triclosan, and silver nanoparticles on artificially induced dentin caries.

**Materials-Methods:** Freshly extracted, 30 sound human third molars were selected and a total of 50 dentin blocks were prepared. Streptococcus mutans (S. mutans) was cultivated anaerobically on blood agar plates at 37°C for a period of 2 days. Following this incubation, bacterial cell pellets were harvested and subsequently resuspended in Brain Heart Infusion (BHI) medium supplemented with 5% sucrose. Streptococcus mutans (S. mutans), was incubated anaerobically for 3 days at 37 °C to create carious lesions at approximately 80 µm depth on exposed surfaces of dentin blocks. Different formulations were applied to 5 dentin blocks obtained from the same tooth with the help of a microbrush. [Grup 1: Boron nitride nanoparticle varnish, Group 2: Triclosan loaded boron nitride nanoparticle varnish, Group 3: Silver triclosan boron nitride nanoparticle varnish, Group 4: 5% Sodium Fluoride varnish (Enamelast, Ultradent), Group 5: Deionized water (control)]. Boron nanoparticles were obtained by the sonication-centrifugation method. Silver nanoparticles were prepared according to the emulsion diffusion-evaporation method. The formulations applied to both group 2 and group 3 were created by dispersing triclosan and/or silver nanoparticles in dimethylformamide (DMF), following the method mentioned before. Formulation optimization were achieved as a result of encapsulation efficiency, particle size, zeta potential value and in vitro release studies with formulations. The formulations were also imaged using scanning electron microscope (SEM) for characterization. Dentin surfaces were exposed to biofilm application with S. mutans for 7 days. After cariogenic loading, blocks were used to examine biofilm (50 dentin block, n = 10). The S. Mutans, colony forming units (CFUs) were evaluated to determine the growth kinetics of the biofilm. The topographic properties of the biofilm surface were evaluated by SEM using 2 dentin blocks for each group. Log 10 CFU and dead-live ratio were analysed using two-way ANOVA test and Bonferroni post hoc test. All of the analyses were conducted using Graphpad Prism 5.03 software, and the level of significance for the analyses was set at 5%. **Results:** The levels of biofilm formation on the dentin block surfaces in Group 4 (0,226± 0,026) (p<0,05) were significantly lower than those in Group 1, Group 2, and Group 3. The number of live bacteria (CFU/mL) on the surfaces of the dentin blocks treated with the remineralizing formulations was significantly lower compared to the control group. Notably, it was observed that the cell numbers detected on the dentin blocks in Group 4 exhibited the lowest CFU/mL values (5,6 CFU/mL). **Conclusion:** The highest antibacterial activity on artificially induced dentin caries was observed in the sodium fluoride varnish. Among the newly synthesized formulations, the highest antibacterial activity was found in the varnish containing boron nitride nanoparticles, triclosan, and silver nanoparticles.

**Keywords:** dentin caries, boron nitride nanoparticles, triclosan, silver nanoparticles, streptococcus mutans



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### [OP-014]

#### Assessment of color change and surface roughness in composite resins and teeth subjected to remineralizing agents

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**Objective:** This study was conducted to determine the color change and surface roughness of a nanohybrid, a microhybrid, an indirect composite resin and human central incisor teeth after the application of fluoride varnish (FV) and casein phosphopeptide- amorphous calcium phosphate (CPP-ACP). **Materials-Methods:** Twenty-four specimens were fabricated from each composite material (Nova Compo C, Gradia Direct, Solidex and teeth) by using a teflon mold (7 mm diameter and 2 mm thickness). Initial (T0) color measurements were made on the non-reflective white surface of the composite resin materials (Nova Compo C, Gradia Direct, Solidex) and teeth with a spectrophotometer (Vita Easshade V) and initial surface roughness (Ra) values were measured with a mechanical contact profilometer (Mitutoyo Surftest SJ-410). Following baseline color and Ra measurements, each group was equally divided to 3 subgroups as control group, FV (Polimo %5 NaF) and CPP-ACP (GC Tooth Mousse) applied groups (n=8). A total of 72 composite specimens and 24 human teeth were used in the study. Fluoride varnish was applied according to manufacturer's instructions and color and surface roughness measurements were repeated (T1) after the varnish was dried. CPP-ACP was applied to the specimens twice a day for 14 days and color measurements surface roughness measurements were repeated (T1). For all groups, color change values ( $\Delta E_{00}$ ) were calculated using the CIEDE2000 formula. Two- and three-way analyses of variance and Tukey's post-hoc test were performed, with  $p < 0.05$  regarded as indicative of significance. **Results:** No significant differences were detected among the teeth and resin composite materials in terms of the  $\Delta E_{00}$  values ( $p > 0.05$ ). Color change of all materials was above the acceptability threshold ( $> 1.8$ ) and the perceptibility threshold ( $> 0.8$ ). There were significant differences among the remineralizing agents with respect to the  $\Delta E_{00}$  values ( $p = 0.04$ ). Solidex/control combination showed the lowest, but clinically unacceptable  $\Delta E_{00}$  values. Regarding the surface roughness values, there were significant differences among teeth and resin composite materials ( $p = 0.005$ ). No significant differences were detected between remineralizing agents ( $p > 0.05$ ). The highest roughness values were observed in the teeth specimens treated with the CPP-ACP. **Conclusion:** The application of fluoride varnish and CPP-ACP for remineralization may cause color change and roughness in both teeth and restorative materials. The effect of remineralizing agents on the color change and surface roughness of teeth and restorative materials is dependent on the type of material, agent, and time. Further studies with longer durations may be necessary to support these results.

**Keywords:** Fluoride varnish, CPP-ACP, color change, surface roughness, composite resin

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**[OP-015]**

**Evaluation of the use of cone beam computed tomography in paediatric patients**

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**Objective:** Cone beam computed tomography (CBCT) is widely used in paediatric dentistry. Due to the high radiation risk in paediatric patients, it is very important to use CBCT with the correct indication and appropriate field-of-view (FOV). The aim of this study was to evaluate the reasons for the use of CBCT in paediatric dentistry and its distribution according to age and FOV. **Materials-Methods:** A total of 442 children between the ages of 5-18 years who presented to Ondokuz Mayıs University Faculty of Dentistry between 2018 and 2023 and had CBCT scanning were included. The children were retrospectively evaluated according to age, gender, imaging area and reasons for requesting CBCT scan. **Results:** In 442 CBCT scans, 229 (51.8%) male and 213 female (48.2%) participants were found. There were 62 children aged 5-9 years, 174 children aged 10-13 years, and 206 children aged 14-18 years. It was determined that the anterior maxilla (60.18%) was the most common region where CBCT was performed. It was observed that the region where CBCT was least preferred was the posterior maxilla (9.27%). When the reasons for use were analysed, it was seen that there were 13 different reasons. The most common reasons for the use of CBCT were evaluation of impacted teeth (39.36%), cystic formations (16.28%), supernumerary teeth (13.57%) and dental anomalies (6.33%), respectively. The rate of dental traumatic injuries was 3.61%. **Conclusion:** CBCT is a frequently needed imaging modality for both diagnosis and treatment planning. It has been determined that impacted teeth are the main reason for requesting CBCT in paediatric patients.

**Keywords:** Cone-beam computed tomography, Impacted tooth, Paediatric dentistry



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**[OP-016]**

**Material impact on shade-matching ability of an intraoral scanner**

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**Objective:** Color is frequently determined by how the human eye perceives the light the object transmits or reflects. Several methods, including computer-assisted digital image analysis, spectrophotometers, colorimeters, and visual evaluation using a shade guide, can determine the appropriate shade during a dental diagnostic. This study aims to determine the shade-matching capabilities between the spectrophotometer and digital scan images taken by the intraoral scanner. **Materials-Methods:** The digital images of the A1-shaded according to the VITA classical A1-D4® shade guide (Vita, Bad Säckingen, Germany) crown restorations fabricated with monolithic zirconia, empress porcelain, acrylic temporary, and composite materials were captured with an intraoral scanner (TRIOS, 3Shape dental system, Copenhagen, Denmark). Screenshots of the scanned data were captured using remote-control computer software (Teamviewer 15.40.8, Germany). The L\*a\*b\* values of the images were obtained with Photoshop (ADOBE Photoshop CC, 2018, Adobe Systems). The L\*a\*b\* values of the crown restorations were measured with the spectrophotometer (VITA Easyshade® V, Vita Zahnfabrik, Germany) as the control group. **Results:** The mean  $\Delta E$  values were  $8.17 \pm 2.43$  for zirconia,  $11.51 \pm 1.37$  for porcelain,  $6.63 \pm 1.64$  for acrylic, and  $3.8 \pm 0.99$  for composite materials. Zirconia and porcelain  $\Delta E$  values interperates as clinically extremely unacceptable, while acrylic is clearly unacceptable and composite moderately unacceptable. **Conclusions:** Within the constraints of the present study, intraoral scanner-acquired shades are insufficient. In light of this information, using digital scanners for shade matching has yet to be recommended, and further research is needed.

**Keywords:** Intraoral Scanner, Spectrophotometer, Photoshop, Shade-matching



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**[OP-017]**

**Can silver diamine fluoride added materials be used in pulp capping treatment?: Case Series**

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**Objective:** Indirect pulp therapy (IPT) is one of the techniques applied to teeth with deep dentin caries to preserve pulp vitality. Silver diamine fluoride (SDF) has an important role in caries management by arresting caries in primary teeth. Due to its high fluoride concentration and silver ions. SDF inhibits cariogenic biofilm and dentine collagen degradation. **Case:** Teeth with short-term provoking pain that were relieved by brushing or removal of the stimulus were included and the teeth with spontaneous pain, sinus tract/fistula formation, mobility, furcation/apical radiolucency, internal and/or external resorption excluded in the case series. IPT was performed on the selected 15 primary teeth with deep dentin caries. Calcium hydroxide, calcium hydroxide powder mixed with SDF, and zinc oxide powder mixed with SDF were applied to the caries- affected dentin to stimulate healing and repair. The teeth are restored with compomer filling material. The patients were recalled at 1, 3, 6 and 12 months. During the 1-3-6-12 month follow-up; clinically and radiographically, pulp vitality, periodontal health and root integrity are preserved in 15 teeth following the AAPD recommendations. No signs or symptoms such as tooth sensitivity, pain, swelling, or radiographic changes due to pathological external or internal root resorption were observed. **Conclusion:** Calcium hydroxide powder mixed with SDF and zinc oxide powder mixed with SDF showed similar efficacy as the control group of calcium hydroxide. According to the results of this case series, calcium hydroxide powder mixed with SDF and zinc oxide powder mixed with SDF are recommended as an indirect pulp capping agent in primary teeth.

**Keywords:** calcium hydroxide, indirect pulp therapy, silver diamine fluoride



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### [OP-018]

#### Evaluation of color and surface roughness of colored anterior resin composite after bleaching and polishing

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**Objective:** This study aimed to assess the color change and surface roughness of colored anterior nanohybrid resin composite (Clearfil Majesty ES-2, Kuraray, Japan) after either bleaching (Pola Office, SDI, Australia) or polishing.

**Materials-Methods:** A total of 40 disc-shaped specimens (5 mm x 2 mm) were prepared from the Clearfil Majesty ES-2 and stored in distilled water for 24h. Initial surface roughness values (Ra) were measured by using a contact profilometer (Mahr M2 Profilometer) and color measurements were obtained with a spectrophotometer (VITA Easyshade 5.0) (T0). Specimens were divided into four groups (n=10). Group 1 (control): distilled water, Group 2: Specimens were immersed in coffee for 7 days. Group 3: Specimens were immersed in coffee for 7 days followed by polishing with Clearfil Twist Dia polishing rubbers (Kuraray, Japan), Group 4: Specimens were immersed in coffee for 7 days followed by bleaching with Pola Office (35% Hydrogen Peroxide) (SDI, Australia). Then, a second round of measurements for both surface roughness values and color was conducted (T1). Data were analyzed by Kruskal Wallis and Bonferroni-Dunn tests ( $p < 0.05$ ).

**Results:** Examination of the effects of coloring, bleaching, and polishing on the samples revealed a significant difference ( $p < 0.05$ ). Pairwise comparisons demonstrated significant differences between all groups. Compared to the initial color measurements of the samples, the highest color change was observed in Group 2 ( $\Delta E1: 3.893$ ) ( $p < 0.05$ ), while the control group showed the least color change ( $\Delta E2=0.251$ ) ( $p < 0.05$ ). When considering the effects of the polishing procedure and the bleaching agent applied after coloring, statistically significant color changes occurred in Group 4 ( $\Delta E6=1.549$ ) compared to the polishing group ( $\Delta E5=0.816$ ) ( $p < 0.05$ ). In terms of surface roughness, there was no statistically significant difference between the groups ( $p < 0.05$ ). Similarly, when assessing the relationship between color and roughness values, no statistically significant interaction between the groups was found.

**Conclusion:** Bleaching and polishing procedures positively affected the color of the colored anterior composite resin. The bleaching process achieved a more successful color change in the colored anterior composite compared to the polishing application. However, neither method fully restored the colored composite resin to its initial color.

**Keywords:** In-Office bleaching, Polishing, Surface roughness, Color change, Composite resin

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**[OP-019]**

**Evaluation of surface roughness in restorative composite materials**

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**Objective:** Our study aims to evaluate the surface roughness of different commercially available restorative composites that are widely used.

**Materials-Methods:** In our study, we used Llis (FGM, Brazil), Vitra Essential (FGM, Brazil), and Charisma Diamond (Kulzer, Wehrheim, Germany) as composite materials. Five samples of each composite resin were formed using plexiglas molds that were 2 mm thick and 8 mm in diameter. Using a light-curing device with an irradiance of 650 mW/cm<sup>2</sup>, each specimen was light-cured by the manufacturer's instructions. The samples were removed from the molds after curing and stored in distilled water at 37°C for 24 hours. To determine the surface roughness of the composite materials, detailed analysis and imaging of the samples were performed using the 3D Nanovea PS50 Laser Profilometer Device (Nottingham, UK). The values obtained for the composite group samples were compared with the Ra, Rv, Rp, and Rz values according to the ISO 4287 standard. Microstructural characterization studies were performed using an Olympus BX4M-Led Light Microscope (Tokyo, Japan). Data were statistically evaluated using T test.

**Results:** When comparing the results of three-dimensional profilometer studies of Llis (FGM, Brazil) classified as Group A, Vitra Essential (FGM, Brazil) classified as Group B and Charisma Diamond (Kulzer, Germany) classified as Group C, restorative composites; the highest roughness value was obtained in the Group A, and the lowest roughness value and smoothest surface were observed in Group C. As a result of our study, the surface roughness value was determined as  $p < 0.05$  for Ra in all composite groups.

**Conclusion:** As a result of our study, it is concluded that the lifetime of dental restorative material may be increased by selecting processes that minimize surface roughness, considering the type and microstructure of the composite restorative material to be used.

**Keywords:** Dentistry, restorative composite materials, surface roughness



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### [OP-020]

#### Surface Roughness of Fluoride-Releasing Restorative Materials With Different Finishing Polishing Systems

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**Objective:** To evaluate the effects of different finishing and polishing systems on the surface roughness of fluoride-releasing restorative materials.

**Materials-Methods:** Total 180 disc-shaped bioactive restorative materials [Riva Self Cure (SDI/Germany)-glass-ionomer hybrid, Beautifil II (Shofu Inc./Japan)-giomer and Filtek Z250 (3M/USA)-microhybrid composite] samples were prepared using a Teflon mold(4mmx2mm)(N=60) and divided into 18 groups according to the finishing polishing system(n=10): 1) Group R/M: Riva Self Cure/Mylar strip(control); 2) Group R/S: Riva Self Cure/yellow belt diamond bur; 3) Group R/SO: Riva Self Cure/yellow belt diamond bur+Opti1Step(Kerr, Switzerland); 4) Group R/ST: Riva Self Cure/yellow belt diamond bur+Clearfil Twist Dia(Kuraray, Germany); 5) Group R/STO: Riva Self Cure/yellow belt diamond bur+Clearfil Twist Dia+Occlubrush(Kerr, Switzerland); 6) Group R/SOO: Riva Self Cure/yellow belt diamond bur+Opti1Step+Occlubrush; 7) Group B/M: Beautifil II/Mylar strip(control); 8) Group B/S: Beautifil II/yellow belt diamond bur; 9) Group B/SO: Beautifil II/yellow belt diamond bur+Opti1Step; 10) Group B/ST: Beautifil II/yellow belt diamond bur+Clearfil Twist Dia; 11) Group B/STO: Beautifil II/yellow belt diamond bur+Clearfil Twist Dia+Occlubrush; 12) Group B/SOO: Beautifil II/yellow belt diamond bur+Opti1Step+Occlubrush; 13) Group F/M: Filtek Z250/Mylar strip(control); 14) Group F/S: Filtek Z250/yellow belt diamond bur; 15) Group F/SO: Filtek Z250/yellow belt diamond bur+Opti1Step(Kerr, Switzerland); 16) Group F/ST: Filtek Z250/yellow belt diamond bur+Clearfil Twist Dia(Kuraray, Germany); 17) Group F/STO: Filtek Z250/yellow belt diamond bur+Clearfil Twist Dia+Occlubrush(Kerr, Switzerland); 18) Group F/SOO: Filtek Z250/yellow belt diamond bur+Opti1Step+Occlubrush. The surface roughness(Ra,  $\mu\text{m}$ ) was measured by contact profilometer (Mahr, Marsurf PS1. One specimen from each group was examined under Scanning Electron Microscope(SEM) device for surface morphology analysis. Two-way ANOVA and Bonferroni tests were used for statistical analysis( $p<0.05$ ). **Results:** In terms of finishing and polishing systems, for Beautifil II groups, Group B/STO exhibited similar surface roughness to Group B/M ( $p>0.05$ ). Among the Filtek Z250 groups, Group F/ST, and Group F/STO also demonstrated similar surface roughness to Group F/M ( $p>0.05$ ). However, for the Riva Self Cure groups, no significant differences in surface roughness were observed ( $p>0.05$ ). Regarding the restorative materials, Beautifil II showed lower surface roughness than Riva Self Cure with all finishing and polishing procedures. **Conclusion:** The finishing system using the yellow belt diamond bur, twist dia, and occlubrush resulted surface roughness values that closely resemble those of the control groups for both Giomer and microhybrid resin composite materials.

**Keywords:** Finishing, Giomer, Glass ionomer, Resin composite, Surface roughness



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[OP-021]

**The Effect of Fiber-Reinforced Composite Layer Design on Molar Teeth with Different Endocrown Restorations**

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**Objective:**

The aim of this study was to evaluate the effect of fiber-reinforced composite layer design on the stress distribution pattern of molar teeth with different endocrown restorations.

**Materials-Methods:**

A 3-dimensional mathematical model simulating an endocrown restored and endodontically treated mandibular first molar tooth was modeled. Then, twelve FEA models representing three restoration designs (1 no fiber layer, 2 fiber layers at cavity floor, 2 fiber layer both at cavity floor and walls) and four different endocrown materials (1 LiSi Ceramic, 2 hybrid ceramic, 3 Composite, 4 short fiber reinforced composite endocrown) were derived.

- Materials used in the study were assumed to be homogenous and isotropic.
- A 300 N load was applied from the contact points at the occlusal surface of the restoration.
- The SolidWorks/Cosmosworks structural analysis program was used for FEA analysis.
- Results were presented by considering principal stresses.

**Results:**

Maximum tensile stress values observed at restoration was 28,41 MPa at the hybrid ceramic endocrown model without fiber layer. The minimum tensile stress value observed at restoration was 15,53 MPa at a short a fiber-reinforced composite endocrown model with a fiber reinforcement layer at all cavity walls. Although the highest stress value observed at supporting root dentin structure was 2,75 MPa at hybrid ceramic and short fiber reinforced composite endocrown model with a fiber reinforcement layer at all cavity walls. The minimum stress value observed at the supporting root dentin structure was 2,24 MPa at the LiSi ceramic endocrown model with a fiber reinforcement layer at the cavity floor.

**Conclusion:**

The results of the current study showed that using a fiber-reinforced composite layer at the cavity floor decreases stresses on both restoration and remaining root dentin structures. However, the design that uses fiber reinforced composite layer at all cavity walls increases the maximum tensile stress values at remaining root dentin structures compared to the fiber layer in cavity floor design. Different endocrown materials exhibited similar stress distribution patterns, but LiSi ceramic material created a minimum tensile stress value at the root dentin structure.

**Keywords:** dental materials, endocrown, FEA, fiber-reinforced composite



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**[OP-022]**

**An In Vitro Investigation of Filling Quality in Internal Resorption Cavities Using Various Obturation Techniques**

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**Objective:** Studies evaluating treatment options for teeth with root resorption have traditionally utilized simulations created by burs. However, in natural resorption cavities, which are formed as a result of clastic cell activity, the demineralized areas exhibit irregular cavity boundaries. The aim of this study is to evaluate the quality of filling achieved by different techniques within internal resorption cavities prepared in a manner similar to the natural structure through acid demineralization. **Materials-Methods:** 54 extracted single-rooted teeth were divided mesiodistally into corresponding halves. The experimental procedure consisted of 11-day cycles repeated every 24 hours, involving the following steps: immersion in 5% nitric acid for 12 hours, thorough rinsing with deionized water, and subsequent exposure to 8% sodium hypochlorite for 10 minutes. Upon completion of this period, the teeth were reassembled, and root canal treatment was conducted. The quality of the fillings was evaluated by determining the amounts of gutta-percha, sealer, and remaining voids in the resorption cavities through stereomicroscopic examination. **Results:** The group filled with AH Plus sealer using the cold lateral condensation technique showed significantly higher percentages of sealer ( $p < 0.05$ ) compared to the other groups. The GuttaFlow2 group, applied with the master cone technique, exhibited the highest percentage of gutta-percha. When the groups utilizing the cold lateral condensation and thermoplastic injection techniques were compared in terms of their sealer content, no statistically significant difference was observed in the percentages of sealer present within the resorption cavities. **Conclusion:** In conclusion, our study uncovered that none of the employed obturation techniques achieved complete filling of the resorption cavities. Nonetheless, the utilization of GuttaFlow2 with the master cone demonstrated superior filling quality, displaying commendable adaptation to the root canal walls and ease of application.

**Keywords:** GuttaFlow2, internal root resorption, root canal obturation

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### [OP-023]

#### **Surgical And Endodontic Treatment Of Glandular Odontogenic Cyst And Internal Resorption: A Case Report**

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**Objective:** Internal root resorption is the progressive destruction of dentin and dentinal tubules on the inner surface of the root, mediated by clastic cells. Glandular Odontogenic Cyst is a relatively rare odontogenic cyst that exhibits glandular or salivary features, thought to demonstrate the pluripotential nature of odontogenic epithelium. The aim of this case was to endodontic and surgical treatment of internal resorption and glandular odontogenic cyst.

**Case:** A 56-year-old male patient presented to our clinic with a complaint of swelling in the left maxillary region. The CBCT image revealed a large radiolucent area extending to the nasal floor and an internal resorption cavity in tooth #22. Root canal treatment was prescribed for teeth #22 and #23. Access cavities were prepared under rubber dam isolation. The working length was established using an electronic apex locator. A metal post was removed from tooth #23. Instrumentation for both teeth was completed using H and K type files up to #60. Irrigation with NaOCl and EDTA was performed during the root canal treatment and activated using a sonic activation device. In tooth #22, due to the ongoing yellowish transparent drainage from within the canal, the root canal treatment of tooth was postponed to after the surgical operation. Tooth #23 was filled using the lateral condensation technique. During the surgical operation, the cyst in the relevant area was enucleated. The pathological evaluation reported the pathology in the region as Glandular Odontogenic Cyst. Four weeks after the surgery, root canal treatment of tooth #22 was completed using the warm gutta-percha obturation technique. The teeth were restored with glass ionomer cement, and the patient was referred to the Prosthetic Dentistry Department. No symptoms were observed during the patient follow-up.

**Conclusion:** A definitive diagnosis of the Glandular Odontogenic Cyst can only be established after a thorough histopathological examination, and long-term follow-up is necessary to exclude recurrences. The rapid treatment of internal resorption aims to halt the resorption process, preventing contact between resorption and the outer root surface, thereby preventing the complication of treatment and facilitating management.

**Keywords:** Internal resorption, odontogenic cyst, warm gutta-percha



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### [OP-024]

#### Clinical and radiological evaluation of the use of different scaffolds in regenerative endodontic treatment of immature permanent teeth: 5 case reports

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**Objective:** Regenerative endodontic procedure (REP) is a frequently used treatment for immature necrotic permanent teeth in pediatric dentistry. Unlike root canal therapy REP has benefits like regeneration of pulp–dentin complex, regaining the vitality of the tooth, healing of periodontal and periapical tissues, and bone regeneration. The use of appropriate scaffolds is an important part of the regenerative endodontic procedure. Blood clot obtained by periapical bleeding, platelet-rich fibrin (PRF), platelet-rich plasma (PRP), and collagen are frequently used scaffold tissues. The objective of this study is to evaluate the effect of different scaffold tissues on clinical and radiographic success in the regenerative endodontic procedure. **Case:** A total of 5 immature necrotic teeth were selected and a regenerative endodontic procedure was performed. A total of three groups, of teeth were randomly grouped as periapical bleeding, PRF, a combination of PRF and periapical bleeding. For case 1 periapical bleeding was used as scaffold, for cases 2 and 3 PRF was used as scaffold, for cases 4 and 5 combination of PRF and periapical bleeding was used as scaffold. Bleeding was induced by placing a #20 sharp spreader beyond 2 mm from the apex. For the PRF preparation, the patient's blood was collected in 2 sterile tubes from the cubital vein. The tubes were centrifuged for 12 minutes at a speed of 2700 rpm. Criteria such as tenderness to percussion, mobility, pain on palpation, swelling, sinus tract, discoloration probing depth, and periapical lesion were evaluated and clinical and radiographic evaluations were made at the 1st, 3rd, and 6th months. **Conclusion:** Periapical bleeding, PRF, and a combination of periapical bleeding and PRF groups all showed clinical and radiological success. PRF's use in regenerative endodontic procedure looks promising, more in vitro and in vivo research are needed to explain the exact mechanism. Further studies will show the importance of choosing the correct scaffold tissues in different regenerative endodontic cases.

**Keywords:** regenerative endodontics, scaffold, platelet-rich fibrin, periapical bleeding

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**[OP-025]**

**Can Artificial Intelligence (ChatGPT) Accurately And Consistently Answer The Frequently Asked Questions About Avulsion Injury? A Qualitative Study On ChatGPT**

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**OBJECTIVES**

Avulsion is one of the most difficult dental injuries to manage by both the physician and the patient. The role of the parent/teacher in this type of injury is also very important and can significantly change the prognosis. Nowadays, artificial intelligence is fully integrated into people's daily lives. How it guides the public in a situation like Avulsion, where the role of the parent is high, is critical. In order to evaluate the reliability and consistency of the answers given by artificial intelligence in informing the public about avulsion injury, the most frequently asked questions on this subject were asked to ChatGPT.

**MATERIAL/METHOD**

‘Can a knocked out primary/permanent tooth be replaced?’ ‘How to replace a knocked out tooth?’, ‘What should i pay attention to when taking a knocked out Tooth to the dentist?’ questions were asked and the answers were analyzed under the guidance of IADT.

New ChatGPT accounts were created with different e-mail addresses both times so that ChatGPT's answers would not be affected by past search algorithms.

The same questions were asked to the AI from different accounts and the answers were recorded.

The accuracy, reliability and consistency of the AI were evaluated by comparing the information in the IADT guideline with the answers given by ChatGPT.

**RESULTS**

Both times the AI answered our questions correctly, clearly and consistently.

It warned people to get the avulsed tooth to the dentist as quickly as possible and without damaging the tooth root. It gave detailed and explanatory answers on how to get the tooth to the dentist. It was mentioned that the avulsed primary tooth should not be replanted and that the permanent tooth should be replanted if certain conditions are met and the dentist deems it appropriate. The answers were simple and easy to understand in a way that the patient could understand.

Although it explained how to perform the replantation procedure and insisted that patients should not do it themselves and that they should get the support of a dentist.

The answers given by the AI were in line with the IADT guidelines.

**CONCLUSIONS**

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Artificial intelligence, just like other technological developments, has both disadvantages and advantages. Today, although it is very easy to access information, it has become very difficult to reach the right information. It is a pleasing development for dentists to learn that artificial intelligence is on our side in informing the public correctly, which is one of the most important goals of dentists. Because artificial intelligence has only raised awareness about what the people should do about avulsion and has been respectful about what the dentist should do and warned the patient to insist on consulting the dentist. Although it is quite adequate and accurate in informing people about avulsion, it does not have a sufficient level of knowledge for undergraduate and doctoral students. It would be better for dental professionals to seek IADT guidance instead of artificial intelligence.

**Keywords:** ChatGPT, avulsion, dental trauma, artificial intelligence



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**[OP-026]**

**Comparison of the marginal adaptation of three different retrograde filling materials in cavities opened with Er,Cr: YSGG laser**

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**Objective:** The aim of this study was to evaluate the marginal adaptation of ProRoot MTA, Biodentine and TotalFill BC RRM as root-end filling materials in cavities opened with Er,Cr: YSGG Laser using scanning electron microscope (SEM).  
**Materials-Methods:** Forty-five extracted single-rooted, human maxillary anterior teeth were used. The root canals were prepared with ProTaper Next rotary files till size X4 and obturated using cold lateral compaction technique with gutta-percha and AH Plus root canal sealer. The apical 3 mm of the root tips were removed perpendicular to the long axis of the teeth. A 3 mm deep root-end cavity was prepared with Er,Cr: YSGG laser. Teeth were randomly divided into three groups: retrofilled with ProRoot MTA (Group 1), Biodentine (Group 2) and TotalFill BC RRM (Group 3). Next, each specimen was prepared longitudinally with burs and subsequently with sandpapers in order to expose the filling materials. After words, the specimens were prepared for SEM analysis to measure the gaps at the material/dentin interface. The distances between the root-end filling materials and cavity walls were measured directly by the SEM at apical and coronal parts. The data obtained were analysed using the Friedman and Holm's post hoc tests, with  $p < 0.05$  as level for statistical significance.  
**Results:** The statistical analysis showed no significant difference among groups at both coronal and apical parts for all materials ( $p > 0.005$ ).

**Conclusion** Within the limitations of this study, when the retrograde cavities opened with Er,Cr: YSGG laser, Biodentine and Totalfill BC RRM bioceramic materials showed similar marginal adaptation with ProRoot MTA.

**Keywords:** Er, Cr: YSGG laser, retrograde cavity, retrograde filling material

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[OP-027]

**Evaluation of the physical properties of different bioceramic based root canal sealers**

Deniz Burcu Mert, Nimet Gençoğlu

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**Objective:** The aim of this study is to evaluate the physicochemical properties of different bioceramic based root canal sealers.

**Materials-Methods:** Five bioceramic based sealers, MTA Fillapex, TotalFill BC Sealer, BioRoot RCS, GuttaFlow Bioseal, Dia-Root Bio Sealer were compared with epoxy resin based sealer, AH Plus. Ten samples of each sealer were prepared in according to the manufacturers' instructions and evaluated for radiopacity, solubility, flow and dimensional change tests. The data were statistically analyzed using one-way ANOVA and Tukey post hoc tests ( $p=0.05$ ).

**Results:** AH Plus showed statistically higher radioopacity than all tested bioceramic based sealers ( $p<0.05$ ). A significantly higher solubility rate was observed for TotalFill BC Sealer ( $p<0.05$ ). Dia-Root Bio Sealer, BioRoot RCS and AH Plus showed solubility rate less than 3% in compliance with ISO standards. TotalFill BC Sealer and MTA Fillapex showed higher flow rates than other tested sealers ( $p<0.05$ ). Dia-Root Bio Sealer, GuttaFlow Bioseal, BioRoot RCS, TotalFill BC Sealer and AH Plus exhibited expansion above 0.1%, while MTA Fillapex showed shrinkage less than 1%.

**Conclusion:** All the tested sealers met the requirements laid by ISO for radioopacity and flow tests. Among the tested sealers only MTA Fillapex showed dimensional stability consistent with ISO standards. Dia-Root Bio Sealer, BioRoot RCS and AH Plus exhibited solubility rate in compliance with ISO standards. Recently introduced Dia-Root Bio Sealer showed adequate radioopacity, flow and solubility, but higher dimensional change than the rates required by ISO standards.

**Keywords:** bioceramics, solubility, radioopacity, flow, dimensional change

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### [OP-028]

#### **Comparison of the effectiveness of single-visit and multi-visit root canal treatment on healing intra-oral sinus tract**

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**Objective:** To evaluate postoperative pain and intra-oral sinus tract healing in teeth with chronic apical periodontitis treated in a single visit and to compare the results with multi-visit root canal treatment using an intracanal calcium hydroxide. **Materials-Methods:** A total of 60 patients in need of non-surgical endodontic treatment participated in this study. All patients provided informed consent. The age range of the patients was between 18 and 65 years. The selected teeth all had a single root and single canal, along with radiographic evidence of apical periodontitis and intra-oral sinus tracts. The patients were randomly divided into two study groups: Group 1(single-visit) and Group 2(multi-visit). Local anesthesia (Ultracaine DS Forte; Aventis Pharma, Istanbul, Turkey) was administered and the tooth was isolated with a rubber dam. Access cavities were created using sterile diamond burs. The working length of each tooth was determined using an electronic apex locator (Propex Pixi, Dentsply Sirona, Ballaguen, Switzerland) and a size #15 K-type stainless steel file was inserted into the root canal, confirmed radiographically. To shape the root canals, nickel–titanium rotary files (VDW GmbH, Munich, Germany) were used in accordance with the manufacturer’s instructions. Rotary files with a #40 size and variable taper tips of up to 0.04 were used. In the multi-visit group, after the shaping process, calcium hydroxide was placed. All multi-visit treatments were completed one week after the initial visit. For all groups, the final irrigation process consisted of the following steps: 5 mL of 2.5% sodium hypochlorite (Wizard, Ankara, Turkey), 5 mL of 17% ethylenediaminetetraacetic acid (Werax, Izmir, Turkey) and 5 mL of saline. In the single-visit group, after the final irrigation, the root canals were filled with gutta-percha and epoxy resin-based root canal sealers (Ah Plus, Dentsply Sirona) using the cold lateral compaction method during the same session. For the multi-visit group, after the removal of calcium hydroxide and following the final irrigation protocol, the root canals were filled during the second appointment. Radiographic checks were performed to ensure proper root canal fillings. Coronal restorations of the teeth were carried out with resin composite material (Z250, 3M ESPE). Postoperative pain was scored for the 2 days following the treatment using a visual analogue scale. In the multi-visit group, pain was also assessed at the beginning of the second appointment and patients were asked about the presence or absence of pain between visits. All patients were scheduled for follow-up appointments and were monitored until the day of the sinus tracts were healed (Healing means the closing of the sinus tract). Data were analyzed using the two sample proportion test and Pearson chi-square tests ( $\alpha=0.05$ ). **Results:** There were no significant differences between two groups regarding the incidence of postoperative pain ( $p>0.05$ ). In the multi-visit group, greater healing was observed on the 3rd and 7th days as compared to the 14th day ( $p<0.05$ ). However, the day of healing showed a homogeneous distribution in the single-visit group, and there were no statistically significant differences between the 3rd, 7th, and 14th days ( $p>0.05$ ). **Conclusion:** Both groups experienced similar postoperative pain. But it has been observed that a multi-visit protocol provides earlier healing than a single-visit.

**Keywords:** sinus tract, apical periodontitis, single-visit, multi-visit, postoperative pain

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**[OP-029]**

**Influence of different cavity designs on instrumentation efficiency in molars**

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**Objective:** The aim of this study was to compare the influence of different endodontic access cavity designs on the shaping ability (percentage of uninstrumented canal surface, canal transportation, centring ability) in mandibular and maxillar first and second molars using micro computed tomography. **Materials-Methods:** 28 mandibular and 28 maxillar molars were selected and divided into 8 groups (n=7) due to endodontic access cavity design (traditional, conservative, orifice directed, ultraconservative). Root canals were instrumented with Protaper Next (Dentsply Maillefer, Switzerland). Micro computed tomography was used to scan the specimens before and after canal instrumentation. Changes in the percentage of total uninstrumented canal surface, degree of canal transportation and shaping ability in the apical 1 mm and 2 mm of canal were evaluated and data were analyzed by analysis of variance with Tukey tests in factorial order ( $p < 0,05$ ). **Results:** The percentage of noninstrumented canal areas did not differ significantly between the groups ( $p > 0,05$ ). Canal transportation was significantly higher for the maxillar molar orifice directed group and ultraconservative group than conservative group in the mesiobuccal canal at 2 mm from the apical end buccopalatal direction ( $p < 0,05$ ). Canal preparation was more centralized in the mesiobuccal canal of the maxillar molar conservative group than maxillar ultraconservative and maxillar orifice directed group at 1 mm from the apical end mesiodistal direction ( $p < 0,05$ ) and in the mesiobuccal canal of the maxillar conservative group was more centralized than orifice directed group at 2 mm from the apical end mesiodistal direction ( $p < 0,05$ ). **Conclusion:** According to the results of this study, cavity design did not effect significantly the percentage of noninstrumented canal areas, but palatal and distal canals has more noninstrumented canal areas. Canals were more transported in the mesiobuccal canal of maxillar molars which cavities designed more minimal invasive at 1 and 2 mm from apical end.

**Keywords:** endodontic access, instrumentation efficacy, micro computed tomography, minimal invasive





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### [OP-031]

#### **Retrospective investigation of the relationship between coronal restoration and quality of root canal fillings and apical periodontitis in a specific Turkish population**

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**Objective:** The purpose of this study is to retrospectively assess the prevalence and efficacy of endodontic treatments in Turkish subpopulations, as well as the relationship between the type of coronal restorations, procedural errors, and their association with the periapical status of treated teeth.

**Materials-Methods:** CBCT images of 500 patients were analyzed. 10500 teeth were evaluated in all, and 1185 of those had received root canal therapy. Periapical condition, coronal restoration, and root canal quality of these teeth were evaluated. Periapical status was evaluated by two observers regarding to KIBTPAI scoring system. The Chi-Square test was used to evaluate all data for statistical analysis

**Results:** Healthy periapical status was seen in 44.9% of endodontically treated teeth. Teeth with procedural errors (broken instrument, untreated canal, perforation, ledge formation, short or overfilled canals, inadequate filling) showed more periapical pathosis than teeth with good endodontic treatment ( $p < 0.05$ ). Additionally, it was found that teeth with sufficient coronal restoration had lower prevalence of apical periodontitis (AP). However, existence of post did not effect periapical status ( $p < 0.05$ ).

**Conclusion:** The effectiveness of the root canal treatment and the periapical status were considerably influenced by the quality of coronal restoration.

**Keywords:** apical periodontitis, cone beam computed tomography(CBCT), coronal restoration, epidemiology, root canal treatment





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### [OP-032]

#### Clear aligner treatment in a 65 year old patient: Case report

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Clear aligners are not widely used to orthodontically treat elderly patients because of multidisciplinary concerns. According to WHO the life period after 65 year old is accepted as ‘old’. A good anamnesis of general health conditions, medication, hormone therapy, chief complains and expectations are necessary for any kind of dental treatment in every patient but in elderly patients especially who have complicated dental histories, deciding about orthodontic treatment is difficult. The presence of implants, prosthetic restorations, root canal treatments and old fillings, untreated periapical lesions, worn occlusion, missing teeth, periodontal issues, bone recession, aged enamel surfaces which can limit orthodontic tooth movement planning must be recorded and observed carefully. Apart from intraoral problems some natural vision loss with aging may lead to poor cleaning thus the oral hygiene maintenance may be difficult. ‘Planning and finishing orthodontic treatment in elderly’ should be ‘functionally compromised and esthetically acceptable’. A women of 65, with above listed intraoral conditions and with a chief complain of ‘front teeth crowding and prominence of upper incisors’ was referred by the dentist. She was still in business life and was in good mental and physical condition. She had 3 implants in the lower posterior segments and 4 crowns in the upper posterior. Almost all teeth were aged, colored, had composite restorations. Bone recession was present and she had mild oral hygiene. Her periodontist reported that she was under recall for more than 10 years and her situation was stable. Patient rejected fixed orthodontic treatment thus, clear aligner treatment (Align Technology-A.T) was planned. Usual pretreatment records and CBCT was taken in order to asses the bone and root conditions. The treatment plan began with the I-Tero (A.T.) scanning device under patients’ consent in the IOSim software (A.T.) used on site by the orthodontist where first instructions to the technician were sent. Special requests were written in the prescription form in the Invisalign Doctor Site (IDS). After receiving the first ClinCheck treatment plan, 3D control tools in Clin Check software was carefully used by the orthodontist for detailed planning. The shortest possible treatment was planned in order to preserve the acceptable oral hygiene during treatment.

Patient was compliant; used each appliance 20 hours per day and changed aligners every 14 days. Appointment intervals were every 30-45 days. After a set of 14 aligners and interproximal reduction (IPR) done respectively at stages 1,4 and 8; treatment goals were achieved. Total treatment lasted 9 months. Overbite and overjet were improved, crowding was corrected, dark triangles between the crowns at gingival level were reduced while a functional occlusion was set. Since the results were satisfactory for doctors and patient, further refinement was not needed. She was referred back to the dentist and periodontist with final records. Very slight bone loss was detected but clinically mobility was not observed. Results and methods will be discussed.

**Keywords:** Clear Aligner Treatment in elderly; invisalign, adult orthodontics, gerodontology



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### [OP-033]

#### Investigation of the Relationship of Palatal Arch Morphometry with Maxillary Sinus Volume: CBCT Study

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**Objective:** The maxillofacial region is a complex of anatomical structures that are in close proximity and connection with each other. The palatal arch structure does not have a single appearance, but exhibits different morphologies in different individuals in terms of shape and size. This morphological diversity may also affect other structures in its immediate neighbourhood. Studies argue that factors related to the palatal structure play a decisive role in the volume of the maxillary sinus. The aim of this study was to determine the shape, depth, width, length and palatal vault angle of the palatal arch on cone beam computed tomography (CBCT) images taken for various reasons and to determine the relationship between these factors and maxillary sinus volume.

**Materials-Methods:** CBCT images of optimal diagnostic quality taken for different diagnostic purposes from a total of 150 male and female patients (84 female-66 male) over 18 years of age without missing teeth were evaluated by an oral radiologist with two years of experience. The shape of the palatal arch was determined in each image, and the palatal depth, width, length and palatal dome angle were measured. ITK-SNAP (version 3.8.0) software was used for maxillary sinus volume measurement. Statistical analysis of the research was done using SPSS v.21 program. The 95% confidence intervals were calculated and a  $p < 0.05$  was considered statistically significant.

**Results:** The ages of male patients participating in the study ranged between 18 and 58 (mean 29.12), and the ages of female patients ranged between 18 and 60 (mean 27.85). The average palatal width, length, depth, right maxillary sinus volume, left maxillary sinus volume, total maxillary sinus volume and palatal vault angle were found to be  $55.08 \pm 3.84$  mm,  $27.04 \pm 2.35$  mm,  $21.53 \pm 2.80$  mm,  $15.20 \pm 5.09$  mm,  $15.45 \pm 5.24$  mm,  $30.65 \pm 9.91$ , and  $38.38 \pm 5.16$  mm, respectively. The most common palate shape in both genders was U type, while the least common was V type. All of the measured parameters were found to be statistically significant between genders, except for the palatal vault angle. As a result of the correlation analysis, it was shown that palatal length was 0.4% ( $R^2 = 0.004$ ), palatal depth was 42.3% ( $R^2 = 0.423$ ), and palatal width was 2% ( $R^2 = 0.020$ ) effective in explaining the palatal vault angle. A high level of correlation was detected between the right (1) and left (2) sinus maxillaris volumes and total sinus maxillaris volumes ( $r_1 = 0.959$ ,  $r_2 = 0.961$ ). A high correlation was also observed between right and left sinus maxillaris volumes ( $r = 0.842$ ). A moderate correlation was also observed between palatal vault angle and palatal depth ( $r = 0.651$ ).

**Conclusion:** There is a significant difference in palatal arch parameters between different genders. In addition, these dimensions also play a role on maxillary sinus volumes.

**Keywords:** cone beam computed tomography, hard palate, maxillary sinus, palatal vault



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### [OP-034]

#### Dental implants an overview of important principles

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<sup>2</sup>Isufi Royal Dental

<sup>3</sup>Mother Theresa Hospital Departemnt of Maxillofacial Surgery

**Objective:** The study aims to evaluate from one implant to all on X, all-on-four and all on 6 treatment concept and applied fixed dental prostheses.

**Case:** For this presentation we have use the patients datas who has done dental implants in the Isufi Royal Dental Practice.

Fromdatasderivatedfromthestudyhasresultedthatmostofpatientswho hasundergothroughthesetreatments options,mostofthemdesirefixedprotheticsoolutionsandonlyafewofthemwantsremovableprothesiswithbar.

**Conclusion:** as conclusions we can say that all these treatment concepts if are done following the right protocol has very good outcomes. For all the treatments it is a long road and need a very close collaboration between the surgeon, the lab technique and the patients to have a good satysfaing result.

**Keywords:** Principles, Treatment, Implants



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### [OP-035]

#### Anatomical classification of maxillary sinus contour morphology in a Turkish subpopulation using CBCT, implications for dentomaxillofacial surgery; a pilot study

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**Objective:** Comprehensive examination and effective radiological assessment are crucial for elucidating the structure and variations of the maxillary sinus before dentomaxillofacial surgical procedures. This study aims to evaluate and classify anatomy and morphology of maxillary sinus in a Turkish subpopulation by using CBCT (Cone Beam Computed Tomography) to avoid possible complications that may arise during dentomaxillofacial surgery.

**Materials-Methods:** This retrospective pilot study involved the examination of CBCT images from approximately 100 patients, which were obtained between January 2020 and December 2023 for various dental purposes. The images were retrieved from the database of the University of Health Sciences, Gulhane Faculty of Dentistry, Oral and Maxillofacial Radiology Department. Maxillary sinus was examined in the areas of teeth numbered 5, 6 and 7 on both right and left sides individually. Sinus contours were classified as narrow, tapered, ovoid, square and irregular. Irregular type was divided into subtypes as sinus floor related with tooth root, irregular sinus floor, and sinus floor with septa/exostosis. Existence of mucosal thickening on sinus floor and its amount was also classified. Relations of these parameters with gender and situations of existence, non-existence of the teeth or existence of implant were evaluated.

**Results:** When existence and non-existence of each teeth (5,6 and 7) on left and right side or existence of implant is evaluated, no significant differences were found in any of the areas between male and female patients. Between two genders, no significant differences were observed in terms of mucosal thickness on both right and left sinus floors. A significant difference was found between sinus contours about the existence of right and left maxillary teeth numbered 7 ( $p<0.05$ ). In the region of right maxillary second molars, the mostly seen sinus contour type was found as “sinus floor related with tooth root” and the less common was found as narrow type. On the left side, “irregular sinus floor” type was mostly seen and “narrow” type was less common. In the other examined regions, no significant difference was found between sinus contour type and existence, non-existence of the teeth or existence of implant.

**Conclusion:** Results of this study are compatible with the literature. No relationship was found between gender and mucosal thickening. A significant difference was observed between sinus contour type and existence or non-existence of the teeth, in the fields of right and left maxillary second molars. Especially before surgical operations like implant treatment, and during the treatment, to know about the sinus contour type that could be encountered has critical importance for dental professionals to prevent the complications. This research will proceed with study on more patients.

**Keywords:** Maxillary sinus, implant surgery, classification



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**[OP-036]**

**Biomechanics of Dental Implants Analyzed Using the Finite Element Method**

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**Objective:** The objective of this study is to analyze the biomechanics of dental implants utilizing the Finite Element Method (FEM) to ascertain stress distribution, strain, and displacement under various loading conditions. The research aims to enhance the understanding of the biomechanical behavior of dental implants, contributing to improved implant design and longevity.

**Materials-Methods:** The study employs FEM, a renowned numerical technique, to simulate and analyze the biomechanical performance of different dental implant designs and materials under varied loading scenarios. A comprehensive evaluation is executed by establishing detailed simulation environments, ensuring accurate, reliable, and reproducible results. Parameters such as stress distribution, strain, and displacement are meticulously assessed to understand their implications on dental implant performance.

**Results:** The findings delineate clear patterns in stress distribution across various dental implant designs and materials. The study identifies specific regions prone to excessive stress concentration, which could potentially lead to implant failure. A comparative analysis reveals the suitability of diverse materials for dental implants, providing crucial insights into the optimal selection based on biomechanical properties. The investigation into different loading conditions, including axial and non-axial forces, offers a profound understanding of their impact on dental implants, further enhancing the knowledge in the field. **Conclusion:** The research significantly contributes to the field of dental implantology by employing the FEM for a detailed biomechanical analysis of dental implants. The study's results are essential for informing better design and material choices, leading to the advancement of dental implant technology and ultimately improving clinical outcomes and patient satisfaction. The insights gained are pivotal in promoting the development of robust, reliable, and innovative dental implant systems, ensuring their successful integration and longevity in clinical applications.

**Keywords:** biomechanics, implant, finite element method, ansys, stress analysis



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**[OP-037]**

**Fatigue Life Prediction of Dental Implant Assemblies: State-of-the-Art Finite Element Simulation of ISO 14801 Implant Fatigue Test Setup**

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**Objective:** The aim of this study is to utilize state-of-the-art simulation techniques of finite element method to predict the fatigue life of dental implant assemblies, with a specific focus on replicating the ISO 14801 implant fatigue test setup, a recognized standard in the industry. Hence, the number of dental implant prototypes can be reduced for fatigue test setup.

**Materials-Methods:** A comprehensive finite element model established to mimic the ISO 14801 fatigue test setup for dental implants. ANSYS 2023 R2 software was employed to simulate cyclic loading conditions, realistically representing the physiological environment in which dental implants operate. The model parameters and boundary conditions were meticulously adjusted to align with the specifications and criteria established by ISO 14801.

**Results:** Finite element simulation results closely mirrored the empirical data derived from actual ISO 14801 test setups. Fatigue life predictions for various dental implant assemblies showed significant variations based on material composition, design, and loading scenarios. The study identified specific design configurations and material selections that exhibit optimal fatigue resistance under standardized testing conditions. In addition, the areas prone to fatigue-initiated failures in various dental implant assemblies were pinpointed.

**Conclusion:** Finite element method simulation of the ISO 14801 fatigue test setup enables a powerful tool for predicting the fatigue life of dental implant assemblies. By leveraging advanced modeling techniques, this study successfully provides insights into the longevity and reliability of various dental implant designs and materials under cyclic loading conditions. The findings are invaluable for manufacturers and dental professionals aiming to optimize dental implant selections and designs, ensuring durability and improved patient outcomes.

**Keywords:** fatigue, dental implant, finite element method, iso 14801, stress concentration

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### [OP-038]

#### **Oral plasmacytoma arising from multiple myeloma patients: Two case reports**

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**Objective:** Multiple myeloma is a neoplastic proliferation of plasma cells and is the second most common hematologic neoplasm after non-Hodgkin's lymphoma. It is characterized by neoplastic plasma cell proliferation in the bone marrow. Multiple myeloma can present in the oral cavity either as extramedullary plasmacytomas in the soft tissue or solitary bone plasmacytomas. Extramedullary plasmacytomas can evolve in soft tissue anywhere in the body through hematogenous dissemination. Solitary plasmacytomas, on the other hand, appear as a single lesion within the bone. The corpus, angulus, and ramus of the mandible are the most affected areas. The most common symptoms are bone pain, weakness, and infections. We aimed to present both extramedullary and solitary forms of plasmacytoma, which is a rare oral manifestation of multiple myeloma.

**Case:** A 52-year-old man with a previously diagnosed multiple myeloma was admitted to our clinic for a mass in the left maxillary region, which he reported to have been growing for the last 1 month. The examination revealed a 4x4x4 cm purple, red nodule adherent to the maxillary buccal gingiva which didn't change color on palpation. In radiographic imaging, there was evidence of bone resorption and expansion to the ridge crest in the left maxillary zone. The lesion was completely removed by excisional biopsy. As the peduncle of the lesion was seen to penetrate into the maxillary sinus, the antral region was also completely cleared with the Caldwell-Luc procedure. As a result of the biopsy, a diagnosis of plasma cell neoplasia was confirmed. Therefore, this lesion was clinically diagnosed as extramedullary plasmacytoma. A 77-year-old woman with a history of multiple myeloma presented to our clinic with complaints of pain and anesthesia in the right mandibular region. The intraoral examination revealed pain on palpation in the lingual region of the mouth. However, the color of the mucosa was normal. Radiographic examination revealed a radiolucent lesion in the right mandibular region near the basal base with well-defined margins associated with the mandibular canal. The site was opened under local anesthesia and the purple lesion was seen to have pushed the alveolar inferior nerve to the superior. The lesion was completely removed without damaging the nerve. The biopsy result was diagnosed as plasma cell neoplasia. Therefore, this lesion was clinically diagnosed as a solitary bone plasmacytoma.

**Conclusion:** Extramedullary plasmacytomas seen in the oral cavity are homogeneous purple or red nodules on the gums, cheek, lip mucosa, and tongue. Solitary bone plasmacytomas appear as a single lesion within the bone and are usually asymptomatic in the initial period. Patients with multiple myeloma have a poor prognosis because oral symptoms usually appear at later stages. This report emphasizes the importance of oral clinical and radiological examination in the multidisciplinary diagnosis and treatment approach in multiple myeloma patients. In conclusion, dentists are advised to pay attention to radiographic features and possible oral findings in order not to delay medical intervention.

**Keywords:** Multiple myeloma, Plasmacytoma, Oral cavity

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**[OP-039]**

**Treatment options for stage-3 medication-related osteonecrosis of the maxilla**

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**Objective:** The aim of this study is to perform the treatment of medication related osteonecrosis cases involving the maxillary sinus with different surgical techniques.

**Material-Methods:** A total of 10 patients diagnosed with stage-3 maxillary medication-related osteonecrosis of the jaws (MRONJ) were included in the study. General findings in the patients included persistent pain, swelling, and purulent drainage accompanied by sinusitis. All patients were initially treated with a 2-week combined antibiotic therapy (amoxicillin+clavulanic acid and ornidazole) to control the infection. Then sequestrectomy and bone debridement were performed. Finally, the resulting oro-antral fistula was closed by extending the buccal fat pad or mucosal flap. In 8 cases, platelet-rich fibrin was applied before this closure method.

**Results:** Flap dehiscence was not observed in any of the patients except 2 patients. The first patient had approximately 3 mm opening because of a large oroantral fistula. However, the area closed after 4 weeks since there was fat tissue under the mucosal flap. In the other patient, the oro-antral space was not reoperated because there was no infection and the patient's systemic condition. An obturator prosthesis was made to improve the patient's quality of life. Thus, the oro-antral relationship was prevented. No symptoms were observed in any of the patients during an average follow-up period of 26 months.

**Conclusion:** Different surgical techniques can be applied in maxillary Stage-3 medication-related osteonecrosis of the jaws (MRONJ) patients depending on the patient's general systemic condition and the size of the oro-antral fistula that develops. Since almost all patients have a history of cancer, the most important goal should be to improve their quality of life and eliminate acute symptoms, regardless of the treatment method applied.

**Keywords:** Medication-related osteonecrosis of the jaws, buccal fat pad, maxilla

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### [OP-040]

#### Evaluation of Pterygospinous Ligament Ossification with Cone-Beam Computed Tomography

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#### Objective:

The pterygospinous ligament (PSL) is a structure that extends from the posterior free edge of the lateral pterygoid lamina to the angular spine of the lower surface of the greater wing of the sphenoid bone and can be partially or completely ossified. The prevalence of ossification of this structure has been reported between 1% and 31.2% in the literature. Based on the relationship between the anatomical structures in the infratemporal fossa, ossification of the ligament can cause clinical symptoms such as numbness of the tongue and gums, pain during speaking and chewing, alterations in the sense of taste, and may interfere with some anesthetic and surgical procedures. This study aimed to retrospectively evaluate the presence of ossified pterygospinous ligament (PSL) via Cone Beam Computed Tomography (CBCT) images.

#### Materials-Methods:

CBCT images of the patients who had undergone CBCT examination in dentomaxillofacial radiology clinic for various purposes were included in the study. The presence of PSL ossification, its type as partial or total ossification, and laterality were evaluated in coronal axial and sagittal sections. The relationships between the presence of PSL and age and gender were examined statistically.

#### Results:

Ossification of the pterygospinous ligament was observed in 143 (25.2%) of the 568 patients. PSL ossification was found in 21.9% of female patients and 29% of male patients. Also 1136 sides of the 568 patient, including right and left, were evaluated. PSL ossification was identified in 194 (17.1%) of these 1136 sides. PSL ossification was observed unilaterally in 92 (16.2%) patients and bilaterally in 51 (9%) patients. In terms of PSL ossification type, partial ossification was observed in 114 (20.1%) patients and total ossification was observed in 29 (5.1%) patients. There was no statistically significant difference in terms of age and gender, except that the presence of PSL on the right side was significantly higher in male patients than in female patients ( $p < 0.05$ ).

#### Conclusion:

PSL ossification was observed in 25.2% of the patients included in the study, and this anomaly should be considered in the presence of clinical symptoms that may occur depending on its proximity to the infratemporal fossa, and CBCT is a useful tool in evaluating the PSL.

**Keywords:** Pterygospinous ligament, Cone Beam Computed Tomography, Ossification, Infratemporal fossa



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**[OP-041]**

**Pneumatization of the Inferior Nasal Concha: a Cone-Beam Computed Tomography Study**

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**Objective:**

Turbinate pneumatization, also known as concha bullosa, refers to the existence of an air cell inside the turbinate. Concha bullosa occurs rarely in the inferior turbinate. Inferior concha bullosa is generally asymptomatic and diagnosed incidentally by computed tomography. Its main clinical symptoms are nasal obstruction, headache, and postnasal drip. This study aimed to retrospectively evaluate the presence of inferior concha bullosa pneumatization via Cone Beam Computed Tomography (CBCT) images.

**Materials-Methods:**

Study included randomly selected 300 patients who had undergone CBCT examination for various reasons. Patients with a history of sinonasal surgery and CBCT images with low-quality were excluded. Gender, age and, presence and laterality of inferior nasal concha pneumatization were recorded for each patient. In patients who had inferior nasal concha pneumatization, presence of the deviation of the nasal septum, middle nasal concha pneumatization, hypertrophy of inferior and middle nasal concha and maxillary sinus pathology were also evaluated.

**Results:**

Study group consisted of 175 (58.3%) female and 125 (41.7%) male patients with an average age  $35.39 \pm 16.87$ . Average of the patients were  $35.21 \pm 16.39$  and  $35.66 \pm 17.64$  for female and male patients, respectively. Pneumatization of the inferior nasal concha were detected in 7 (2.3%) patients and, 6 (3.4%) were found in female patients and 1 (0.8%) were found in male patients. Two of the detected pneumatized inferior conchae were bilateral and 5 were unilateral (3 left side, 2 right side). In terms of coexistence with other investigated nasal anomalies, of the 7 patients with pneumatization of the inferior nasal concha 5 patients had pneumatized middle concha, 5 patients had maxillary sinus pathology, 4 patients had deviation of the nasal septum, 2 patients had hypertrophy of the inferior nasal concha and 2 patients had hypertrophy of the middle nasal concha.

**Conclusion:**

Although results of this study shows that pneumatization of the inferior nasal concha is a rare anomaly, in cone beam computed tomography examinations their presence and coexistence with other nasal anomalies should be considered.

**Keywords:** Turbinate pneumatization, Cone beam computed tomography, Inferior concha bullosa



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**[OP-042]**

**A rule-based expert system for diagnosis and treatment planing of temporomandibular joint diseases**

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**Objective:** Temporomandibular joint (TMJ) problems are very common in society, and general dentists may find it difficult to diagnose and treat these cases. Our goal was to use artificial intelligence to help diagnose temporomandibular joint problems. **Materials-Methods:** A rule-based expert system was developed using the Python programming language. An “if... then... else...” approach was adopted. This console-based program examines the right and left joints separately and classifies TMJ disorders as intra-articular and myofascial. Multiple choice questions are used to collect symptoms related to mouth opening, joint pain, masticatory pain and hypertrophy, joint sounds (clicking, crepitation), asymmetry (deviation, deflection) and bruxism. A diagnosis is then made on the basis of the collected symptoms and a treatment plan is presented. As this program works under the Python interpreter, it can be used on all major operating systems such as Windows, Linux, macOS, Android, iOS and Unix. The expert system was first tested on a large number of fictional cases to eliminate bugs and errors in the program. It was then tested on 10 real clinical cases. The diagnoses and treatment recommendations of the program were compared with the diagnosis and treatment plan of an experienced maxillofacial surgeon. **Results and Conclusion:** The expert system and the surgeon’s opinions were parallel. Although this program is a prototype for now, even in its current form it can be used for diagnosis and treatment of TMJ problems. **Note:** Source code of the project can be delivered on demand.

**Keywords:** Temporomandibular joint, artificial intelligence, expert systems

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**[OP-043]**

**Antibiotic Resistance From The Maxillofacial Surgery Perspective**

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Antibiotic resistance presents a growing challenge in healthcare, and it is of increasing concern in maxillofacial surgery. Maxillofacial surgeons frequently encounter complex infections and postoperative complications that necessitate antibiotic use. However, the inappropriate or excessive use of antibiotics in this field can contribute to the development of antibiotic-resistant bacteria, posing risks to individual patient care and public health. Odontogenic infections rank among the most common infections in the human body. The  $\beta$ -lactam, macrolide, lincosamide, nitroimidazole, and tetracycline groups of antibiotics are the most commonly used and effective options for dental problems. One of the primary factors leading to the development of resistance is the extended use of antimicrobials when the underlying cause is not adequately treated. These antibiotics are also employed in the treatment of focal infections and as prophylactic measures. It is evident that this widespread usage could potentially become a significant public health concern if not applied correctly. Furthermore, antibiotic resistance carries a substantial economic burden, including prolonged hospital stays, numerous medical tests, workforce productivity loss, and the necessity for extended and diverse antibiotic treatments. The extensive application of antibiotics across various sectors leads to the emergence of antibiotic-resistant bacteria and genes, intensifying resistance levels. To address this global challenge, proactive measures such as antibiotic stewardship, robust infection control protocols, and patient education are essential. These strategies aim to promote responsible antibiotic usage within the field of maxillofacial surgery and help mitigate the overarching problem of antibiotic resistance.

**Keywords:** antibiotic resistance, odontogenic infection, maxillofacial surgery

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**[OP-044]**

**Evaluation Of Mandibular Condyle, Coronoid, And Sigmoid Notch Morphology In Patients With Rheumatoid Arthritis**

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**Objective:** This study aims to assess morphological changes in the mandibular condyle, coronoid process, and sigmoid notch regions using panoramic radiography in patients diagnosed with Rheumatoid Arthritis. **Materials-Methods:** A total of 368 patients diagnosed with Rheumatoid Arthritis were included in the study. Morphological changes in the mandibular condyle, coronoid process, and sigmoid notch areas were evaluated based on panoramic radiographs. Factors such as gender, age, and Eichner index were taken into consideration during the analysis. Statistical analysis was performed using the Chi-square test, and results with a p-value less than 0.05 were considered significant. **Results:** In the 368-patient study, 82.1% (302 individuals) were female, and 17.9% (66 individuals) were male, with a mean age of  $55.76 \pm 14.15$  years. Convex-shaped condyles prevailed on both sides (R: 41.0%; L: 42.4%). Bilaterally, the coronoid process took a triangular form (R: 43.8%; L: 48.4%). The sigmoid notch showed a broad shape on both sides (R: 41.3%; L: 45.1%). In males, the right side had straight condylar shapes, and the left side exhibited more triangular and rounded coronoid shapes with statistical significance ( $p < 0.05$ ). The decreasing number of teeth was associated with an increased occurrence of wide sigmoid notch and significantly decreased occurrence of rounded type ( $p < 0.05$ ). **Conclusion:** Panoramic radiographs, commonly used in routine dental examinations, help to monitor morphologic changes in the jaw. The morphology of the mandibular condyle, coronoid process, and sigmoid notch can be affected by factors such as Rheumatoid Arthritis, gender, and tooth loss.

**Keywords:** Panoramic Radiography, Rheumatoid Arthritis, Morphological Changes



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### [OP-045]

#### Facial harmony after orthognathic surgery in patients with laterognati (case series)

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**Objective:** Providing ideal aesthetics and function in cases with dentofacial deformity and laterognathism is quite complex. Mostly in Class III patients, lower incisors tend to tip lingually and maxillary incisors labially to compensate the occlusion. With addition of laterognathism, improving the occlusal relation, chewing function and profile aesthetics gets even more challenging. For such adult patient cases, orthognathic bilateral sagittal split osteotomy can be used to reposition the jaws to their ideal locations, but it is crucial to take into consideration the patient's post op occlusal functions and stability, profile and facial appearance preferences during the treatment planning. To achieve the ideal results, you need to plan in a multidisciplinary aspect, patients need to go under orthodontic decompensation treatment to have their ideal dental positions in the alveolar bone. In this case series, we aim to emphasize the importance of the collaboration between orthodontics and surgery in patients with laterognathism and facial disharmony.

**Materials-Method:** In this study three high angle Class III patients with 1-4 mm of mandibular deviation were selected. To correct the angulation and alignment of the teeth first; before the surgery they had an orthodontic treatment; so, after the surgery, it would be easier to have stable occlusion. The patients underwent bilateral sagittal split osteotomy. The orthognathic surgery performed by the Department of Oral and Maxillofacial Surgery at Marmara University Faculty of Dentistry between 2019 and 2022. Digital planning was initially conducted for our patients, and the expected outcomes and facial changes were communicated to them. Subsequently, the surgeries were performed according to the planned adjustments and the splints created for each patient, and aesthetic changes after surgery were evaluated.

**Conclusion:** The results showed that good occlusal relation, and sufficient alveolar bone support was present around the teeth, dental inclinations, soft tissue profile and overall an aesthetic improvement was achieved as planned. This study shows with a multidisciplinary approach and a up to date technological planning, we can predict more precisely our treatment results to increase the aesthetic and functional quality for our patients. To further validate our results, it is necessary to increase the number of patients and conduct clinical trials with longer follow-up periods.

**Keywords:** Class III malocclusions, Laterognathism, orthognathic surgery, 3d planning





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### [OP-046]

#### Related Anatomy of orofacial infections of odontogenic origin with their spreading pathways and complications

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**Objective:** Although odontogenic orofacial infections that affect the numerous deep fascial spaces in the important neighborhood are widespread and extensively discussed, descriptions of the further spread of the inflammation and potentially fatal circumstances are rare. It's crucial to keep in mind that a simple tooth infection can lead to serious consequences, particularly in immunocompromised or disabled patients, diabetics, cancer patients, those with infections connected to the use of bisphosphonates, necrosis of the jaw bone, and individuals who have received radiation therapy. The purpose of this study was to identify the anatomical pathways through which orofacial infections migrate into the deep head and neck fascial spaces as well as their connections to clinical symptoms. Odontogenic infections can spread by going right past nearby anatomical features including bones, spaces, periosteum, vessels, etc. Despite the widespread use of antibiotics, orofacial infections with an odontogenic etiology are the most frequent cases encountered by clinicians. Since it may cause severe side effects such as mediastinitis, cavernous sinus thrombosis, osteomyelitis, Ludwig angina, abscesses, and retropharyngeal abscesses, it is crucial to have the proper therapy. An appropriate medical procedure should be carried out for the treatment of acute infections resulting from odontogenic tissues, surgical incision, and drainage, extraction of the tooth that is the source, or in phlegmonous conditions that make the surgical approach difficult.

**Materials-Methods:** The patients with odontogenic orofacial infections who visited the maxillofacial surgery department, between 1984 and 2023 were examined by looking at their age, gender, and the deep fascial spaces where the infection spreads. This study was done retrospectively. In addition to the transmission of infection, each patient was assessed for complications. Inspection and radiographic techniques were used to assess the anatomy associated with infection locations and dissemination traces.

**Results:** The submandibular space (34%) was the most prevalent in this study's infective spaces, followed by the vestibular space (14%), buccal space (10%), perimandibular space (8%), palatinal space (7%), submental space (6%) and the canine fossa (5%), as well as the subcutaneous space (4%), sublingual space (2%), temporal space (1%), and deep neck space (1%). Ludwig angina is identified in 3% of cases. The submandibular area was a significant location in patients with odontogenic infection.

**Conclusion:** To effectively treat the consequences of orofacial infections of odontogenic origin, early identification, intensive antibiotic treatment, and surgical intervention are necessary. Clinical professionals with experience and training in handling potential consequences should manage patients. We advise close postoperative clinical and radiological follow-up evaluations, along with prompt surgical re-intervention if necessary. Cavernous sinus thrombosis, mediastinitis, meningitis, osteomyelitis, septicemia, brain abscess, and Infratemporal fossa abscesses, are some of the potentially dangerous outcomes of orofacial infections with an odontogenic origin. Although making a clinical diagnosis of these illnesses can be difficult, knowing the relevant anatomy and transmission routes makes it possible to diagnose and treat these infections more precisely.

**Keywords:** odontogenic infections, submandibular spaces, oral abscess, cavernous sinus thrombosis, mediastinitis



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**[OP-047]**

**The Retrospective Evaluation of Supernumerary Teeth in the Anterior Maxilla by using 3D Cone Beam Computed Tomography Scans**

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**Objective:** The aim of this study was to retrospectively evaluate the prevalence, positional characteristics, relationship with the anatomical structures and associated complications of supernumerary and mesiodens teeth in the anterior maxilla using 3D Cone Beam Computed Tomography (CBCT). **Material-Methods:** 198 CBCT images taken from the patients aged 4-15 years were scanned and the data of supernumerary teeth were evaluated (between the years of 2017 and 2023). Age, gender, number of supernumerary and mesiodens teeth, the eruption status of mesiodens, proximity to anatomical structures, tooth shape and positional characteristics were recorded. CBCT scans of mesiodens teeth were classified according to their positions in frontal, sagittal and axial planes and the data obtained were analysed. **Results:** A total of 63 supernumerary teeth were diagnosed in 198 CBCT scans analyzed in this study. There were more supernumerary teeth in males (%33,33) than females (%11,53). Also, 58 (%92,06) of the diagnosed supernumerary teeth were mesiodens. Of the mesiodens, 17 (%29,31) were incisor, 28 (%48,27) were conical, 10 (%17,24) were tuberculated and 3 (%5,17) were round shaped. The average distance to the nearest permanent tooth was measured as 0,064 mm. The most common complication caused by the examined teeth was observed as eruption problem. **Conclusion:** Within the limitations of the present research, due to the proximity of supernumerary teeth to surrounding anatomical structures and possible complications, the use of CBCT imaging in the treatment planning is recommended. However, it is possible to conclude that further multi-centered prospective studies of supernumerary teeth and the studies regarding artificial intelligence-based diagnosis are needed.

**Keywords:** Cone Beam Computed Tomography, Mesiodens, Supernumerary Teeth

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**[OP-048]**

**Surgical Management of Fibrous Dysplasia-Related Lip Paresthesia: A Case Report**

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**Objective:** The purpose of this case report is to present a case of fibrous dysplasia causing lip paresthesia and to describe the surgical treatment applied.

**Case:** The subject of this case report, a 37-year-old female patient with no substantial systemic morbidities, presented with the chief complaint of right-sided lip paresthesia, prompting suspicion of a potential association with the mandibular canal. Panoramic radiograph revealed a prominent portrayal of a radiolucent lesion in proximity to the mandibular canal. A comprehensive clinical evaluation was carried out, which included a thorough examination of the patient's medical history and symptomatic presentation. The radiographic confirmation of the expansive lesion was diligently acquired through CBCT imaging. The patient was operated under general anesthesia. Local anesthesia was administered to safeguard hemostasis. The surgical procedure began with a preliminary incision using a 15-no scalpel to provide quick surgical access. Total enucleation was performed, which included the complete excision of the pathological lesion's fibrous, stromal, and osseous components. Surgical wound closure was performed with 3.0 vicryl sutures, promoting optimal wound healing and lowering the risk of infection. Following the operative intervention, meticulous postoperative care was provided, including vigilant monitoring for potential complications, effective pain management, prophylactic antibiotic administration, and a structured regimen of follow-up consultations to assess wound healing progress and ensure comprehensive patient care.

**Conclusion:** In conclusion, thorough preoperative preparation, precise surgical excision, and vigilant postoperative monitoring can improve symptoms and outcomes in maxillofacial fibrous dysplasia. A thorough patient evaluation, correct differential diagnosis, and long-term follow-up are essential to patient care. Following research methods and completing extensive scientific peer evaluations improves the quality and scholarly credibility of the reported research.

**Keywords:** fibrous dysplasia, fibro-osseous lesions, labial paresthesia, maxillofacial surgery, enucleation

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**[OP-049]**

**The Impact of Mental Disorders on the Occurrence of Bruxism**

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**Objective:** To determine the correlation that exists between patients with mental disorders and the occurrence of bruxism in these patients.

**Materials-Methods:** During the years 2019-2023, about 30 patients of the psychiatry section at the “Mother Teresa” University Hospital Center, Tirana, Albania, were examined. Of these patients, 13 patients were female, and 17 male patients, and their ages ranged from 20 - 50 years old. In addition to these patients, a group of 119 students were also investigated, as a control group, and they ranged in age from 20-25 years old. The contingents of the number of patients included in the study were observed based on the distributed questionnaire and related to the occurrence and content of bruxism according to the respective anamnesis for each of the individuals. The treatment of the mentally ill was combined, according to psychological methods, the method of using relaxing medications, and methods of prosthetic treatment with relaxing splints, while only medication and prosthetic methods were used with the control group.

**Results:** According to our study, it was found that bruxism was found in nearly 80% of the mentally ill and in 50.4% of the control group. According to the results of the study, we found that there is a statistically significant relationship regarding bruxism between the two groups, referring to the values of  $p = 0.01$ . The consequences of bruxism are pain in the jaw muscles, abrasion of the dental system, and that was found in 100% of the cases of the study group, and referring to the value of  $p \leq 0.001$ , which is statistically significant for both groups. The treatment for both groups was carried out by means of relaxing splints, where the best results were achieved in the control group referring to the value of 85% (101 patients), whose healing was achieved after a period of 6 months. In the study group with individual mentally ill patients, positive results in the treatment of bruxism were found in 20% (6 mentally ill patients), but we cannot definitively say that the positive result came from the method of using medications or as a result of the use of relaxing rails.

**Conclusion:** In the evidence of the bruxism, the psychogenic-emotional factor plays an important role, and from our study and those referred by other local and foreign authors, the treatment of this diagnosis should be carried out with the combined therapeutic-prosthetic method.

**Keywords:** bruxism, emotion, disorders, stress, pain



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### [OP-050]

#### Evaluation of a Postanesthetic Palatal Ulceration with Velscope Fluorescence Method: A Case Report and a Brief Literature Review

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**Objective:** The use of local anesthesia applications in dentistry is a well-established and dependable practice. Nevertheless, complications such as ulceration, necrosis, and tissue slough can occur due to the firm and dense structure of the palatal mucosa. The presence of large ulcerated lesions such as these can be misdiagnosed as oral cancer. The aim of this report is to present the autofluorescence imaging of a benign oral lesion and assess the clinical efficacy of the VELscope in terms of specificity and sensitivity with a brief literature review.

**Case:** A 45-year-old female patient was referred to the outpatient clinic of Oral and Maxillofacial Radiology Department. Upon first examination, the lesion was initially described as a deep ulcer with a diameter of 4-5 millimeters, covered by a pseudomembrane, resembling squamous cell carcinoma (SCC). In regard of the medical history and intraoral & extraoral examinations, the patient was diagnosed with palatal ulceration due to aggressively injected local anesthesia. Fluorescence examination with VELscope was performed and the lesion did not reveal a finding compatible with SCC. The patient was followed up for 2 months. VELscope examinations were performed during the follow-up sessions. A literature review has been performed about VELscope examination over the last 5 years and found 26 research articles but only 6 articles eligible for this review. Sample size, sensitivity and specificity of lesions were evaluated in these studies.

**Conclusion:** Autofluorescence examination of the lesion revealed that a well-defined ulceration with green light reflection same as the normal palatal mucosa. Erythematous lining around the lesion appeared slightly darker during the examination but no loss of autofluorescence was observed. In addition, when the literature were evaluated, it was found that the rate of sensitivity ranged from 64% to 94%. Whereas rate of specificity was found to vary from 15% to 100%. The diagnosis, treatment and follow-up of palatal ulceration after local anesthesia were presented. Autofluorescence imaging can be used as an auxiliary method as it is a basic, cost-effective and noninvasive complementary imaging method. Although its specificity is controversial, it has a high sensitivity value, so it can be useful to evaluate suspicious lesions during intraoral examination.

**Keywords:** autofluorescence imaging, velscope, oral diseases





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### [OP-051]

#### Recurrent Parotitis and Xerostomia are Associated with Psychological Resilience in Patients with Primary Sjögren's Syndrome

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**Objective:** Primary Sjögren syndrome (pSS) is a chronic autoimmune disease characterized by lymphocytic infiltration of exocrine glands and systemic extra-glandular involvement. Decrease in salivary flow rate (SFR) is an essential problem for oral health and daily life in patients with pSS. Psychological resilience is a crucial component of coping with difficulties in chronic diseases and Brief Resilience Scale (BRS) is a tool to evaluate the status of patients. The aim of this study was to assess relations among clinical manifestations, psychological resilience and general health status for developing patient empowerment strategies in pSS.

**Materials-Methods:** This cross-sectional study included 116 pSS patients (F/M: 111/5; 53.78±12.30 years) diagnosed according to the 2016 ACR/EULAR pSS diagnostic criteria. Data were collected by clinical examinations and a questionnaire. Brief Resilience Scale (BRS) scored by 5-Likert scale (1: strongly disagree vs. 5: strongly agree) and General Health status evaluated by visual analogue scale (VAS, 0: the worst health -100: the best health) were used in the study. Internal reliability of BRS was evaluated by Chronbach-alpha value (0,704). High scores in BSR and General Health status reflected better outcomes in the study. SFRs of patients were measured by a dentist (GM) in the visit. In addition, patients were asked their xerostomia levels; “How do you feel today as compared to your last visit as far as your xerostomia level is concerned?”. Responses were coded as decreased, no change or increased.

**Results:** In the group, 104 patients of 116 patients with pSS (89,65%) had dry mouth complaints diagnosed as xerostomia. Patients with xerostomia had lower U-WSR (0,18±0,19 ml/min vs. 0,35±0,20 ml/min) than the others (n=12, 10,35%)(p<0.05). The BRS score was found to be high in patients whose xerostomia levels decreased (n=82, 2.55±0.69) compared to others (n=22, 2.87±0.72) (p=0.054). In the group, the BRS score (2.11±0.37) was lower in patients who had recurrent parotitis than the others (2.67±0.86)(p=0.014). Decreases in General Health status scores were found in patients with isolated dental pain (55.0±8,66) than patients with isolated gingival/periodontal problems (64,74±9,20) (p=0.012). Moreover, patients with denture-related problems had lower General Health status scores compared to those without denture-related problems in the group (54,17±8,01 vs. 64.0±11,06) (p=0.036).

**Conclusion:** Patient empowerment strategies focused on recurrent parotitis and xerostomia as well as pain and denture-related problems should be developed for better clinical outcomes in patients with pSS.

**Keywords:** Brief Resilience Scale, Parotid gland, Primary Sjögren's Syndrome, Xerostomia





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### [OP-052]

#### Evaluation of trabecular bone structure in female patients on panoramic radiography with fractal analysis

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**Objective:** The aim of the study is to compare the trabecular bone structure of female patients under the age of 50 and over the age of 50 with the fractal analysis method on panoramic radiography. **Materials-Methods:** A total of 60 systemically healthy female patients, 30 patients under the age of 50 and 30 patients over the age of 50, were included in the study. Two regions of interest were selected bilaterally from the right and left ramus anterior regions on panoramic radiographs at 60x60 pixels. Fractal analysis was performed using White and Rudolph's box-counting method at each site. **Results:** The mean value of fractal analysis was found to be lower in patients over 50 years of age than in patients under 50 years of age. It was found to be 1.62 in the group under the age of 50 and 1.56 in the group over the age of 50. Considering median values, a statistically significant difference was obtained between the medians of fractal analysis values according to the groups ( $p < 0.001$ ). While the median for the group over 50 years of age was 1.58, it was found to be 1.63 for the group under 50 years of age. Both right and left region values were found to be lower in the group over 50 years of age. Also, considering all patient ages, a statistically significant negative and weak correlation was found between age and fractal analysis values ( $r = -0.308$ ,  $p = 0.001$ ). Furthermore, no significant difference was found between the fractal analysis values of the right and left regions in both groups. **Conclusion:** One in three women worldwide over 50 suffers from osteoporosis, a severe health problem. The likelihood of osteoporosis increases with age in female patients. Thus, it may cause a decrease in the complexity of trabecular bone structure and an increase in trabecular porosity. These changes can be evaluated on panoramic radiography with the fractal analysis method.

**Keywords:** fractal analysis, osteoporosis, trabecular bone

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**[OP-053]**

**Assessment of Oral Mucosal Diseases in Patients Applying to a Faculty of Dentistry**

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**Objective:** In this study, we aimed to retrospectively review the patients who applied to a faculty of dentistry with a complaint of oral mucosal disease.

**Materials-Methods:** The records of 1000 patients who applied to Marmara University, Faculty of Dentistry, Department of Oral and Maxillofacial Radiology between January 2019 and January 2023 were retrospectively reviewed. The patients' records were evaluated according to the prevalence of the disease and presence of histopathological reports of the lesions.

**Results:** The study was conducted with a total of 1000 cases, aged between 18 and 94. The average age was 50.84±15.96 years. The most common oral mucosal diseases were irritation fibroma with 10.4%, burning mouth syndrome with 9.8%, hyperkeratosis with 9.4%, reticular type oral lichen planus with 8.3%, respectively. There was a statistically significant difference between age groups in terms of the prevalence of reticular type oral lichen planus ( $p=0.033$ ;  $p<0.05$ ). The rate of reticular type oral lichen planus in the 51-60 age group (12%) was significantly higher than that in the 61-70 (6.3%) age group ( $p<0.05$ ). The rates of burning mouth syndrome in women (11.6%) and hyperkeratosis in men (6.7%) were statistically significantly higher ( $p<0.05$ ). The most common oral mucosal diseases in 459 cases with histopathology reports were reticular type oral lichen planus with 13.7%, irritation fibroma with 13.3%, hyperkeratosis with 12.9% and erosive type oral lichen planus with 10.5%, respectively.

**Conclusion:** Dentists play an important role in the diagnosis, treatment and follow-up of oral mucosal diseases which can be seen in any region of the oral mucosa. In addition histopathologic examination plays an important role in the planning and prognosis of patients by providing early diagnosis.

**Keywords:** oral cavity, oral mucosal diseases, prevalence, histopathological evaluation



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### [OP-054]

#### Evaluation Of Artificial Intelligence For Detecting Periapical Lesions On Panoramic Radiographs

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**Objective:** The aim of this study is to evaluate the function of diagnostic computer software designed for the detection of periapical lesions on panoramic images with deep learning methods.

**Materials-Methods:** In our study, more than 500 adult retrospective panoramic radiography images obtained randomly were evaluated. and periapical lesions were labeled on the radiographs with the ResultLab.Ai labeling program (ResultLab.Ai, Istanbul, Turkey). All images have been rechecked and verified by Oral, Dental and Maxillofacial Radiology experts. The model used is a U-Net based architecture customized for dental radiographs and optimized for fast operation. What is meant by customization is the structures called “Attention Gate” added to the architecture to draw the model’s attention to the lesions. The purpose of these structures is to draw the model’s attention to the relevant areas by resetting some pixel values and giving high values to some pixel values while combining the images’ features from the deep parts of the architecture with the details from the shallow parts of the architecture.

**Results:** Mask estimation was made separately for each image and F1 and IoU scores were calculated by comparing them with the marked masks. A list was created from the calculated F1 and IoU scores. The F1 and IoU score of the entire data set was calculated by taking the average of the values in this list. In IoU score calculation, Keras library’s Mean IoU metric was used to calculate for 2 classes. In the F1 score calculation, the F1 score metric of the SKLearn library was used to calculate the unweighted average for 2 classes. As a result, IoU was obtained as 0.8578 and F1 Score was obtained as 0.8587.

**Conclusion:** Detection of periapical lesions on panoramic radiographs with an artificial intelligence approach will help practitioners reach definitive conclusions even in lesions that are likely to be overlooked. In addition, success rates for deep learning methods improve as data set size grows. As the number of images rises, the training models’ success rates will follow.

**Keywords:** Panoramic radiography, deep learning, artificial intelligence, apical lesions

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**[OP-057]**

**Evaluation of Consistency Between Clinical and Histopathological Diagnosis for the Lesions of Oral Cavity**

Damla Torul, Mehmet Melih Omezli, Buket Temürlenk

Department of Oral and Maxillofacial Surgery, School of Dentistry, Ordu University, Ordu, Turkey

**Aim:**

Correct diagnosis is a prerequisite for optimum management and prognosis of the disease. Although histopathological diagnosis accepted as the gold standard for the correct diagnosis, in some instances, the microscopic view of histopathologic examination may not be sufficient to make correct diagnosis. Thus, the integration of clinical, radiographic, and pathological information together may be required to reach the correct diagnosis. The aim of this study was to evaluate the consistency between clinical and histopathological diagnosis in the lesions of the oral cavity.

**Materials-Methods:**

Archival records of the patients admitted to the Department of Oral and Maxillofacial Surgery and had a biopsy for various reasons between 2012-2023 were reviewed. Demographic characteristics and clinical and histopathological diagnoses were recorded.

**Results:**

A total of 252 biopsy cases with a mean age of 48.5 were included in the study. The rate of male patients found higher (59.92%) than females. In 69.04 % of the cases, the clinical diagnosis of the lesion was consistent with the pathology report. Among the records, the most encountered lesion was the cysts which had an 83.11% consistency rate. The consistency rate was found 81.82% for odontogenic tumors, 60.86% for soft tissue tumors, and 29.41 % for non-odontogenic tumors, respectively. The lowest rate was found for malignant cases with a rate of 12.50 %.

**Conclusion:**

Consistency was found between clinical and histopathological diagnoses in nearly 70 % of the cases. A higher consistency was seen in benign cysts and tumors, while it showed a dramatic decrease in malignant lesions. Therefore, to reach a correct diagnosis, the clinical, radiographic, and histopathological information should be evaluated together with effective cooperation between clinicians and pathologists, especially in malignant lesions to prevent misdiagnosis.

**Keywords:** Diagnosis, malignant, oral pathology



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### [OP-058]

#### **Stress levels in students from 4th and 5th year Dental University, during oral surgery practice**

Stojan Petrovski, Gordana Apostolova, Jasna Petrovska

UKIM Faculty of dentistry in Skopje, North Macedonia, Department of oral surgery

**Objective:** Stress level evaluation in students during oral surgery clinical practice

**Materials-Methods:** 20 Students were included in this study, 10 students from 4th year of studying and 10 students from 5th year of studying. All the students were from the University “Sv. Kiril i Metodij” in Skopje, Faculty of Dentistry. All the students were in perfect health conditions, without any chronic diseases. The students were also instructed to fill out the questionnaire for stress determination, and they've accepted to be a part of this study. In the biochemistry laboratory of the Dental Faculty, saliva was collected during the oral surgery clinical practice, and during normal lecture day (without clinical practice). Later on, the saliva was processed and studied with spectrophotometric measures of salivary amylase. The end results were correlated with the type of activity during the clinical practice (active/passive) and later on were compared to the ones that were collected from the students during the theoretical lecture day, as a control group.

**Results:** Our results suggest a higher salivary amylase level in students during oral surgery clinical practice, compared to students which attend theoretical lectures.

**Conclusion:** Students have higher stress levels during the oral surgery clinical practice, compared to non-clinical activity

**Keywords:** oral, surgery, stress, students





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### [OP-059]

#### Is YouTube™ a Useful Resource of Information About Xerostomia Treatment

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<sup>2</sup>Saliwell Ltd., Harutzim, Israel.

**Objective:** Xerostomia is the feeling of dryness in the oral cavity, which mostly results from insufficient saliva secretion or complete lack of saliva. Saliva plays a vital role in maintaining oral health and also has a tremendous effect on the systemic health. Research shows that xerostomia affects millions of patients throughout the world and has a negative outcome in quality of life. This situation, which makes even the simplest activities such as eating, tasting and speaking difficult, compels the patients to search for solutions. Today, thanks to the easy accessibility of the internet, many patients who are uncomfortable with this situation want to benefit from the information provided in online platforms on the causes and treatments of xerostomia. YouTube™, where both visual tools and informative content are used together, is one of the most used platforms for this purpose. However, there is no evidence that videos in YouTube about xerostomia treatment have been evaluated systematically. The aim of this study was to assess the quality of free access videos on xerostomia treatment in the YouTube™ platform. **Materials-Methods:** We conducted a search on YouTube™ using the term “xerostomia” and selected the first 25 videos in order of relevance. The following exclusion criteria were applied: language other than English, videos that did not cover xerostomia treatment, videos on nonhuman specimens, videos without title or sound, advertisements, and videos longer than 30 minutes. Twenty-one selected videos were classified based on their duration, country of origin, date of upload to the system, information source, number of views, and likes and dislikes. These materials were then analyzed for their content. **Results:** The majority of the analyzed videos were uploaded by health-related companies and informational websites. Their mean duration was 5.03 min, with a mean quantity of 441 likes and 41 comments per video. The average usefulness score of video contents was found to be 5 out of 8. **Conclusion:** These materials uploaded by healthcare professionals and health-related companies, could be helpful as resources for patient education.

**Keywords:** Xerostomia, Youtube, Dry mouth

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**[OP-060]**

**Reconstruction of vertically and horizontally maxillary alveolar crests with titanium mesh: Three case reports**

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**Objective:** The aim of this study was to reconstruct maxillary alveolar crests with severe alveolar bone loss after tooth extraction with titanium mesh in both vertical and horizontal directions. **Case:** The records of a total of 3 patients who were followed from crest reconstruction to the implant stage were analyzed. Patients received a combination of bovine and allogeneic grafts mixed with autologous blood. A titanium mesh and 4 titanium screws were used to fix the grafts. One of the patients underwent cancellous iliac graft in addition to the other grafts under general anesthesia. After a 6-month follow-up period, the titanium mesh was removed and dental implants were placed in the same session under local anesthesia. A total of 8 implants were placed. The mean follow-up period was 18.6 months. Preoperative mean vertical bone height was  $11.04 \pm 0.2$  mm and mean horizontal width was  $1.50 \pm 0.15$  mm. The mean vertical bone height was  $15.56 \pm 0.3$  mm and the mean horizontal width was  $7.9 \pm 0.3$  mm at the 6th postoperative month. Accordingly, the mean bone gain at 6 months was  $4.52 \pm 0.1$  mm vertically and  $6.4 \pm 0.15$  mm horizontally. Patients were followed up for an average of 5.3 months after implant surgery and no implant loss was observed. **Conclusion:** The use of titanium mesh in combination with allogeneic and xenogeneic grafts in alveolar crests with vertical and horizontal insufficiency can be considered as an option to provide the bone support required for implant surgery.

**Keywords:** Bone graft, dental implant, titanium mesh

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**[OP-061]**

**A rule-based expert system for partially or fully impacted third molars**

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**Objective:** The removal of partially or fully impacted third molars is one of the most common oral surgical procedures. However, in many cases a wrong decision is made as to whether these teeth should be extracted. Sometimes a third molar with pathological symptoms is left in place simply because the patient is not in pain and says “let it stay in place until it becomes symptomatic”. On the other hand, in some cases, a fully impacted third molar with no pathological signs is extracted with great difficulty and surgical morbidity because of “mysterious” pain that is actually caused by a completely different cause, such as TMJ, bruxism or dentin sensitivity. We wanted to use artificial intelligence to accurately diagnose the need to extract a third molar.

**Materials-Methods:** A rule-based expert system was developed using the Python programming language. An “if... then... else...” approach was adopted. This console-based expert system asks the user multiple-choice questions about trismus, the eruption status of the tooth, the presence of pain, radiographic and clinical symptoms, and the proximity of the tooth to the maxillary sinus or inferior alveolar canal. The indication for extraction is then decided on the basis of the data collected. As this program works using the Python interpreter, it can be used on all major operating systems including Windows, Linux, macOS, Android, iOS and Unix. The expert system was first tested on a large number of fictional cases to eliminate bugs and errors. It was then tested on 20 real clinical cases. The diagnoses and treatment recommendations made by the expert system were compared with the diagnosis and treatment plan of an experienced maxillofacial surgeon.

**Results and Conclusion:** The expert system and the human surgeon’s opinions were in agreement. Although this expert system is currently a prototype, it can be used to assist non-experts in determining the indications for third molar extraction. Note: Source code of the project can be delivered on demand.

**Keywords:** Artificial Intelligence, Third molar, Rule-based expert systemS



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### [OP-062]

#### Conservative Treatment of Mandibular Corpus and Unilateral Condyle Fractures in a Pediatric Patient with Closed Reduction and Literature Review

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**Objective:** The current presentation aims to report the conservative treatment of unilateral intracapsular condylar head and mandibular corpus fractures due to maxillofacial trauma with a bite block with 3 mm thickness, intermaxillary fixation and active physiotherapy in a pediatric patient. **Case:** A twelve-year-old patient referred to our clinic with complaints of pain and abnormal mandibular movements following trauma (a bicycle accident). Due to clinical and radiological examination, a non-displaced condylar head fracture in the left temporomandibular joint and a favorable fracture in the right mandibular corpus were observed. The patient reported pain and mandibular deviation during function. Considering the patient's age, continuation of the condylar growth, and the good prognosis of the fractures, a conservative treatment was planned. An occlusal splint-style bite block with 3 mm thickness was fabricated, an arch bar was applied to the lower and upper teeth, and the bite block was fixed to the arch bar in the upper jaw with wires. Then, maxillo-mandibular fixation was performed with orthodontic elastics. The patient was recommended to apply active physiotherapy for 4 weeks. During physiotherapy, in order to avoid midline deviation, patient was asked to perform these movements following the dental midline plane between the mesial contact points of the lower and upper central teeth as a guide during exercises. **Conclusion:** After four weeks of physiotherapy and intermaxillary fixation, mandibular movements in normal range, reduction in self-reported pain, and elimination of mandibular deviation during function were observed. At the end of the treatment period, the oral appliances were removed and the patient was advised to continue physiotherapy for as long as possible. The patient is still on follow-up period. As a result of the literature review covering the last five years (between 2019 and 2023), it was determined that the closed reduction methods are safe and reliable treatment approaches in the treatment of maxillofacial traumas detected in the pediatric population in 16 studies. Since condylar growth and regeneration are affected in treatments with open reduction, closed reduction is a recommended treatment option for condylar head, condylar neck and subcondylar fractures in children aged 12 and under, unless there is a limitation in mouth opening or a dislocation outside the articular fossa.

**Keywords:** Closed Reduction, Condylar Fracture, Trauma, TMJ



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### [OP-063]

#### Comparative evaluation of impacted canine localisation using two different panoramic radiography devices

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**Objective:** Impacted canines create serious problems and frequently necessitate surgical intervention. As a result, early detection of impacted or displaced maxillary canines with an identifiable and reliable approach is desirable. The purpose of this study was to measure impacted maxillary canines in 90 randomly selected individuals using two different panoramic radiographs and compare them according to age and gender. **Materials-Methods:** In this study, 500 panoramic radiographs from the Marmara University Faculty of Dentistry's Department of Oral and Maxillofacial Radiology's archive were scanned, and the panoramic radiographs of 90 patients with impacted maxillary canine teeth who met the study criteria were retrospectively examined. The angulation of the impacted teeth to the midline and distance to the occlusal plane were measured and assessed in these radiographs, 44 of which were obtained with a Planmeca and 46 with a Morita panoramic radiography devices. **Results:** A substantial difference was found between various age groups in the distance to the occlusal plane and the angle with the midline assessments of the impacted canines and non-impacted antagonist canines when the Planmeca device was compared within its own results. A significant variation was identified between various age groups in the distance to the occlusal plane and the angle assessments of the impacted canines and non-impacted antagonist canines with the midline in the comparison of the Morita device within its own results. In comparing all findings of the two devices within their own findings, no significant difference was detected. It has been shown that the incidence of impacted canines is higher in women than in men. The findings were evaluated with SPSS 18.0 statistical programme and independent sample T test was used for pairwise group comparisons and significance was evaluated at  $p < 0.05$  level. **Conclusion:** The aim of the diagnosis and treatment plan in impacted canines is to predict the problems that may be caused during eruption. Early diagnosis of the impacted canine and its relationship with the surrounding structures can be easily determined by radiographic evaluation.

**Keywords:** Impacted maxillary canine, Impacted tooth, Oral radiology, Panoramic radiography





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[OP-066]

### Marginal Resection of Multicystic Ameloblastoma in the Mandibula: A Case Report

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**Objective:** Ameloblastoma is a benign odontogenic tumor usually seen in the jaw bones. It covers approximately 1% of oral tumors, and approximately 80% are observed in the mandible and 20% in the maxilla. It is a locally aggressive epithelial tumor, often asymptomatic and slow growing. Patients usually consult the dentist as a result of painless swelling and facial asymmetry. Although it can occur in a wide age range, it most commonly affects patients between the 2nd and 5th decades. The aim of this study is to describe the treatment of multicystic ameloblastoma observed in the mandible. **Case:** A 70-year-old male patient was referred to our clinic to evaluate the radiolucent area in the left mandibular corpus noticed on routine panoramic radiography. Intraoral examination revealed slight expansion in buccal and lingual areas. In cone beam computed tomography sections, a multilocular lesion was observed in the premolar region, causing perforation and expansion in the buccal and lingual cortex, and causing resorption in the tooth roots. As the result of the incisional biopsy was plexiform type multicystic ameloblastoma, treatment with marginal resection was decided. Under appropriate conditions, the mucoperiosteal flap was removed with local anesthesia and the relevant teeth were extracted. After the reconstruction plate was placed on the base of the mandible, the tumor was excised along with 1 cm of adjacent intact bone tissue with surgical drills under irrigation. The incision lines were primarily sutured. The tumor was also confirmed that multicystic ameloblastoma. The wound healing process was observed without any problems ten days after the surgery. The patient was fitted with a partial prosthesis after 6 months, no recurrence was observed in the 1-year follow-up and the patient is still under control. **Conclusion:** Ameloblastoma treatment is divided into radical and conservative approaches. Treatment of multicystic ameloblastomas is usually segmental or marginal bone resection using a radical surgical technique. Follow-up at regular intervals after appropriate surgical treatment is very important in terms of possible recurrence.

**Keywords:** ameloblastoma, mandibula, marginal resection

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**[OP-067]**

**Effectiveness of clear aligner therapy in rotational tooth movement**

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**Objective:** The present study investigates the effectiveness of Invisalign (Align Technology, San Jose, Calif) in rotational tooth movement. The aim of this research is to assess the accuracy of the predicted rotational movements in the digital treatment plan (Clincheck, Align Technology, San Jose, CA) compared to the actual achieved results following treatment completion. **Materials-Methods:** A retrospective analysis was conducted on a cohort of orthodontic patients who underwent clear aligner therapy for rotational tooth movements. Digital treatment plans and 3D models were used to predict the anticipated degree of rotation for each tooth. Post treatment, the achieved, rotational movements were measured in the same way and assessed quantitatively. **Results:** Preliminary findings reveal a significant correlation between the predicted rotational movements and the actual revealed results. However, variations were observed among different tooth types and degree of rotation. Teeth with mild to moderate rotations demonstrated higher accuracy rates in alignment with the digital treatment plan, while more complex rotations exhibited slight discrepancies. The most accomplished tooth movement was found with 80% accuracy in lower central incisors, 74.29% accuracy in lower laterals, 71.43% accuracy in upper central incisors and lower second premolars whereas the least accuracy was found with 28% in lower canines. **Conclusion:** These results reveal the potential of Invisalign orthodontic treatment to accurately predict and achieve rotational movements. The study emphasises the importance of precise treatment planning and patient selection for optimal outcomes. Further research is warranted to explore factors contributing to the variations observed and to refine treatment protocols to enhance the accuracy of rotational tooth movements with Invisalign.

**Keywords:** clear aligner, rotation, accuracy



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[OP-069]

### Treatment planning for effective and efficient correction of Class II malocclusion

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**Objective:** The approach of treatment of Class II malocclusion correction depends on several factors such as: the status and pattern of growth, severity of the malocclusion and patients cooperation. Because of the wide variation found in Class II malocclusions, many different diagnostic decisions whether to extract or not to extract, must be made and treatment mechanics must, of necessity, differ as well. This case reports describe the common diagnostic decisions and the different biomechanics regarding the teeth extractions in patients with Class II malocclusion as well as regarding the dimensions of denture: the anterior limit, the lateral and the vertical limit in patients with different skeletal pattern. **Case:** The treatment of a Class II malocclusion in case 1 hyperdivergent patient, required extraction of maxillary first premolars to correct the increased overjet, proclined upper incisors, convex profile and skeletal Class II. Case 2 patient with hypodivergent skeletal pattern was treated with camouflage treatment with maxillary first premolar extraction for correction of the jaw relation, retracting the teeth in the extraction space and maintaining the lower incisors position, achieving Angle Class I in the canine region and Angle Class II in the molar region. Case 3 with normal pattern of growth was treated with second maxillary premolars extraction. Due to the fact that the patients were adults, treatment plan could not have included headgears and functional appliances for Class II correction. In all three cases we did not flared the mandibular incisors in order to level the Curve of Spee or to eliminate crowding, due to the fact that their position is very critical. **Conclusion:** The results included harmonic occlusal relationships with adequate positioning of the teeth in their bony bases and correction of skeletal disharmonies. We can conclude that accurate diagnosis and treatment planning following orthodontic extraction guidelines lead to a long-term stability. Any decision regarding the need for extraction of teeth during orthodontic therapy is not only dependent on the presence or absence of space in the dental arches. Other issues should be evaluated in order to achieve proper malocclusion correction, maintenance or improvement of facial aesthetics and result stability. It is necessary to develop individualized treatment plan with complete evaluation of patient's dental, facial and skeletal patterns to offer a correct diagnosis and proper treatment plan. We should respect the basic orthodontic principles of treatment planning and do not exceed the biological limitations according to the natural equilibrium.

**Keywords:** Class II malocclusion, Treatment planning, Treatment mechanics, Extractions

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**[OP-070]**

**Evaluation of oral health-related quality of life between different types of orthodontic treatment**

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**Objective:** During orthodontic treatment, patients may have some complaints about their general functions. The aim of this study is to evaluate oral health-related quality of life between fixed orthodontic treatment and clear aligners with Oral Health Impact Profile (OHIP-14). **Materials-Methods:** The study sample comprised 68 patients who had an ongoing orthodontic treatment. The patients were divided into 2 groups according to the treatment, as fixed orthodontic treatment, and clear aligner. Each patient completed the OHIP-14 which is divided into seven categories as functional limitation, physical pain, psychological discomfort, physical disability, psychological disability, social disability, and handicap. Each answer is scored by means of a five-point Likert scale quantifying the frequency of events impacting on quality of life for each domain, with scores ranging from “never = 0” to “always = 4” The answers of each question and categories were compared by treatment groups and gender. Independent two sample t-test, Mann Whitney U test and Pearson chi-square test were used to evaluate data. Significance level was taken as  $p < 0.050$ . **Results:** Physical pain, psychological discomfort, physical disability, social disability, and total score were statistically higher in female. No statistically significant difference was found according to treatment types. **Conclusion:** The effect of gender factor on quality of life is significant. Although the treatment process and rules to be followed were different from each other, it did not cause a significant change in the quality of life of patients.

**Keywords:** Fixed orthodontic treatment, Clear aligners, Oral health-related quality of life





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### [OP-071]

#### Evaluation of the relationship between human bite marks and craniofacial morphology: A pilot study

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**Objective:** Bite marks on the skin can be valuable in forensic sciences for identifying victims, making suspect assessments, or eliminating. The aim of this pilot study is to investigate the relationship between dental data in bite marks and facial features, thus enabling predictions about facial identification in forensic cases.

**Materials-Methods:** The study included 25 volunteer students (ages 19-25), who had not received orthodontic treatment, no congenital malformities, no prosthetic restorations in the anterior region. Bite marks were obtained by biting onto dental wax wrapped around a sponge roller with a 3.5 cm radius from each volunteer. The inter canine distance, arch depth, and arch length of the upper and lower jaws in these bite marks were measured using a caliper. Intraoral scans of the volunteers were re-measured using the iTero Digital Scanner (Align Tech, USA). Profile photographs were taken and FH/GoMe, as well as the ratio of lower facial height to total facial height, were calculated from soft tissue using the GIMP (GNU Image Manipulation Program, Version 2.10.34) software. Statistical data were evaluated by the SPSS program. The Shapiro-Wilk test was used to determine the normality distribution. Wilcoxon test was used to compare wax and digital measurements, as the data didn't have a normal distribution. The Spearman test was used to assess inter-group correlations.

**Results:** When the inter canine distance, arch depth, and arch length measurements obtained from bite marks on wax were compared with both upper and lower jaw in digital data, statistically significant differences were found for each measurement ( $p < 0.05$ ). A correlation was found between the lower jaw intercanine distance obtained from bite marks and FH/GoMe ( $p = 0.046$ ), as well as between the lower jaw arch length obtained from digital scans and FH/GoMe ( $p = 0.032$ ). There is a correlation between all values obtained from bite marks and digital data ( $p < 0.05$ ). No correlation was found between the ratio of lower facial height to total facial height and the values.

**Conclusion:** Despite the statistical differences between bite mark and digital data, the correlation of measurements indicates the meaningful use of bite-mark data in facial identification. It is believed that the difference between the values in the bite marks and the digital measurements may be attributed to the potential distortion of the wax or other factors during the biting process. This disparity suggests that similar results could also be observed in bite marks obtained from tissue. When evaluated, the data related to the lower jaw seems to be more distinctive. While the results appear promising, increasing the sample size is necessary for better results.

**Keywords:** Forensic Odontology, Bite Mark Analysis, Vertical Dimension, Arch Dimension





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### [OP-072]

#### **Determining the incidental pathologic findings (IPF) on panoramic radiographs before orthodontic treatments: a retrospective study**

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**Objective:** Panoramic radiography is an imaging method that displays teeth, jaws and surrounding structures in two dimensions and is frequently used in the follow-up and treatment phase of patients. This study aims to determine the frequency of incidental findings (IPF) in panoramic radiographs taken before orthodontic treatment. **Materials-Methods:** In this retrospective study; A total of 330 patients (170 women, 160 men) aged between 7 and 49 years were included. In the panoramic radiographs of the patients before orthodontic treatment; Impacted teeth, periodontal space widening, pulp stones, rotated teeth, congenitally missing teeth, supernumerary teeth, unerupted teeth, crowding, diastemas, persistent primary teeth and pathological findings were reviewed. IPFs were grouped into dental anomalies, radiopacities and radiolucent areas in the jaws, impacted teeth, and other anomalies in the jaws. Data were compared according to gender (female/male) and age groups (6-12 years, 13-46 years). **Results:** Dental anomalies were detected in 90.6% of the panoramic radiographs examined. No statistically significant relationships were found between gender and dental abnormalities ( $p>0.05$ ). The incidence of idiopathic osteosclerosis is 3.6%, and all of these people are men; It has been determined that people with sclerosing osteitis are mostly men and alveolar radiopacities are mostly not seen in women. No statistically significant relationship was found between gender and radiolucent areas in the jaw bones ( $p>0.05$ ). It has been observed that patients are mostly between the ages of 6-12 in the absence of any dental anomalies. When the type of dental anomaly was examined, it was determined that the patients with superimposition of third molars on mandibular canal, supernumerary tooth, missing tooth and dilacerated root were mostly between the ages of 13-49. It has been determined that people with sclerosing osteitis are mostly between the ages of 13-49 and patients aged 13-49 mostly have alveolar radiopacities. It has been determined that patients with possible periapical or residual cyst and possible dentigerous cyst are mostly between the ages of 13-49, and patients aged 13-49 are mostly seen in radiolucent areas in the jaw bones. It has been determined that patients aged 13-49 years mostly have caries. The average number of decayed teeth in the 13-49 age group is higher than the average number of decayed teeth in the 6-12 age group. As a result of the analysis, a statistically significant relationship was found between age groups and IPFs ( $p<0.05$ ). The most common congenitally missing teeth were upper lateral teeth with 6.4%. In the panoramic radiographs examined, the incidence of impacted teeth was 29.4%, and the most impacted tooth was found to be the maxillary right canine tooth with 30.9%. **Conclusion:** Panoramic radiographs are a preferred routine diagnostic tool in the evaluation of anomalies, lesions, cysts, etc. related to dental conditions. According to the results of this study, a high rate of dental anomalies were detected by evaluating panoramic radiographs before orthodontic treatment. Age and gender changes play a role in the presence of IPFs.

**Keywords:** incidental pathologic findings, orthodontic treatment, panoramic radiography



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### [OP-073]

#### Interdisciplinary treatment of skeletal open bite-case report

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**Objective:** Surgical-orthodontic treatment in the literature is the most recommended treatment for skeletal open bite as orthodontic anomaly. Through this case report we represent the results of skeletal open bite with interdisciplinary orthodontic-prosthodontic treatment approach. **Case:** Adult patient 22 years, came in our Clinic for consultation. After the clinical examination, anamnesis and radiographic analyses, we established presence of skeletal open bite, hypodontia of lower second premolars and extraction of lower right first molar. The therapy plan consists of orthodontic fixed appliance in first phase and prosthodontic treatment in second phase. **Conclusion:** In two years period with intrusion of posterior teeth and use of intermaxillary elastics for anterior teeth extrusion, we have achieved satisfying results with the curve of Spee leveling and over bite of 2 mm. At the end of the orthodontic treatment we did prosthodontic rehabilitation with fixed prosthodontic restorations in the lower posterior part. Satisfying results from the interdisciplinary treatment and the satisfying smile of the patient for the therapeutic team presented satisfaction and motivation for further interdisciplinary collaboration in skeletal open bite cases. The patient's facial appearance was markedly improved, and she achieved a functional and stable occlusion after this treatment.

**Keywords:** Open bite, orthodontic treatment, prosthodontic treatment



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### [OP-074]

#### Biological properties of nitinol archwires coated with titanium nitride- copper films

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**Objectives:** The main purpose of orthodontic treatment (OT) is to accomplish an optimal occlusal relationship in order to obtain adequate oral function and aesthetic appearance. Under optimal economic conditions, demand for OT reaches at least 35%, but in higher socioeconomic areas in US more than 50% of children are receiving orthodontic care. Acceptance of OT in Europe, like in western population and Scandinavian countries, is at similar levels. Very desirable mechanical characteristics, such as shape memory effect and superelasticity, expanded the use of nitinol (NiTi) archwires in orthodontics significantly. The complex conditions present in the oral cavity, including biofilm formation on the exposed surfaces, substantially alter the surface and structural properties of the NiTi archwires compromising the safety of OT. The necessity for developing novel material coating that would decrease Ni release and improve biological properties is of a great importance. **Materials-Methods:** Copper doped titanium nitride films (TiN-Cu) on the surface of NiTi archwires were obtained by combination of the cathodic arc evaporation and DC magnetron sputtering. The physicochemical characterization was performed using energy-dispersive X-ray spectroscopy (EDS) and X-ray diffraction (XRD). Ion release was assessed using inductively coupled plasma optical emission spectrometry (ICP-OES). The cytotoxicity of NiTi archwires, stainless steel (SS) archwires and TiN-Cu coated archwires was investigated using 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyl tetrazolium bromide (MTT) test. In order to evaluate bacterial adhesion and biofilm formation, the following strains were used: *Streptococcus mutans* and *Streptococcus mitis*. **Results:** Physicochemical characterization revealed well-designed coatings with the presence of TiN phase with incorporated Cu. The release of Ni was the lowest regarding TiN-Cu-nanocoated archwires ( $p < 0.05$ ) and increased in acidic conditions, while the release of Ti was constant. Contrary, the release of Cu was higher in neutral conditions and decreased during the observation time ( $p < 0.05$ ). The cytotoxicity was the lowest in 28-day eluates of TiN-Cu-nanocoated archwires ( $p < 0.05$ ). The coating inhibited the adhesion and growth of bacteria such as *Streptococcus mitis* and *Streptococcus mutans* ( $p < 0.05$ ). **Conclusion:** Taking into account the results of cytotoxicity test and biofilm formation, TiN-Cu-nanocoated archwires may be considered as a good candidate for further clinical investigations.

**Keywords:** antibacterial activity, orthodontic archwires, *Streptococcus mutans*, nanocoatings

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**[OP-076]**

**Exploring Tooth Size Discrepancies in Patients with Mild Hypodontia Through 3D Intraoral Scan**

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**Objective:** The aim of this study was to compare tooth size between patients with mild hypodontia and a control group. **Materials-Methods:** In the study, 7 female patients (aged 8-32) with mild hypodontia (congenitally missing  $\leq 2$  teeth) were compared with 7 age- and gender-matched controls (aged 10-31). The patients' teeth were scanned using a 3D scanner (Itero Scanner, California, United States) to measure tooth dimensions. Tooth size was determined by measuring the mesiodistal dimensions of all fully erupted teeth using the 3D Builder Program (Microsoft Corporation, Washington, United States). The distance between the contact areas was measured as the widest diameter of all teeth. Statistical analysis was performed using SPSS version 21.0 software (IBM, Chicago, Illinois, USA). Descriptive analyses of numerical variables were calculated as mean and standard deviation. Student's T test or Mann Whitney U test was used to compare numerical data between the two groups based on normality analysis. Values equal to or less than 0.05 ( $p \leq 0.05$ ) were considered statistically significant. **Results:** The mean age of the study group is 17.3 years, while the control group has a mean age of 18.1 years, and this difference is not statistically significant. The mean mesiodistal dimensions of teeth 31, 41, and 16 in the study group are less than those in the control group, with differences of 5.6%, 4.6%, and 4.5% respectively. This is followed by teeth number 46, 14, and 24 with rates of 3.7%, 3.7%, and 3.2%, respectively. However, there is no statistically significant difference between the groups. **Conclusion:** Tooth number and size anomalies are developmental anomalies that occur under the joint influence of genetic and environmental factors. When one anomaly occurs, it should be expected to pave the way for another.

**Keywords:** Hypodontia, Tooth Size, Dimensions, 3D Scanner



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**[OP-077]**

**Association between Maxillary Sinus Mucous Thickness and Molar Periodontal Status**

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**Objective::** This study aimed to explore the effect of maxillary molar periodontal status on sinus mucosal thickening using cone-beam computed tomography (CBCT).

**Materials-Methods::** One hundred CBCT images were evaluated for the following parameters: age, sex, interdental bone loss (IBL), maximum mucosal thickness (maxMT), minimum residual alveolar bone height (minRABH), furcation involvement and the relationship between the maxillary sinus and the root apices of the posterior teeth. The presence of mucosal thickening (maxMT > 2 mm) of the maxillary sinus was recorded. The parameters that could influence the dimensions of the maxillary sinus membrane were assessed. The data were analyzed using independent sample t-test, one way ANOVA, Bonferroni multiple comparison and Chi-square tests with the significant level at  $\alpha = 0.05$ .

**Results:** Mucosal thickening was present in 40% of the analyzed CBCT images and increased in frequency as the periodontal status of the corresponding molar progressed from no bone loss (0%) to mild (15%) to moderate (47.5%) to severe (37.5). Results of Chi-square test determined that IBL loss, minRABH, and furcation involvement had a statistically significant influence on maximum mucosal thickness ( $P < 0.05$ ).

**Conclusion::** IBL, minRABH and furcation involvement were significantly associated with mucosal thickening of the maxillary sinus.

**Keywords:** cone-beam computed tomography, molars, mucosal thickening, periodontitis





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### [OP-078]

#### Minimally invasive approach in the surgical treatment of intraosseous defects

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**Objective:** Deep intraosseous defects are associated with deep pockets. They are at high risk of further progression and if left untreated lead to tooth loss. Flap techniques have evolved over the years. Initially, they were combined using bone and membrane based on the concept of guided tissue regeneration, and today they are minimally invasive, membranes are used very rarely, and they have been replaced by biological mediators. The goals of minimally invasive periodontal regeneration are: reducing the depth of the periodontal pocket, obtaining new bone and new clinical attachment, and minimizing gingival recession.

**Case:** Our case represents a “combined” bone defect. The patient is 35 years old, a smoker, less than 10 cigarettes a day, without systemic diseases. The diagnosis is periodontitis stage 3, grade C. After finishing the non-surgical therapy, we started the surgical regenerative therapy. The surgical technique utilizes small incisions and a limited access approach for treating the defect. From biomaterials we used Emdogain and Bio-Oss. 6 months after the treatment, we had an aesthetically excellent result. The depth of the defect has been reduced and new clinical attachment has been obtained. X-ray showed filling of the defect with a combination of xenograft particles and new bone tissue.

**Conclusion:** Minimally Invasive Surgical Approach focuses on the conservative elevation of both buccal and lingual flaps of the defect-associated interdental papilla. The clinical improvements are associated with limited morbidity to the patient during the surgical procedure and in the post-operative period.

**Keywords:** periodontal regeneration, intraosseous defects, minimally invasive approach

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## [OP-079]

### Self reported oral health attitudes and behavior among a group of Turkish dental students

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**Objective:** The objective of this study was to evaluate the self-reported levels of knowledge, attitudes, and behaviors about oral health among a group of Turkish dental students. Additionally, the study aimed to analyze the variations in these attitudes and behaviors based on factors such as dental education level, gender, and socioeconomic status.

**Materials-Methods:** A self-administered questionnaire was developed, based on the Turkish version of the Hiroshima University Dental Behavioral Inventory (HU-DBI). The questionnaire was distributed to a sample of 375 dental students. A total of 333 students (237 preclinical (1, 2 and 3rd years of study) and 96 clinical (4 and 5th years of study)) consented to participate in the questionnaire. Participants were able to provide dichotomous responses (agree/disagree) to a set of 20 items from the HU-DBI. The highest possible score that could be obtained was 12. The researchers conducted a statistical evaluation to estimate the oral health behavior and attitudes of the study groups. This calculation was based on the total number of correct oral health answers for each item. The IBM SPSS (statistical package for social sciences) Statistics version 22 was used for data analysis.

**Results:** The HU-DBI score of clinical students ( $6.83 \pm 1.36$ ) was significantly ( $P=0.01$ ) higher than preclinical students ( $5.85 \pm 1.53$ ). When the mean values were analyzed, it was found that women ( $6.31 \pm 1.54$ ) had higher oral health scores than men ( $5.84 \pm 1.53$ ) ( $p < 0.05$ ). HU-DBI values do not show a statistically significant difference according to socioeconomic level ( $p=0.88$ ). The study found that the prevalence of smoking among the participants was 18.92%. Furthermore, the students who smoked 10-20 cigarettes per day had a substantially poorer attitude-index score ( $p = 0.02$ ) compared to their non-smoking peers. The findings of the study indicate that preclinical students exhibit a higher tendency compared to clinical students to delay dental visits until experiencing toothaches. Additionally, preclinical students receive comparatively less guidance from their dentists regarding proper brushing techniques and receive less positive reinforcement for their brushing habits, in contrast to clinical students. According to the findings, approximately 38.7% of dental students expressed concern regarding the coloration of their teeth, while around 16.5% of them reported experiencing bleeding gingiva subsequent to brushing. The consequence of the current study indicated that 23.4% of the students concerned that their teeth are getting poorer despite day-to-day brushing.

**Conclusion:** This study has provided confirmation that there is a positive correlation between the level of education and the improvement of oral and dental health behavior, attitudes, and knowledge among dental students. Additionally, it has been observed that female students tend to exhibit better oral and dental health care practices compared to their male counterparts. Furthermore, non-smokers tend to possess more favorable attitudes towards oral health compared to smokers. The study's findings highlight the poor oral health habits exhibited by dental students in Turkey. It is imperative to implement comprehensive programs that focus on enhancing their personal dental hygiene practices and developing preventative oral health knowledge prior to the beginning of dental education.

**Keywords:** dental education, dental students, Hiroshima University Dental Behavioural Inventory, oral health

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**[OP-080]**

**Immunohistochemical Evaluation of the Effect of Vitamin K2 Supplementation on Regeneration of Calvarial Bone Defects in Rats**

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**Objective:** In this study it was aimed to evaluate histolochemically the effect of orally administered vitamin K2 on guided bone regeneration in rats.

**Materials-Methods:** The 12 adult male Sprague-Dawley rats used to create two calvarial critical size bone defect; the left defects were left blank (B defect), the right defects were treated with a bovine bone graft and collagen based resorbable membrane (GM defect). After surgery, rats were randomly divided into two groups; the first group (Control Group) was given distilled water, and the second group (Test Group) was given 30 mg /kg vitamin MK-7 K2 once a day by gavage for 8 weeks. At the end of 8 weeks, the rats were sacrificed. Tissue samples were stained immunohistochemically. Osteocalcin expression was evaluated immunohistochemically using the ImageJ Fiji software program. Statistical analyzes of the data were evaluated in the GraphPad Prism program. Statistical significance was accepted as  $p < 0.05$ .

**Results:** Osteocalcin was higher in GM defects than in B defects ( $p < 0.0001$ ) and higher in test group than the control ( $p < 0.05$ ).

**Conclusion:** The results of this study suggested that orally administered vitamin K2 following guided bone regeneration increases the osteocalcin level in critical sized calvarial defects of rats.

**Keywords:** Bone Regeneration, Rats, Vitamin K2

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**[OP-081]**

**Comparison of conventional and modified sling suture techniques in FGG operations with cairo type 2 and type 3 localized gingival recessions**

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**Objective:**

The aim of this study is to investigate the effects of conventional suture (CS) and modified sling suture (MSS) techniques, applied in free gingival graft (FGG) surgery using gingival unit graft (GUG) and conventional graft (CG) techniques, on clinical parameters and graft sizes. Materials-Methods:

52 individuals having CAIRO Type 2 (RT2) and Type 3 (RT3) gingival recessions in their mandibular anterior region were divided into four groups as a) GUG+MSS (n=13), b) GUG+CS (n=13), c) CG+MSS (n=13) and d) CG+CS (n=13). Keratinized gingival width (KGW), keratinized gingival thickness (KGT), relative gingival recession height (rGRH), and relative vestibule depth (rVD) measurements recorded using a digital caliper and UNC 15 periodontal probe. Dimensional changes of the graft determined by measuring the surface area (GSA) of the graft during the healing period using ImageJ software. All measurements were repeated at baseline, 1 and 3 months. Results:

It was determined that the increase in KGW in the 1st and 3rd month compared to the baseline in GUG+CS group was significantly higher than GUG+MSS group ( $p<0.05$ ). Baseline KGT was significantly higher in the GUG+MSS group compared to the CG+MSS and CG+CS groups ( $p<0.05$ ), on the other hand, the change ( $\Delta$ ) in the KGT levels in the evaluated time periods was not statistically significant between the groups ( $p>0.05$ ). When  $\Delta$ GSA (mm<sup>2</sup>) and  $\Delta$ GSR (%) values were compared between the groups, it was determined that the amount of decrease in the 1st and 3rd month compared to baseline in the KG+MAS group was found to be significantly higher than the GUG+MSS and GUG+CS groups ( $p<0.05$ ).

**Conclusion:**

Within the limits of this study, it can be concluded that keratinized gingiva can be obtained successfully with both GUG or CG techniques in FGG surgery, on the other hand, regardless of the suture technique used, the graft obtained with the GUG technique showed less dimensional graft shrinkage.

**Keywords:** Free gingival graft, Gingival unit graft, Modified sling suture, Shrinkage





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### [OP-082]

#### Evaluation of Salivary MMP Levels in Periodontitis Patients with Uncontrolled Diabetes

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**Objective:** Type 2 diabetes mellitus (T2DM) and periodontitis are both characterized as chronic inflammatory disorders that have a mutually influential association. The dysregulation of glucose levels in individuals with T2DM has a significant impact on the pathophysiology and equilibrium of inflammatory mediators. Multiple mediators are produced throughout the inflammatory cascade of periodontitis and T2DM, including matrix metalloproteinases (MMPs). Extensive research has been conducted to investigate the role of certain collagenases in the etiology of periodontal diseases due to their potential as a reliable biomarker for the identification of periodontitis in oral fluids. Objective of this study was to determine if the levels of MMP-3, -8, -9 are attributed to grade III periodontitis patients with uncontrolled T2DM. **Materials-Methods:** Non-smoker 75 individuals with Grade III periodontitis were recruited and were divided into three groups according to the stages of their periodontal status. 75 systemically healthy individuals without periodontitis were served as control. Periodontal clinical metrics, plaque score, gingival bleeding index, probing pocket depth, and clinical attachment level, for each participant were recorded. Blood and whole saliva samples (WSS) were obtained from every participant. Hemoglobin A1c (HbA1c) levels were determined using blood samples, whereas levels of MMP-3, -8, -9 were determined using WSS. Levels of MMPs were assessed using an enzyme-linked immunosorbent assay (ELISA) method. Statistical analysis of the mean difference between the groups regarding MMP levels was conducted using a Kruskal-Wallis one-way ANOVA with the Mann-Whitney U test, while independent was used for the assessment of HbA1c and periodontal clinical metrics.  $p < 0,05$  was accepted as statistically significant. **Results:** Overall MMP levels and clinical periodontal scores of the grade III periodontitis patients were significantly higher than healthy individuals ( $p < 0,01$ ). Grade III Stage C periodontitis patients had severely increased MMP-3, -8, -9 levels ( $196,2 \pm 2,8$ ;  $292,9 \pm 1,9$ ;  $128,6 \pm 3,5$  ng/mL, respectively) in comparison to healthy participants ( $5,2 \pm 2,3$ ;  $4,3 \pm 3,1$ ;  $6,1 \pm 2,5$  ng/mL, respectively) ( $p < 0,01$ ). Likewise, MMP-3, -8, -9 levels of the grade III stage C patients were higher than the grade III stage A patients ( $76 \pm 4,3$ ;  $98 \pm 1,6$ ;  $80 \pm 3,4$  ng/mL, respectively) ( $p < 0,001$ ). No significant difference was found when Grade III Stage C and B patients were compared regarding the levels of MMP-3 and -9 ( $p > 0,05$ ). However, the MMP-8 levels of patients in Grade III Stage C were found to be significantly higher compared to those in Grade III Stage B ( $186 \pm 2,4$  ng/mL) ( $p < 0,05$ ). **Conclusion:** Notable clinical changes were observed in the periodontal tissue of T2DM individuals with poorly managed blood sugar levels. These changes include a reduction in gingival redness, an increase in clinical attachment loss, gingival bleeding and elevated levels of MMP-3, -8, and -9. Findings of our investigation indicate a potential association between T2DM and increased levels of MMP-3, -8, and -9, which may contribute to the progression of periodontal tissue degradation. In the limitations of our study, MMP-8 exhibited more sensitivity as a marker for periodontal inflammation among the other MMPs that were investigated in this study.

**Keywords:** Periodontal disease, Matrix Metalloproteinase, Diabetes Mellitus, Saliva, Biomarker



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### [OP-083]

#### Inflammatory stress and periodontal tissue destruction in patients with metabolic syndrome and periodontitis

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**Objective:** Metabolic syndrome (MetS) and periodontitis are diseases that lower the quality of life and their incidence rates are increasing. Since both of these diseases are associated with systemic inflammation and insulin resistance, they may be comorbid. The aim of this study was to evaluate the effect of interleukin-20 (IL-20) on periodontal destruction in individuals with MetS. **Materials-Methods:** A total of 20 individuals with systemically and periodontally healthy, 20 individuals with systemically healthy and periodontitis, 20 individuals with MetS and periodontally healthy, 20 individuals with MetS and periodontitis were enrolled in the present study. Gingival crevicular fluid (GCF) and serum samples were collected from all participants for biochemical analyses. IL-20, receptor activator of nuclear factor kappa B ligand (RANKL) and osteoprotegerin (OPG), total oxidant status (TOS) and total antioxidant status (TAS), matrix metalloproteinase-8 (MMP-8) levels were measured in the GCF and serum samples. For statistical analysis, the Kruskal-Wallis H test, post hoc test with Bonferroni correction, Spearman analysis, and chi-square test were used. **Results:** GCF and serum IL-20 levels were highest in individuals with MetS and periodontitis ( $p=0.001$ ). There were a significant positive correlations between GCF and serum IL-20 values and periodontal parameters ( $p<0.01$ ). RANKL and RANKL/OPG levels increased in the presence of periodontitis ( $p=0.001$ ) and were positively correlated with IL-20 and clinical parameters ( $p<0.01$ ). Oxidative stress index values were increased in both periodontitis and MetS ( $p=0.001$ ) and were positively correlated with GCF IL-20 ( $p<0.05$ ) and serum IL-20 ( $p<0.01$ ). **Conclusion:** IL-20 was found to be associated with both periodontitis and MetS. We suggest that IL-20 may aggravate osseous destruction by both affecting the RANKL/OPG ratio and increasing oxidative stress

**Keywords:** gingival crevicular fluid, interleukin-20, metabolic syndrome, oxidative stress, periodontitis



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### [OP-084]

#### **Assesment of changes in clinical and radiographic parameters following the application of local hyaluronic acid gel as an adjunct to minimally invasive non-surgical treatment of intraosseous defects**

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**Objective:** Recently, Minimally invasive non-surgical treatment (MINST) has emerged as a prominent approach for the treatment of intraosseous defects. Hyaluronic acid (HA) plays an important role in inflammation and wound healing mechanisms. Furthermore, it has been reported as having clinically positive effects regarding periodontal tissue regeneration and treatment of periodontal disease. The aim of this study is to evaluate the clinical and radiographic effects of HA gel application as an adjunct to MINST in Stage III/IV periodontitis patients with intraosseous defects > 3mm.

**Materials-Methods:** A total of 36 patients were included in the study and randomly divided into two groups: a) MINST +HA (test; n=17) and b) MINST (control; n=19). Following supragingival debridement, subgingival application of 0,8 % HA gel was performed in the test group in addition to MINST treatment in the intraosseous defect areas. HA application was repeated at the 4th week after treatment.

**Clinical measurements;** probing pocket depth (PPD), clinical attachment level (CAL), gingival recession (GR), bleeding on probing (BOP), and plaque (P) measurements at the intraosseous defect area were recorded at baseline, 3rd months, and 6th months. Radiographic measurements; total defect depth (TDD), intrabony defect depth (INFRA) and defect angle were made at baseline and 6th months.

**Results:** In the study population, there was a significant decrease in the clinical parameters of PPD, CAL, BOP, and P (%) at 3 and 6 months compared to baseline in both the test and control groups ( $p < 0.05$ ). When the changes in clinical parameters were compared between the groups, it was found that the test group had a significantly greater reduction in PPD and CAL values at 3 months compared to baseline ( $p < 0.05$ ). However, there was no significant difference between the groups when the changes at 6 months were compared to baseline between the groups ( $p > 0.05$ ). The test group showed less increase in GR measurements at 3rd and 6th months compared to baseline ( $p < 0.05$ ). In both the test and control groups, there was a significant decrease in TDD, INFRA measurements at 6 months compared to baseline ( $p < 0.05$ ). On the other hand, there was a significant increase in intraosseous defect angle measurements in both groups ( $p < 0.05$ ). However, there was no statistically significant difference in the changes between the groups during the evaluated time intervals ( $p > 0.05$ ).

**Conclusion:** Within the limitations of our study, it was concluded that the additional use of 0,8% HA gel in the treatment of intraosseous defects resulted in positive improvements in clinical periodontal parameters. Therefore, it can be suggested that subgingival application of 0,8% HA gel as an adjunct to the MINST procedure can be utilized, especially for intraosseous defects where gingival recession is expected.

**Keywords:** Minimally invasive, nonsurgical periodontal debridements, periodontitis, alveolar bone loss, hyaluronic acid



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### [OP-086]

#### Shear bond strength evaluation of self adhesive resin cement to resin materials produced by additive and subtractive methods after different sandblasting protocols and surface pretreatments

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**Objective:** In digital dentistry, additive methods as an alternative to subtractive methods are developing rapidly. Permanent resin crown materials are now available on the market for additive manufacturing. Surface pretreatment protocols need more investigations to get strong adhesive interface. In the research, it is aimed to compare different sandblasting protocols with different surface pretreatments on different permanent resin crown materials produced with different methods in terms of shear bond strength.

**Materials-Methods:** Permanent resin crown materials were selected as VarseoSmile Crown Plus (BEGO, Bremen, Germany) and Cerasmart270 blocks (GC Corp, Tokyo, Japan), produced by additive and subtractive methods respectively. 140 samples were prepared as 6x7x2 mm rectangular plates, grinded and polished with 600-800-1200 grid abrasive papers. Seven subgroups from each material (n=10) were formed according to different surface pretreatments as sandblasting (50µm Al<sub>2</sub>O<sub>3</sub>, 1.5 bar, 10 mm distance), hydrofluoric acid (HF) application (Porcelain Etch Gel 9.6% hydrofluoric acid, Pulpdent Corp. Watertown, MA), Multi Primer (MP) application (containing silane, MDP and MDTP)(G-Multi Primer, GC Corp, Tokyo, Japan), sandblasting+HF, sandblasting+MP, sandblasting+HF+MP and control subgroup which was left untreated. After the surface pretreatment applications, self adhesive resin cement Rely X U200 (3M Deutschland GmbH, Germany) was applied onto each sample and 3 mm diameter of composite (Filtek<sup>TM</sup> Z250, 3M Deutschland GmbH, Germany) was bonded onto that surface. After light curing, all samples were exposed to thermocycling from 5 to 55 degrees celsius with 5000 cycles. After thermocycling, shear bond strength test was applied to all samples with universal testing machine (Model 3345, Instron Corp., Norwood, MA). Then, all materials were inspected with a stereomicroscope (OPMI pico, Zeiss, Oberkochen, Germany) and a scanning electron microscope in order to observe the type of failure whether it was adhesive, cohesive or mixed thoroughly. Data were tested for normality with Shapiro-Wilk test. For statistical analysis, 2-way ANOVA and Tukey HSD test were used for shear bond strength, and Fisher-Freeman-Halton test and Fisher's Exact test were used for the mode of failure (p<0.05).

**Results:** Mean shear bond strength value of VarseoSmile Crown Plus (23,44 MPa) was higher than Cerasmart270 (16,37 MPa) (p<0.001). The difference between the VarseoSmile Crown Plus control subgroup (17,41±1,89) and Cerasmart270 control subgroup (8,29±1,97) was statistically significant (p<0.001). There is no statistically significant difference between the shear bond strength values of VarseoSmile Crown Plus's sandblasting+HF+MP subgroup, HF subgroup, sandblasting+MP subgroup and MP subgroup (p>0.05), and these four subgroups exhibited the highest shear bond strength values among all subgroups (p<0.001). VarseoSmile Crown Plus sandblasting+HF+MP subgroup had significantly higher shear bond strength value (28,76±3,11) compared to Cerasmart270 sandblasting+HF+MP subgroup (23,62±2,33) (p=0.001). While VarseoSmile Crown Plus exhibited mostly cohesive failure, Cerasmart270 exhibited mostly adhesive failure except sandblasting subgroup and sandblasting+MP subgroup.



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**Conclusions:** Additively produced permanent resin crown material exhibited higher shear bond strength and mostly cohesive failure compared to subtractively produced permanent resin crown material which showed mostly adhesive failure after different sandblasting protocols and surface pretreatments. Differences may be explained by the different production techniques and microstructures of these materials.

**Keywords:** permanent resin crown, additive and subtractive production, self adhesive resin cement, surface pretreatment, shear bond strength



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### [OP-087]

#### Three-dimensional accuracy comparison of digital intraoral scanners produced with different scanning technologies and conventional implant measurement method in full-arch edentulous mandible

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#### Objective:

The integration of digital impressions within dental practice is rapidly advancing, The optimal parameter selection for digital measurement accuracy is a focal point in studies, although the range of scanning devices available remains limited. However, scanning devices specifically designed for dental applications employ various scanning technologies. Among these, the most commonly used ones are triangular scanning and parallel confocal microscopy scanning technologies. There is no existing study in the literature that compares the success of intraoral scanners produced using different technologies for complete arch implant measurements.

The overarching objective of this study is to assess the trueness and precision of intraoral scanners produced using different scanning technologies in comparison to the conventional method for implant-supported prosthetic treatments.

#### Materials-Methods:

To create an implanted lower jaw model that doesn't represent an ideal clinical scenario, six implants (Straumann 4.1 mm Bone Level, Basel, Switzerland) were placed in the polyurethane fully edentulous mandible model. Two distally tilted implants were placed in the former region of the first molars with a 30-degree angulation. Two mesial tilted implants were placed in the former region of the first premolars with a 15-degree angulation. Two parallel implants were placed in the former area of the second incisors. Six Straumann scan bodies (CARES Mono Scan body for screw-retained abutment; Institute Straumann AG), made entirely of PEEK material and designed to fit directly into the implant, were hand-screwed to the implants to facilitate digital scans. The positions of the scan bodies on the x-, y-, and z-axes were measured using a coordinate measuring machine (CMM) (CMM Contura G2 10/16/06 RDS; Carl Zeiss Industrielle Mess Technik GmbH). The polyurethane reference model was scanned ten times using four different intraoral scanners available in the market (3Shape Trios4, Planmeca EmeraldS, Itero Element 5D, 3Disc Heron), and digital data were generated following the manufacturer's recommendations. All digital data were registered in a virtual environment using a reverse engineering program (Geomagic Control X, Geomagic, USA), and center points of scan bodies were determined.

#### Results:

The statistical analyses were performed using the SPSS version 23 software package. The normality of the variables was assessed through histograms and analytical methods (Kolmogorov-Smirnov / Shapiro-Wilk tests). Descriptive variables that exhibited a normal distribution were presented using mean and standard deviation. The results were determined to adhere to a normal distribution. These parameters were compared employing a one-way ANOVA test. The equality of variances was assessed through the Levene test. Subsequently, pairwise post-hoc comparisons among groups were conducted utilizing the Tukey test. A significance level of 5% was adopted for statistical significance.

#### Conclusion:

The results of this study indicate that, in fully edentulous mandibles, devices utilizing the scanning technique of parallel confocal microscopy (3Shape Trios4, Itero Element 5D) were found to be more successful in terms of precision and accuracy in obtaining impressions for implant-supported prostheses compared to devices employing the triangulation method (Planmeca EmeraldS, 3Disc Heron).

**Keywords:** intraoral scanners, accuracy, digital impression

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**[OP-088]**

**Ti-Bar Monolithic Zirconia All-On-Four Hybrid Prostheses: Case Series**

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**Objective:** This study aims to examine the technical and clinical aspects of using Ti-Bar and monolithic zirconia in the restoration of all-on-four implant prostheses. Prostheses with the all-on-four concept, which have been used for a long time to improve the quality of life for edentulous patients, are manufactured using different restorative materials. Among these materials, options such as metal-acrylic resin, metal-composite resin, and PEEK-ceramic have reached popularity.

However, in all-on-four implant superstructure applications that use acrylic teeth, problems like wear and fracture can occur over time. Therefore, intraoral or extraoral methods can be used to repair the acrylic superstructure or repair broken parts. Due to the high number of complications occurring in acrylic superstructures and the frequent reporting of these complications in the literature, the use of materials with high durability, such as monolithic zirconium dioxide, has increased in recent years, especially with advances in digital manufacturing.

**Case:** Six patients who previously used all-on-four hybrid acrylic prostheses presented to our clinic with complaints of prosthetic fracture, acrylic teeth falling out, and esthetic concerns. Prostheses were designed for these patients with a Titanium (Ti-6Al-4V) substructure produced by milling and an upper structure made from zirconia (3Y-TZP) monoblock. Subsequently, hybrid prostheses were produced after the substructure and upper structure were cemented in a laboratory environment using an MDP-containing adhesive cement. It has been observed that the new prostheses tend to cause fewer problems compared to the fracture and wear problems of acrylic superstructured prostheses and also increase the overall aesthetic satisfaction of the patients. This new method can be recommended as an alternative for prostheses restored with the all-on-four concept.

**Conclusion:** Ti-Bar monolithic zirconia all-on-four Hybrid Prostheses are a new alternative method that provides successful results in terms of aesthetics and functionality in clinical practice. Long-term follow-up studies are needed to draw definitive conclusions.

**Keywords:** all-on-four, ti-bar, zirconia



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### [OP-089]

#### Effect of different marginal finish lines and marginal thickness on the fracture resistance of zirconium reinforced lithium silicate glass ceramic crowns

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**Objective:** The aim of this study is to investigate the fracture resistance of zirconia reinforced lithium silicate glass ceramic (ZLS) crowns with different marginal finish lines and marginal thickness. **Materials-Methods:** The dies representing the prepared mandibular first molar tooth with a flat occlusal (non-anatomical) surface at 6 mm crown length and 6° taper angle, from which the specimens will be obtained, were prepared in the CAD/CAM milling unit to provide standardization. Specimens were separated into 8 groups as different marginal finish lines and marginal thickness. In the first group; 1 mm 135 ° shoulder finish line, in the second group; 1 mm 90 ° shoulder finish line, in the third group; 1 mm chamfer finish line, in the fourth group; 1 mm deep chamfer finish line, in the fifth group; 0,5 mm 135 ° shoulder finish line, sixth in the group; 0,5 mm 90 ° shoulder finish line, in the seventh group; 0,5 mm chamfer finish line, in the eighth group; 0,5 mm deep chamfer finish line. A total of 88 epoxy resin die models were obtained, 11 for each group, using silicone molds from these prepared dies. ZLS crowns were cemented with resin cement onto an epoxy resin die. The specimens thermocycled at 5-55 °C for 5000 cycles and then the fracture resistance test was performed with 1 mm/sec load speed by universal testing machine. Fractured specimens are grouped according to Burke classification fracture types. The fractured surfaces were examined in SEM (Scanning Electron Microscopy). The data were statistically evaluated using the Shapiro-Wilk, Oneway Anova tests. **Results:** Statistically significant difference was found between the groups ( $p=0,002$ ;  $p<0.05$ ). According to the data obtained in our study, ZLS crowns prepared as 1 mm chamfer finish line ( $1749.88\pm327.69$  N) had the highest fracture strength values and ZLS crowns prepared as 0.5 mm 90° shoulder finish line ( $1030.91\pm432.84$  N) had the lowest fracture strength values. **Conclusion:** It was concluded that different marginal finish lines and marginal thickness affect the fracture strength of ZLS crowns, 1 mm chamfer finish line design increases the fracture resistance of ZLS crowns.

**Keywords:** Chamfer finish line, Shoulder finish line, Fracture resistance, Zirconia-reinforced lithium silicate (ZLS)



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[OP-091]

**Effect of home bleaching on the color differences of polished and glazed CAD-CAM produced monolithic ceramics**

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**Objective:** The objective of this study was to evaluate the color differences of mechanically polished and glazed CAD-CAM produced monolithic ceramics after home bleaching. **Materials-Methods:** In this study; three different CAD-CAM ceramics (monolithic zirconia, lithium disilicate, and zirconia-reinforced lithium silicate) were used. Specimen dimensions were 14x12x1 mm and they were divided into two subgroups as mechanical polishing and glazing (n=8). Mechanical polishing was applied to measuring surface of each specimen for 3 minutes using a ceramic polishing kit. Recommended amounts of glaze powder and liquid were mixed homogeneously and a thin layer of glaze material was applied to the measuring surface of the specimens. Afterwards, home bleaching agent containing 16% carbamide peroxide was applied onto the specimen surfaces in the form of a thin gel layer for 14 days (4 hours daily). The color parameters of the specimens were measured under D65 measurement conditions before and after the bleaching agent application and recorded. The color difference values were calculated with two different formulas as  $\Delta E_{00}$  and  $\Delta E_{ab}$ . Results were analyzed using two-way ANOVA and Tukey multiple comparison tests. Statistical significance level was taken as  $P < 0.05$ . **Results:** According to the two-way ANOVA results, it was determined that different material and surface treatment factors were effective on  $\Delta E_{00}$  and  $\Delta E_{ab}$  values and there was an interaction between the factors ( $P < 0.05$ ). For the mechanical polishing groups, although the highest  $\Delta E_{00}$  and  $\Delta E_{ab}$  values were found in the monolithic zirconia; there was no statistically significant difference between the color change values of the materials ( $P > 0.05$ ). However, among the glazed groups, the lithium disilicate group had a higher  $\Delta E_{00}$  value. For each material type, it was determined that the applied surface finishing treatment did not result into a statistically significant difference ( $P > 0.05$ ). While mechanical polishing or glazing (surface finishing method) did not cause a significant difference in the  $\Delta E_{ab}$  values for zirconia-reinforced lithium silicate and lithium disilicate groups; it was determined that the  $\Delta E_{ab}$  value was significantly lower in the glazed monolithic zirconia group than in the mechanically polished monolithic zirconia group ( $P < 0.05$ ). **Conclusion:** When the  $\Delta E_{00}$  and  $\Delta E_{ab}$  values of the experimental groups were compared with the perceptibility and acceptability thresholds, it was determined that both color difference values were below the perceptible threshold values ( $< 0.8$  and  $1.2$ ) in all experimental groups. However, it should be taken into consideration that color difference values may increase with repeated bleaching applications.

**Keywords:** CAD-CAM, Ceramics, Color difference, Home-bleaching

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[OP-092]

**Potential use of ChatGPT as an interactive self-educational tool in prosthodontics**

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**Objective:** ChatGPT (GPT-3.5) is a large language model developed by OpenAI, and it is based on the generative pre-trained transformer (GPT) architecture. It is designed to generate human-like text and engage in natural language conversations. Although ChatGPT can be used in many fields such as productive writing, information retrieval, health and medicine, its competencies in prosthodontic education have not been evaluated. Therefore, this study aimed to assess ChatGPT as an interactive self-educational tool in prosthodontics.

**Materials-Methods:** In this study, ChatGPT was questioned on seven topics of prosthodontics consisting of occlusion, temporomandibular joint disorders, materials science, fixed prostheses, removable dentures, implant-supported prostheses and dental anatomy. A total of 105 prosthesis questions were asked to ChatGPT, including 5 fill-in-the-blank, 5 multiple-choice, and 5 open-ended questions in each topic. The accuracy of ChatGPT's answers was evaluated in percentage terms.

**Results:** When all questions were evaluated, ChatGPT provided correct responses for 49% of fill-in-the-blank queries and 43% of multiple-choice and open-ended questions. When compared in terms of topics, the highest correct response rate was observed in temporomandibular joint disorders (67%) and the lowest correct response rate was observed in occlusion (13%) followed by fixed prostheses (33%) and implant-supported prostheses (40%). Correct response rate of the other topics was 53%.

**Conclusion:** ChatGPT's ability to provide correct answers for prosthodontic questions was promising but limited. Therefore, students should not exclusively depend on this large language model; instead, they should also seek guidance from current and trustworthy sources like textbooks, dental journals and scientific databases. However, through integration with databases such as PubMed, ScienceDirect, and ClinicalKey, ChatGPT has the potential to enhance its capability to provide more accurate information to students and customize their learning experiences to meet their individual needs in the future.

**Keywords:** ChatGPT, dental education, prosthesis



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### [OP-093]

#### Prosthetic rehabilitation of patients with amelogenesis imperfecta and cleft lip and palate: a case series

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**Objective:** Anterior ridge defects as a result of trauma or congenital abnormalities of cleft palate require complex treatment procedures of hard and soft tissue augmentation prior to the prosthetic rehabilitation. When treating cleft lip and palate patients, the Andrews bridge permits rehabilitation with a fixed-removable partial denture when conventional methods are contra-indicated. This system permits the replacement of the lost teeth as well as supportive structures necessary for proper aesthetics. Andrews' bridge is an efficacious fixed removable treatment modality for edentulous areas with large vertical defects. It can restore aesthetics, speech and function successfully along with complete closure of the defect. Besides, various treatment options are offered for the treatment of genetic disorders and diseases to prevent malfunction of the masticatory system and an unaesthetic appearance. Amelogenesis imperfecta (AI) is defined as an interruption of enamel formation due to genetic inheritance. The aim of this case reports is to demonstrate prosthetic rehabilitation of a cleft lip and palate and an AI patient.

**Case:** A 17-year-old female patient presented with chief complaints that included dissatisfaction with tooth size, shape, and shade, along with poor chewing function. She was presented with discolored and deformed teeth, missing teeth, anterior open bite, and posterior short crowns. The patient in our AI cases showed huge discoloration in permanent dentition in the upper and lower jaws. At this point, gingivectomy and gingivoplasty were performed to adjust the height of the cervical line. Prosthetic treatment included full mouth preparation to receive laser-sintered restorations. Full mouth metal-ceramic FPDs were preferred to improve the occlusion and esthetics. A 36-year-old male patient referred to department of prosthodontics in Selcuk University for rehabilitation of his upper jaw. Patient gives a history of cleft lip and palate and got surgically treated at his young age. Due to the anterior partially edentulous area, a mixture of permanent and removable prostheses, such as the Andrew bridge, were used during treatment planning. Andrew's bridge repairs orofacial features by replacing natural teeth and supporting tissues that have been removed. Prosthetic treatment included upper and lower jaw teeth preparations to receive laser-sintered restorations and anterior metal bar framework with stud attachments. Anterior removable denture consisted of metal housing with plastic clip placed on the bar.

**Conclusion:** Rehabilitating a patient with AI or cleft lip and palate is challenging from both functional and aesthetic point of view. Prosthodontic treatments with careful consideration of patient expectations and requests, were critical for a successful outcome and patient satisfaction. The complexity of these diseases requires an interdisciplinary approach to achieve optimal treatment results. Prosthetic replacement in such patients is an age specific speciality treatment involving fixed, complete or partial dentures and implant-supported prosthesis. In the present cases, prosthetic rehabilitation was considered in order to provide satisfaction to the patient in terms of esthetics and function. Recall examinations were done periodically. The patients were satisfied by the results.

**Keywords:** andrew's bridge, cleft palate, fixed-removable prosthesis, syndrome



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### [OP-094]

#### Evaluation of Different At-Home Bleaching Systems on Color Stability of 3D Printed Crown Resin

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**Objective:** This study examined 3D printed crown resin material to assess color stability following exposure to various at-home bleaching agents.

**Materials-Methods:** Sixty square shaped specimens (A2 shaded) were prepared from permanent crown resin Saremco print CROWNTEC (Saremco Dental) using SLA technology. The specimens were randomly divided into three groups, each containing 20 specimens. The bleaching procedure was conducted using at-home bleaching agents: Opalescence (OPL), Whiteness Perfect (WP), and Potenza Bianco (PB), all containing 16% carbamide peroxide. Color measurements were conducted at two different time points. CIE L\*, a\*, b\* color parameters were recorded using a spectrophotometer. According to the Commission Internationale de l'Eclairage (CIE), the CIEDE2000 color differences ( $\Delta E_{00}$ ) were calculated for both the initial color and after bleaching. The data was analysed using One-way ANOVA to compare normally distributed data. To compare non-normally distributed data Kruskal Wallis and Wilcoxon test was used. **Results:** Bleaching procedures were found to be statistically significant and differs according to bleaching agents ( $p=0.001$ ). The highest color change values were determined in Group PB. Following the bleaching procedures, the application of PB bleaching agent resulted into a greater change in CIE L\* (lightness) compared to the other at-home bleaching agents used. There was no significant difference in CIE a\* and b\* color parameters between bleaching agents at any time period. **Conclusion:** 3D printed crown resin material exhibited changes in color. The color change was significant with PB at-home bleaching agent.  $\Delta E_{00}$  values for 3D printed crown resin after the bleaching procedures were within clinically acceptable values.

**Keywords:** Bleaching, 3D printed resin, color stability



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**[OP-095]**

**Evaluation of Water Sorption and Solubility of Digitally and Conventionally Produced Temporary Fixed Materials**

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**Objective:** The study aims to evaluate water sorption and solubility of conventional and digitally produced temporary fixed materials.

**Materials-Methods:** Disc-shaped samples (N=40) were created from two conventionally produced temporary fixed materials: bis-acrylic composite resin (Protemp 4-PT) and acrylic resin (Dentalon plus-DP) and two digitally produced [3D printing (MACK4D Temp-MT) and CAD/CAM milling (On Dent-OD)]. The prepared discs were dried in a desiccator until they reached a constant mass. They were weighed after one week of storage in distilled water at 37°C. The weights of the samples, which were again subjected to conditions similar the initial drying procedure, were measured. Water sorption and solubility values were calculated by formula. One-way analysis of variance (ANOVA) and the Tamhane or Tukey post hoc test ( $\alpha=.05$ ) were used to evaluate the data. **Results:** Water sorption values of the PT group ( $24.16 \pm 8.1 \mu\text{g}/\text{mm}^3$ ) were statistically higher than all other groups ( $p= 0.001$ ). However, the pairwise comparisons of the OD, MT, and DP groups did not reveal any differences that were statistically significant ( $p>0.05$ ). When the water solubility values were analyzed, DP group ( $0.49 \pm 2.01 \mu\text{g}/\text{mm}^3$ ) showed no significant difference with the PT group ( $1.69 \pm 2.2 \mu\text{g}/\text{mm}^3$ ) ( $p=0.402$ ), while they were higher than OD ( $-3.96 \pm 0.84 \mu\text{g}/\text{mm}^3$ ) and MT ( $-10.29 \pm 1.37 \mu\text{g}/\text{mm}^3$ ) groups. In addition, a significant difference was observed in the water solubility values of OD-MT groups ( $p<0.05$ ). **Conclusion:** All of test groups were found to be within the values recommended by ISO standards. It can be inferred that the PT material may cause the most staining.

**Keywords:** CAD/CAM, 3D printing, temporary fixed prostheses, water sorption, solubility

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**[OP-096]**

**Comparison of Accuracy and Precision in Bridge Restorations Using Different Milling Machines**

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**Objective:** The aim of this in vitro study is to evaluate the accuracy and precision of three-unit bridge restorations produced with different milling devices.

**Materials-Methods:** A dental model prepared for bridge restorations on the right first premolar and first molar teeth was used in this study. Reference scanning was performed using a laboratory-type scanner (inEos X5, Dentsply Sirona). A dental design program (DentalCAD 3.1 Rijeka; exocad GmbH) was used to design the bridge restoration, and this design was saved as a reference (R-STL). A total of 10 bridges were produced using R-STL data and polymethylmethacrylate blocks (Telio CAD LT A2 B55 [Ivoclar Vivadent, Liechtenstein]) with three different milling devices (Cerec MC XL [C-STL], Cerec Primemill [P-STL], inLab MC X5 [X-STL]). The produced restorations were scanned again with an intraoral scanner (Cerec Primescan, Dentsply Sirona), and these data were recorded (C-STL, P-STL, X-STL). Subsequently, these data were transferred to a three-dimensional analysis program (Geomagic Control X; v.2020.1, 3D Systems, NC, USA), and the production accuracy of the bridges was examined. The statistical analysis of the obtained data was conducted using one-way ANOVA, post-hoc Tukey test, and Shapiro-Wilk test ( $\alpha=0.05$ ).

**Results:** Significant differences were observed among groups in terms of RMS values for accuracy ( $p<0.001$ ), while there was no significant difference in the standard deviations of RMS values for precision ( $p=0.117$ ). The highest accuracy values were observed in X-STL (RMS=32), while the lowest accuracy values were in C-STL (RMS=44).

**Conclusion:** According to the findings, significant differences were found among different groups in terms of accuracy values ( $p<0.001$ ). However, no significant difference was observed in terms of precision values ( $p=0.117$ ). Based on the results obtained, it was observed that the inLab MC X5 device provided higher accuracy compared to other devices

**Keywords:** Accuracy, Cad/Cam, Digital, Milling, Precision

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**[OP-097]**

**Comparison of masseter and temporal muscles thickness in edentulous patient with and without prosthesis via ultrasonography**

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**Objective:** The aim of this study is compare to masseter muscle thickness (MMT) and temporal muscle thickness (TMT) in patients with dentate, edentulous, implant and natural tooth-supported fixed dentures using ultrasonography (USG).

**Materials-Methods:** Images of patients who had undergone USG and orthopantomography (OPG) for various purposes at Bolu Abant İzzet Baysal University Faculty of Dentistry Oral and Maxillofacial Radiology Clinic were used. By examining the OPG images of the patients in the USG archive, the patients were divided into 4 different groups: edentulous (Group 1), natural tooth-supported fixed prosthesis (Group 2), implant-supported fixed prosthesis (Group 3) and dentate (Group 4). MMT and TMT were measured as the distance between the two most distant fascias. Kruskal-Wallis, Post -Hoc and Ancova Model tests were used for data analysis

**Results:** It was observed that MMT and TMT in Group 4 were higher than in other groups. (  $p < 0.05$ ) and there was no significant difference between the Group 1, Group 2 and Group3. The mean age of Group 4 was found higher than the other groups, To exclude the effects of age on muscle thickness Ancova Model was used. There was no significant difference between Group 4, Group 3 and Group 2 in terms of MMT and TMT. MMT and TMT values in Group 1 were significantly lower than the other groups. (  $p < 0.05$ )

**Conclusion:** Although larger sample size is needed to confirm the results of the study, fixed prosthesis was found to have the same effects as teeth in preventing muscle atrophy.

**Keywords:** Masseter Muscle Thickness, Temporal Muscle Thickness, Ultrasonography, Prosthesis

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[OP-098]

**Prosthetic rehabilitation of a patient with rhabdomyosarcoma**

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**Objective:** Rhabdomyosarcoma (RMS) is the most common soft tissue sarcoma in childhood and is most frequently located in the head and neck. As the patient grew older, they developed facial asymmetry as a result of the prominent atrophy of their right cheek. The therapy for this condition is multiagent chemotherapy, radiation therapy, surgical resection or a combination of these modalities. Radiation therapy is an independent risk factor for adverse sequelae to the oral cavity and dentition in childhood cancer survivors. Chemoradiation can also impact the growth of soft and hard tissues in the affected areas and in the case of the head and face, cause facial and dental abnormalities. These anomalies become increasingly pronounced as patients grow older and can affect their quality of life. This case report presents a 21-year-old boy with oral and dental effects after rhabdomyosarcoma treatment, diagnosed at the age of 3 years old. This report highlights the key role of dentists in the clinical management of rhabdomyosarcoma cases before, during and after treatment, and its potential side effects.

**Case:** A 21- year-old male patient was admitted to the hospital when he was 3 years old with an asymptomatic, mass in the left cheek area with progressive growth over approximately 3 weeks. After microscopic and immunohistochemical assessment of the biopsy specimen were consistent with epithelioid rhabdomyosarcoma. He received chemotherapy for 30 weeks in combination with localized radiotherapy during the inductive phase of nine weeks. After cancer therapy to follow-ups the potential effects of late sequelae was observed after chemoradiation in multiple developmental areas. This 21-year old patient applied to our clinic with complaints of esthetics, function and phonation. In the intraoral and radiographic examination, mobile and abnormality teeth were observed. After multidisciplinary treatment (vestibuloplasty and gingivectomy) it is planned to make a removable prosthesis with fixed partial dentures (FPD's).

**Conclusion:** The patient's function, phonation and aesthetic problems have been greatly reduced. The patient was recalled at one month intervals. During the follow-up period, the patient's speech and chewing function was rehabilitated and the patient's self-confidence was restored.

**Keywords:** fixed partial dentures, removable prosthesis, rhabdomyosarcoma





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### [OP-099]

#### Impact of Clinical Illuminance Conditions and Light Incidence Angle on the Color Analysis of an Intraoral Scanner

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#### Objective:

Digital technology innovations in dentistry have increased, and intraoral scanners have become integral to the clinical process, particularly for color analysis. Various factors, including illumination, may affect the accuracy. This study aims to evaluate the impact of illuminance conditions and light incidence angle on the accuracy and applicability of color data gathered from digital color scan images.

#### Materials-Methods:

The color data was obtained from the upper central and lateral incisors, canine, and molar teeth (n = 160) clinically with a spectrophotometer (EasyShade V; Vita Zahnfabrik) and an intraoral scanner (Trios 4; 3Shape) under two different illumination conditions: clinical darkness (0 lux) and clinical lightness (2900 lux). The screenshots of the scanned data were transferred with remote control computer software (Teamviewer 15.40.8, Germany) and processed using a raster graphics editing program (Adobe Photoshop CC, 2018, Adobe Systems) for obtaining L\*a\*b\* values. Data was analyzed using paired t-test and One-way ANOVA ( $\alpha=0.05$ ).

#### Results:

The L\*a\*b\* values of the spectrophotometer were significantly different from those of the digital scanner ( $p < 0.001$ ). A statistically significant difference was found between the two clinical illuminance conditions at all L\*a\*b\* values ( $p < 0.001$ ). The average  $\Delta E$  values between the two conditions were  $12.99 \pm 2.61$  for clinical lightness and  $11.33 \pm 2.68$  for clinical darkness. Evaluating the light incidence angle, the canine teeth' color values were found significantly different ( $p=0.016$ ).

#### Conclusion:

Clinical illuminance conditions may impact the color analysis capabilities of intraoral scanners. Considering that intraoral scanners are affected by light, the angle of incidence of light is considerable. The results of this study suggest that a supplementary instrumental method for assessing tooth shade is still necessary.

**Keywords:** Color Analysis, Illuminance, Intraoral Scanner, Spectrophotometer



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### [OP-101]

#### Comparison of color stability of two provisional restorative materials stored in different mouthwashes

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**Objective:** Provisional restorations are generally used before permanent restorations such as crowns, laminate veneers, and, implant-supported prostheses. During dental implant treatments, provisional restorations can be used for a long time for soft tissue shaping. Especially in the anterior region, the color stability of the provisional restorative material becomes essential. This study aimed to evaluate the effect of different mouthwashes on the color stability of 2 different provisional materials.

**Materials-Methods:** Twenty-five disc-shaped specimens (12 mm in diameter and 2 mm in thickness) were produced from 2 different provisional materials (Temdent, Triad). Each temporary material was divided into 5 subgroups according to the liquid to be stored (distilled water, Andorex, Meridol, Listerine, Colgate, n=5). Color measurements at baseline and after 48 hours and 14 days of storage were performed by using a spectrophotometer. CIEL\*a\*b\* color parameters were recorded, and  $\Delta E_{00}$  values between the baseline and each storage interval were calculated. Data were statistically analyzed using ANOVA and student-T and Tukey HSD tests ( $\alpha=0.05$ ).

**Results:** For Temdent material at the end of 48 hours, no significant difference was observed between different mouthwash groups regarding color change. However, at the end of 14 days, the  $\Delta E_{00}$  values obtained from the Andorex group were found significantly higher than the other groups. Still, no significant difference was detected among other liquid groups. For Triad material, at the end of 48 hours, the  $\Delta E_{00}$  values obtained from the Colgate and Andorex groups were found significantly higher than the other groups, while no significant difference was detected among other liquid groups. However, at the end of 14 days, greater color change was observed in Andorex, Colgate, and Listerine solutions, in descending order, while no significant difference was found among Listerine, Meridol, and distilled groups. When materials stored in the same solution were compared, Triad showed significantly higher color change than the Temdent material for each solution. ( $p<0.05$ ).

**Conclusion:** The color stability of provisional restorative material is affected by the type of material and mouthwash solution. The most color change was observed in Triad compared to Temdent, while Andorex was found to cause the most color change among the mouthwash solutions.

**Keywords:** color, mouthwash, provisional restorations



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### [OP-102]

#### Effects of Implant vs Abutment-Level and Digital vs Conventional Techniques on Impression Accuracy

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**Objective:** The aim of this study is to compare the accuracy of conventional and digital impression techniques used at the implant and abutment levels.

**Materials-Methods:** Eight implants were inserted at different angles and distances into the polyurethane edentulous mandible model. Angled and straight multi-unit abutments are placed on the implants to correct the angles at an optimum level. Scan bodies were fixed on the abutments and a 3-dimensional (3D) reference model was obtained by scanning the polyurethane model with an optical scanner. Then, ten abutment level digital impressions were made with 3Shape Trios 3 and STL data were obtained. A verification jig was produced to record the angle and the hexagonal positions of the multi-unit abutments, then the abutments were removed, and open tray impression copings were fixed to the implants. First, without splinting and then by splinting the copings, twenty open tray conventional impressions were made (n=10). Master casts were obtained for each conventional impression and then multi-unit abutments were fixed by placing them on the casts with the help of the verification jig. Then, scan bodies were placed on multi-unit abutments for each master cast and 3D models were obtained with a digital laboratory scanner. STL files of these 3 different impression groups were transferred to a reverse engineering program to measure distance and angle deviations from the 3D reference model. Data were analyzed in IBM SPSS V23. The suitability of the data for normal distribution was examined with the Shapiro Wilk test; one-way analysis of variance test was used to compare normally distributed data according to three groups, and multiple comparisons were examined with the Tukey test. The significance level was taken as p<0.05.

**Results:** No statistically significant difference was observed between the digital (243.12 ±207.58 µm) and splinted (288.74 ±222.39 µm), non-splinted (311.62 ±183.84 µm) conventional groups in terms of distance deviations (p=0.82). In terms of angular deviation, the digital group (0.37° ±0.18°), was statistically significantly superior to splinted (0.59° ±0.12°) and non-splinted (0.58° ±0.14°) conventional impression groups (p=0.02).

**Conclusion:** In full-arch implant treatments with severe angulations, high deviations can be observed in both digital and conventional impressions, which can compromise the passive fit of the restoration to be produced. However, thanks to intraoral scanners, better impressions can be made, especially by minimizing angular deviations.

**Keywords:** abutment level impression, digital implant impression, multi-unit abutment, scan body

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[OP-103]

**Clinical illuminance impact on the accuracy of an intraoral scanner; A Pilot Study**

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<sup>2</sup>Altınbaş University Faculty of Dentistry, Department of Restorative Dentistry, Istanbul, Turkey

**Objective:** In the current digital era, intraoral scanners have become essential tools in dental practice, and achieving accurate results can positively influence treatment processes and patient satisfaction. Nevertheless, various factors, such as illuminance, may affect the scanning accuracy. From that point of view, this clinical study aims to evaluate the impact of the illuminance of the clinic light on the accuracy of an intraoral scanner.

**Materials-Methods:** Two groups were created based on clinical illuminance conditions; Clinical Lightness (CL) ~1000 Lux and Clinical Darkness (CD) ~0-15 Lux. Six digital scans (TRIOS4; 3Shape) were performed for upper and six scans for lower jaw with ambient light settings, resulting in a total of 24 scans per patient and 96 scans for each group (n=96). The 3D deviations between the reference data and digital scans were calculated and depicted on color-difference maps (Geomagic studio 2015; 3D systems). A one-way ANOVA and the post hoc Bonferroni test for normally distributed data or the Kruskal-Wallis test with Bonferroni correction for non-normally distributed data was used ( $\alpha=.05$ ).

**Results:** Significant differences in accuracy values were found among the two illuminations where CD condition obtained the lowest absolute error ( $p<.001$ ).

**Conclusion:** Illuminance conditions significantly influenced on the scanning accuracy of the IOS evaluated. The extension of the digital scan may have an influence on the scanning accuracy.

**Keywords:** Illumination, Accuracy, Intraoral Scanners





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### [OP-104]

#### Scanning Technology Impact on the Accuracy of Two Different Preparation Techniques

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**Objective:** Digital impressions through intraoral scanners(IOSs) are becoming crucial in dental clinics, enhancing both patients' perceptions and the efficiency of treatment. IOSs are used to digitize dental arches, and the generation of virtual models upon the restorations will be designed and fabricated. The accuracy of IOSs is affected by various factors, including the scanning technology. Thus, the study aims to evaluate the impact of the IOS technology on the scanning process of two different preparation techniques.

**Materials-Methods:** Standardized crown and an onlay preparation dies were generated and scanned as the reference digital data with an industrial scanner (Solutionix C500, MEDIT). The master preparations were scanned with two different IOSs with different technologies; confocal scanning (Trios4;3Shape, Copenhagen, Denmark) and triangulation (Medit i700;Medit, Seoul, Korea) 20 times (n=80). All digital data obtained were evaluated with a 3D analysis software program (Geomagic studio 2015; 3D systems). One-way ANOVA and post hoc Bonferroni test were used for normally distributed data, and Bonferroni and Kruskal-Wallis test for non-normally distributed data ( $\alpha=.05$ ).

**Results:** The accuracy of scanning differed significantly depending on the type of technology used and preparation ( $p<.001$ ).

**Conclusion:** The scanning technique has an influence on the capability of scanning different types of preparation designs.

**Keywords:** Intraoral Scanner, Scanning Technology, Preparation Design, Accuracy



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### [OP-105]

#### Investigation Of The Effect Of Implant Crown Ratio And Material Type On The Force Transmitted To The Implant In Implant-Supported Restorations: A Finite Element Analysis Study

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#### Objective:

The crown implant ratio may pose a problem, especially when short implants are used. This condition is associated with marginal bone loss. Therefore, in this study, it was aimed to evaluate the stresses arising from the bone, implant and its parts and the restoration by finite element analysis, as a result of comparing a situation with ideal bone support and a similar situation with vertical bone loss. The null hypothesis is that the type of material and crown length chosen for implant-supported restorations will not make a difference in terms of stress on implants of different sizes.

#### Materials-Methods:

For this study, 8 mm implants were placed in the 44-46 region and a group with a 3-unit 12 mm length fixed prosthesis and a group with 12 mm implants and a 3-unit 8 mm length fixed restoration (SILR) were designed. The data of the implant parts were obtained from a company and placed in the appropriate position within a bone data drawn in the Solidworks 2013 software (Solidworks Corp., USA). Appropriate multi-unit parts were then added and 3-unit restorations were designed with exocad. Necessary arrangements were made in the Geomagic Design X 2020 (3D systems, Morrisville, NC, USA) program, the restorations were given the characteristics of 2 different materials (lithium disilicate and zirconia). A force of 200 N was applied to the pontic in the occlusal direction and the maximum principal stress values occurring in the bone, implant, multi-unit, restoration and occlusal screw were recorded.

#### Results:

Principal stress (Pmax) values on the implant for the 1st premolar were higher on the 12 mm implant (B1 and B2 groups) and lower on the 8 mm implant. For the implant applied to the 1st molar region, higher stress values were observed in the groups with 8 mm implants (A1 and A2 groups), while lower values were observed with 12 mm implants (B1 and B2 groups).

#### Conclusion:

As the crown/implant ratio increases in favor of the implant, the survival of the unit decreases. In addition, the use of more rigid materials in the application of over-implant restorations has produced better results.

**Keywords:** CAD/CAM, finite element analysis, implant

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**[OP-106]**

**Evaluation of Candida Albicans Involvement and Cleanability of Different Occlusal Splint Materials**

Erkin Özcan<sup>1</sup>, Helin Kaya Özcan<sup>2</sup>, Beril Şahiner<sup>1</sup>, Ihsan Kulaksız<sup>2</sup>, Gülümser Evlioğlu<sup>2</sup>

<sup>1</sup>Istanbul Atlas University

<sup>2</sup>Istanbul University

**Objective:** Our study aimed to compare the candida albicans retention and cleanability of different occlusal splint materials.

**Materials-Methods:** 160 samples discs, 40 in each group, were prepared from 4 different materials used in the fabrication of occlusal splints. PEEK, PMMA and polycarbonate discs were fabricated with subtractive manufacturing and acrylic resin discs were produced in a 3D printer. C.albicans colonies were formed on the discs in the microbiology laboratory. Colony numbers were calculated before cleaning with 4 different cleaning methods, and it was determined which material had more uptake. Then, the discs are divided into groups were cleaned by brushing, using a cleaning tablet, keeping them in an ultrasonic cleaner and using chlorhexidine. The control group was washed only with distilled water. The remaining colonies on the discs were then recalculated. **Results:** Cleaning with a brush showed significant reductions in Candida albicans values for the PMMA group compared to the PEEK, polycarbonate, and acrylic resin groups, with acrylic resin also exhibiting lower values than polycarbonate. Other groups showed no statistically significant differences. Cleaning with cleaning tablets resulted in significantly higher Candida albicans values for the PEEK group compared to the other materials, while chlorhexidine and ultrasonic cleaning successfully removed C. albicans in all material groups, with no significant differences observed. **Conclusion:** C.albicans involvement was most seen in the polycarbonate material, and the most successful methods for cleaning C. albicans colonies were cleaning with ultrasonic cleaner and chlorhexidine.

**Keywords:** Occlusal splint, bruxism, C. albicans



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### [OP-107]

#### Evaluation of fracture resistance of monolithic restorations with different thicknesses

Beril Şahiner, Erkin Özcan  
İstanbul Atlas University

**Objective:** In this study, the fracture resistance of monolithic restorations fabricated from different materials in various thicknesses, subjected to thermal cycling, were examined. **Materials-Methods:** Anatomically prepared acrylic maxillary first molar tooth was reproduced with CAD/CAM (Computer Aided Design/Computer Aided Manufacturing). The occlusal thicknesses of the crowns are fabricated in two different designs as 1 mm and 1.5 mm. Axial walls, on the other hand, are designed as 1 mm. The fracture resistance of the non-thermal cycled samples and the thermal cycled samples were measured and recorded as N. **Results:** When the fracture resistance was evaluated as a result of thermal cycling, the difference was found to be statistically significant only in the sample of the group T prepared in 1 mm occlusal thickness. With the increase in material thickness, the fracture resistance was found to be statistically significant in all groups except the group C. The fracture resistance of the 1 mm and 1.5 mm thick material S was found to be lower than all other groups and was statistically significant. **Conclusion:** The material S with 1 mm occlusal thickness has not been found suitable in posterior restorations. Other materials with reduced thicknesses have been found suitable for use in the posterior region.

**Keywords:** Fracture, Zirconia, Hybrid Ceramic, Thermal Cycle



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**[OP-109]**

**Dental implant treatment for a patient with Papillon-Lefèvre Syndrome: a case report**

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**Objective:** Papillon-Lefèvre Syndrome (PLS), a rare autosomal recessive disorder, results from a genetic mutation in the cathepsin C gene, which leads to a deficiency in cathepsin C enzymatic activity. This condition is marked by distinct features, including palmoplantar hyperkeratosis and severe destructive periodontitis, leading to edentulism at early age. **Case:** This case report presents a 21-year-old female patient with PLS who experienced spontaneous loss of most of her permanent teeth. Based on CBCT images, the patient was diagnosed with severe bone loss in maxilla and mandibula. The remaining teeth of the patient were extracted due to advanced periodontitis, and a total of 11 immediate dental implants were placed in the upper and lower jaws. After a 2-month healing period following the surgery, prosthetic restoration was completed, providing functional and aesthetic rehabilitation. Throughout the 6-month follow up period, no infection or implant loss was observed in the patient. **Conclusion:** In most cases, Papillon-Lefèvre Syndrome presents with aggressive periodontitis and consequent multiple tooth loss. Therefore, dentists play a crucial role in diagnosis and treatment of its oral manifestations. Although these patients suffer deeply from early tooth loss and bone insufficiency in the jaw, the patient's quality of life can be improved by providing full mouth rehabilitation with implant treatment.

**Keywords:** Dental implants, full mouth rehabilitation, Papillon-Lefèvre Syndrome

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**OP-110**

**Enucleation and reconstruction plate treatment of odontogenic keratocyst: case report**

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Marmara University Faculty of Dentistry, Oral and Maxillofacial Surgery, Istanbul

**Introduction:** Keratocystic odontogenic tumor; These are lesions with high recurrence characteristics, which are included in the benign odontogenic tumor class with their aggressive behavior and infiltrative feature to surrounding tissues, developing from dental lamina residues. In this case report, it is aimed to evaluate our case, which is thought to be odontogenic keratocyst, in terms of the course of the cyst, clinical, diagnostic and treatment methods.

**Case:** A 44-year-old female patient applied to our clinic after a panoramic x-ray taken at an external center in 2022. As a result of the panoramic x-ray taken, a radiolucent area with well-defined borders was detected in the patient's right joint condyle. After the cyst area was completely elevated using extraoral and intraoral approaches and the area where the cyst was curettated, the reconstruction plate was adapted to the mandible and the operation was completed. Dental occlusion and joint movements were checked immediately after the surgical procedure and it was found to be optimal. During the 1-month post-operative follow-up of the patient, no position change in joint movements was observed.

**Conclusion:** If not detected early, odontogenic keratocyst may progress along the ramus and cause pain in the joint area and, in advanced cases, condyle fracture. Therefore, it is important for all dentists to have information about the management, differential diagnosis and treatment of these cases.

**Key words:** Keratocyst, condyle, joint, case report

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[OP-111]

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**Classification and Radiological Evaluation of Olfactory Fossa Measurements Using Cone-Beam Computed Tomography: A Retrospective Study**

**Objective:** The aim of our study is to master the anatomy, variation and pathology of the region by using cone-beam computed tomography, which is more practical and more economical, with less radiation exposure than computed tomography. In this way, it is aimed to provide guidance to otolaryngologists and maxillofacial surgeons, to obtain data on anterior skull base anatomy of the population aged 18 and over, and to reduce complication rates by obtaining normative data.

**Materials and Methods:** In our study, cone beam computed tomography (CBCT) images of 120 individuals aged between 18 and 80, selected from the archive of Ankara University Faculty of Dentistry, were included. Individuals according to their age; It is divided into 3 groups as 18-34 years old, 35-60 years old and 60+ years old. 50% of individuals are female and 50% are male. In our study, the depth of the olfactory fossa was measured on both coronal and sagittal sections and grouped according to the Keros classification and comparisons were made. In addition, the width of the olfactory fossa was measured in the coronal section, the nasal septum deviation was examined and compared with other parameters. Paranasal sinuses were evaluated and the degree of opacification was evaluated according to the Lund-Mackay classification. All parameters were compared with right/left, gender, age and other parameters and statistical significance was checked.

**Results:** In coronal measurements, the olfactory fossa depth was observed as Keros Type 2 in 56.7% of the individuals included in the study and this is the highest rate. Later, Keros Type 1 with 33.3% and Keros Type 3 with 10% were seen. In sagittal measurements, the olfactory fossa depth was observed as Keros Type 2 in 63.3% of the individuals included in the study and this is the highest rate. Later, Keros Type 1 with 30.8% and Keros Type 3 with 5.8% were seen. Nasal septum deviation was observed in 54.2% of the individuals included in the study, and 37 of the individuals included in the study had deviations to the right side and 28 to the left side. There is no significant difference in terms of gender, age, Lund-Mackay staging groups and olfactory fossa width values. The mean, median value, minimum and maximum values of the width of the olfactory fossa in men were always higher than the values in women on both the right and the left, although they were not significant. In the presence of right septum deviation, the mean and median values of the right olfactory fossa width were found to be lower than in the absence of deviation.

**Conclusions:** When our results are evaluated, it can be seen that our findings are generally close to studies using computed tomography (CT) images. Considering that CBCT images can be obtained with lower radiation and lower cost than CT images, it is thought that they can be used as an alternative to CT for this region.

**Keywords:** CBCT, Lund-Mackay staging, olfactory fossa, paranasal sinus



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### Poster Presentations

[P-01]

#### Oral care for children with special needs

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#### Objective:

Children with special needs are those who have or are at increased risk for a chronic physical, developmental, behavioral or emotional condition and who also require health and related services of a type or amount beyond that required by children generally.

#### Aim:

The aim of this retrospective study was to determine most usually oral health problems with children with special needs and dental services that we provided them with in Clinical Centre of Montenegro during the period from 1.1. 2022 - 31.12. 2022

#### Methodology:

354 children with special needs, aged 1 to 18 years, were included in this study. They were examined during 2022 year on Department of preventive and child dentistry in Clinical Centre of Montenegro. Data was received from the records of patients.

#### Results:

##### Oral health problems:

- tooth eruption
- dental caries
- Periodontal disease
- Malocclusion
- Damaging oral habits can be a problem for children with disabilities and special needs.
- Tooth anomalies
- Trauma

Often, dental services that we provided these children with were:

- Prevention Measures – 6,9 %
- Restorative dental treatments – 39,66 %
- Endodontic treatments – 1, 25 %
- Tooth extraction – 52.19 %

#### Conclusion:

A child with special needs are also responsible to take care of their mouth. A large percentage of teeth extraction refers to the importance of promoting prevention program for these children.

**Keywords:** children with special needs, dental care, prevention program





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[P-02]

### **The most common occupational diseases among dentists from the Republic of North Macedonia**

Natasha Longurova, Katerina Zlatanovska, Ivona Kovachevska

Faculty of Medical Sciences, Goce Delcev University, Stip, North Macedonia

An occupational hazard is a risk or hazard that occurs as a consequence of the nature or working conditions of a particular profession. Dentists are exposed to a number of occupational hazards during their work. These include: exposure to infections, percutaneous exposure incidents, dermatitis, radiation, noise, musculoskeletal disorders, psychological problems, respiratory disorders, and eye insults. Percutaneous exposure incidents are a major concern, as exposure to serious infectious agents is a major risk. The purpose of our research is to determine how many of the dentists in the Republic of North Macedonia suffer from occupational diseases, which of them are the most common and what they take to protect themselves. Consideration should be given to minimizing such risks and their consequences, including sound infection control practices, as well as continued hepatitis B education and vaccination. Basically, dentists should be aware of individual protection and appropriate sterilization and use of disinfectants with a high antibacterial and antimicrobial effect. A tense posture at work disrupts musculoskeletal alignment and leads to curvature of the spine. This pose also involves certain muscle groups and joints. This can lead to diseases of the musculoskeletal system.

**Keywords:** dentists, danger, diseases, risk



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[P-04]

### A new approach to fabricate posts with CAD/CAM technology

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Aristotle University of Thessaloniki, Dentistry Department, Thessaloniki, Greece

#### Objective:

Prefabricated or conventional cast metal posts have represented the prevailing choice for the treatment of severely damaged endodontically treated teeth. Nonetheless, challenges persist in terms of fracture resistance and bond strength. Given the continuous technological advancements in the field of dentistry, the prospect of employing CAD/CAM (Computer-Aided Design/Computer-Aided Manufacturing) posts presents itself as a promising avenue for enhancing restorative procedures. This series of case reports elucidates a comprehensive procedure for the rehabilitation of compromised teeth, employing post-and-core restoration through CAD/CAM technology

Case:  
Patients came to the dental office after endodontic treatment in need of a restoration with increased retention and esthetics. Subsequent to the comprehensive design and preparation of the abutment tooth, multiple appointments were scheduled to ensure precise restoration. During the initial appointment, intraoral scanning was meticulously performed, followed by meticulous virtual designing of the post. Subsequently, the post restoration was milled and bonded to the remained dental tissues. In a subsequent appointment, the scanning procedure was repeated to facilitate the creation of the final crown. The choice of material and the design of the post-and-core system can exert a substantial influence on fatigue resistance, thereby enhancing the durability of endodontically treated teeth. Clinical cases utilizing CAD/CAM post restorations have demonstrated a reduced incidence of fractures and superior adaptation when compared to conventional prefabricated posts. Custom-designed post-and-core systems exhibit ample strength to supplant the cast metal counterparts, offering the added benefit of improved aesthetics

Conclusion:  
Clinical cases employing the CAD/CAM post technique have demonstrated enhanced mechanical properties and superior aesthetics in comparison to conventional dental methods

**Keywords:** CAD/CAM, post technique, post-and-core, endodontically treated teeth

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## [P-05]

### **Platelet-derived growth factor release from coronal dentine by pulp-capping dental materials**

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**Objective:** The mixed biological and chemical mechanisms of action enable the dental materials such as calcium hydroxide (CH), mineral trioxide aggregate (MTA) and biodentine (BD), to induce the release of endogenous growth factors from dentine. The data regarding the release of platelet-derived growth factor – PDGF (significant angiogenesis, chemotaxis and odontoblastic differentiation promoting molecule) by pulp-capping dental materials are scarce. Our objective was to evaluate the effect of pulp-capping dental materials including calcium hydroxide (CH), mineral trioxide aggregate (MTA) and biodentine (BD) on the release of PDGF from human coronal dentine.

**Materials-Methods:** Thirty coronal dentine discs pairs, cut from lower third molars, were randomly assigned to groups/subgroups (SG) and treated accordingly: Group I (negative control): SG1– without treatment (WT), SG2– WT; Group II (positive control): SG1– CH, SG2– CH; Group III: SG1– CH, SG2– WT; Group IV: SG1– MTA, SG2– WT; Group V: SG1– CH, SG2– MTA; Group VI: SG1– BD, SG2– WT; Group VII: SG1– BD, SG2– CH; Group VIII: SG1– BD, SG2– MTA. Dentine discs were then incubated at 37°C/100% humidity for 14 days. Afterwards, materials were removed, discs placed into phosphate-buffered saline containing tubes and stored at 37°C/24h. PDGF amounts, released into phosphate-buffered saline, were quantified by enzyme-linked immunosorbent assay and expressed as pg/ml.

**Results:** In negative and positive control groups PDGF amounts between corresponding subgroups were similar ( $p>0.05$ ). Compared to subgroups without treatment, significantly higher PDGF amounts were released by CH, MTA as well as BD ( $p<0.05$ ). Comparing the effects of the materials, PDGF amounts did not statistically significant differ; however, CH tend to release more PDGF then MTA ( $p=0.083$ ) and BD ( $p=0.149$ ), while BD released a bit more PDGF then MTA ( $p=0.386$ ).

**Conclusions:** All investigated materials were capable to release PDGF from coronal dentine at similar levels. However, the most pronounced PDGF release was observed by calcium hydroxide, slightly less by biodentine, while MTA tend to release PDGF the least.

**Keywords:** calcium hydroxide, mineral trioxide aggregate, biodentine, growth factors



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### [P-06]

#### Effectiveness of a fluoride-based agent in the treatment of Dentin Hypersensitivity

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<sup>3</sup>Dental clinic ‘Toti&Gurakuqi’

**Objective:** The aim of this prospective clinical trial was to evaluate the effectiveness of a calcium-fluoride-forming agent (Tiefenfluorid®, Humanchemie GmbH, Alfeld, Germany) in the treatment of dental hyperesthesia in adult patients.

The mechanism of Tiefenfluorid® action is complex; it involves the use of two different solutions: 1st solution: magnesia fluoro silicate (F18Mg16Na10O66Si27), copper (II) fluoro-silicate (CuF6Si), sodium fluoride (NaF) as stabilizer, distilled water

2nd solution: calcium hydroxide (Ca(OH)2)—highly dispersed, methylcellulose (C6H7O2(OH)x(OCH3)y), distilled water where the first one penetrates the enlarged interprismatic spaces of the enamel, allowing the complex fluoride and copper ions to enter deeply into the interprismatic enamel, while the second solution, consisting of Ca(OH)2, reacts with fluorides in the interprismatic spaces of the enamel.

**Materials-Methods:** In total, 96 patients; 56 female, 40 male (aged 18–59 years old) diagnosed with DH were enrolled.

The diagnosis of DH was established taking into consideration the subjective examination (time, duration, intensity, and frequency), the clinical examination (tactile and periodontal control), and the radiological examination (pulp and periodontal diseases). The inclusion criteria were presence of erosion lesion, cuneiform defect, pathological abrasion, gingival recession. The exclusion criteria considered were dental caries, pulp and periodontal pathologies, post-restorative sensitivity, defective fillings, neuropathies, fractures and cracks of the teeth, and patients with a pacemaker. The patients were treated with Tiefenfluorid® applied in three appointments at 7-day intervals. The dental surfaces were first cleaned with pumice and then isolated with a rubber dam. Tiefenfluorid®, which consisted of two distinct solutions, was applied as follows: the first solution was applied with a cotton pellet and left in situ for 60 s. Then, the second solution was applied (no rinsing in-between) with another cotton pellet and left in situ for 5 min (time necessary for its evaporation). The surface was rinsed with water only at the end of the procedure. All the patients were recalled and DH was measured and recorded using a pulp tester (NSKR HPS, Fencia, Saint-Denis, Réunion, France) at the following intervals: baseline, 7 days, 14 days, 1 month, 3 months, and 6 months from the last application. Descriptive statistics were computed for all the variables. A random intercept/random slope model was used to evaluate the effect of the treatment, at various times with respect to the initial diagnosis. STATA software (version 14) was used to perform the analysis.

**Results:** The treatment group showed a relevant and time-related increase, at the 6-month follow-up.





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Pulp test measurement:

before treatment mean 1.75 SD 0.72, 7 days mean 3.17 SD 0.62, 14 days mean 4.36 SD 0.54, 1 month mean 5.4 SD 0.58, 3 months mean 6.31 SD 0.73, 6 months mean 7.25 SD 0.81.

Conclusion: Our data provide direct evidence of the high and long-lasting efficacy of Tiefenfluorid® treatment in improving the overall condition of the DH. Tiefenfluorid® is painless during application, easy to apply, and fast-acting, as well as likely has long-term or permanent effects.

**Keywords:** dentin hypersensitivity, pulp tester, Tiefenfluorid®



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[P-07]

### Endodontic treatment of maxillary first molar tooth with fractured instrument

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#### Aim:

Instrument fracture within the root canal during root canal treatment is an undesirable complication in endodontics. There are several recommended methods to retrieve separated instruments. Material and Methods:

A 20 years old female was referred to our clinic with dentoalveolar abscess. Orthopantomography showed a separated endodontic instrument in the middle of the palatal canal on the maxillary first molar tooth and associated periapical lesion. Non-surgical endodontic retreatment was planned. Broken file was successfully retrieved by using endodontic instruments (Hedsrom file and K file) and irrigation with NaOCl at first session. After the instrument removed the canal, the tooth was prepared in working length and root canals filling with calcium hydroxide. After resolution of the abscess, the endodontic treatment was completed at the second appointment.

#### Result:

The patient was recalled at the end of six months. She was satisfied by the treatment and the tooth was clinically asymptomatic. Six months follow-up radiographic examination revealed progressive involution of periapical lesion.

#### Conclusion:

The teeth with have broken instrument, abscess and periapical lesion may be successfully treated with non-surgical endodontic retreatment.

#### Conclusion:

**Keywords:** endodontic, maxillary first molar, fractured instrument



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[P-09]

### Root perforation repair using calcium silicate-based material

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**Objective:** Root perforations during endodontic procedures could be significant cause of endodontic treatment failures. Perforations that are located in coronal third of the root canal usually occur during access cavities preparation or during exploring canal orifice. Our goal was to present a modality of root perforation management using calcium silicate-based material. **Case:** A 38-year-old male patient was referred to our clinic for treatment of root perforation of mandibular right first molar. Preoperative radiograph revealed inadequate previous endodontic treatment with suspected furcal defect on mesial aspect of distal root, its apical resorption and small radiolucency around mesial root apex. Clinical examination, after removal of previous root canal filling, showed perforation site and the destruction of adjacent furcal hard tissues. Following chemical-mechanical treatment, using reciprocating file system, calcium hydroxide paste was placed for a week. The perforation defect was sealed with calcium silicate-based material inserted by hand instrument. Fat end of a paper point was used for material condensation. After the setting of placed reparation material, root canals were obturated in the same visit. Control clinical and radiographic examination confirmed good outcome. **Conclusion:** Alterations of tooth internal anatomy like narrowing of the root canals makes endodontic treatment more challenging in a technical sense which means that errors such as failure in orifice/canal location, excessive removal of tooth tissues or perforation of the root are more likely. Although lateral root perforations significantly raise the degree of difficulty of endodontic therapy, these complications can be managed with high degree of success. Good operative technique and calcium silicate-based materials improve prognosis and predictability of this treatment option.

**Keywords:** root perforation, calcium silicate, furcation defect



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### [P-10]

#### Endodontic therapy of mandibular first molar with lateral and apical lesions

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**Objective:** The main root canal system can have ramifications such as lateral canals that connect it with the periodontal ligament. These canal branches are very difficult to reach and clean during endodontic therapy due to its position and size but they are pathways for microbes and their products causing lateral lesions. Our report presents successful endodontic treatment of mandibular first molar with lateral and apical periodontitis.

**Case:** A 46-year-old male patient was referred to our clinic for endodontic treatment of right mandibular first molar with apical and lateral lesions that were incidentally discovered on panoramic radiograph. Patient was symptom free and radiography suggested that the tooth was previously treated by pulp amputation. Radiograph showed periapical lesion around the apex of distal root, periodontal ligament widening around the apex of mesial root and the lateral lesion on the distal side of mesial root. Following access cavity preparation, canal patency and working lengths were determined for distal and one of mesial canals while the other was unnegotiable to the physiological foramen. Unnegotiated terminal apical part of the canal was not recognizable even on additional 3D imaging. Endodontic instrumentation and copious, active irrigation were done along negotiable parts of root canal system. Calcium hydroxide medication was placed for two weeks and root canals were obturated but with unintentional overfilling of the distal canal. However, overall outcome of endodontic therapy was favorable and follow-up radiograph, taken after a year, showed apical and lateral healing.

**Conclusion:** Small diameter accessory canals are not visible on the radiographs but its presence is suspected when there are lateral lesions on a root surface. These anatomical variations are not reachable to instrumentation but infected/necrotic tissue in it could be treated by adequate and copious irrigation and medication. Present case suggests that desirable treatment outcome could be achieved even in situations when ramification and irregularities of canal system are not directly reached and filled of the all by standard endodontic procedures.

**Keywords:** lateral periodontitis, periapical lesion, 3D imaging





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### [P-11]

#### Endodontic treatment of mandibular third molar with multiple pulp stones and calcifications

Bojan Dzeletovic, Dejan Ostojic, Tatjana Savic Stankovic

Department of Restorative Odontology and Endodontics, School of Dental Medicine, University of Belgrade, Belgrade, Serbia

**Objective:** Pulp stones can significantly interfere with the proper differentiation of pulp chamber structures and thus lead to failures in procedures during endodontic therapy. While denticles can complicate finding the orifices of root canals, the accompanying histological changes like pulpal fibrosis can make difficulties during endodontic instrumentation. Our report presents endodontic treatment of mandibular third molar with pulp stones and calcifications. **Case:** The patient was referred to our department for endodontic treatment of mandibular left third molar due to prosthodontic reasons. This tooth was intact but with significantly mesial inclination. Panoramic radiograph revealed radio-opacities in the coronal part of pulp chamber while root canal outlines were just partially traceable. Conservative access cavity was made and multiple pulp stones were differentiated from surrounding tissues. Denticles were freed from pulp chamber walls and removed with the aid of ultrasonic tips. Rest of pulp tissue was also altered by calcifications and fibrosis. Canals instrumentation and obturation were done in a same visit. **Conclusion:** Convenient ultrasonic tips of appropriate dimensions and shapes can enable more conservative and safer work in otherwise complicated cases. Inability to perform an adequate conservative endodontic treatment would call into question subsequent implementation of other procedures and the entire plan of prosthetic therapy. Management of clinical cases difficult from the aspects of accessibility and altered internal morphology requires adequate clinical skills and knowledge about the possibility of different variations in the shape and content of the pulp chamber.

**Keywords:** pulp stones, wisdom tooth, pulp calcifications, ultrasonic tip

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## [P-13]

### **Assessing the Histological Effects of a Copper-Calcium Hydroxide Compound in Endodontically Treated Teeth**

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**Objective:** The success of endodontic treatment depends on maintaining the long-term cleanliness of the root system and dentin canals, as this is crucial for eliminating microbial threats. This becomes particularly important, as addressing only the main root canal cannot guarantee sterility in the lateral canals and apical delta. This study aimed to provide histological insights into the effects of copper-calcium hydroxide within the root canal system. **Materials-Methods:** The study included 20 extracted teeth, divided into two groups. The first group (n=12) comprised untreated teeth that were extracted for orthodontic or prosthetic reasons, serving as the control group. The second group (n=8) comprised teeth that had been treated with a copper-calcium hydroxide-based compound known as Cupral (Humanchemie GmbH, Alfeld, Germany). This treatment was conveyed through inductive-electrophoretic trans-canal current during 2-3 sessions, each spaced 7-8 days apart. Regrettably, these teeth experienced fractures within the patients' mouths for various reasons, making reconstruction impossible. Following this, all teeth from both groups were preserved in a 10% neutral buffered formalin solution for subsequent histological examination. **Results:** In the slides from the first group, we observed open and empty dentinal tubules. In contrast, in the slides of the second group, we identified the presence of copper sulfide, visually manifesting as a light brown color, extending from the canal entrance to the apical region. Within the apical delta, we detected small dark brown particles of copper hydroxide. These particles effectively penetrate to all lateral canals along their entire length until they reached the border of the dentin cementum. We conducted this observation by employing Hematoxylin-Eosin staining, which revealed copper and sulfide in colors ranging from light brown to dark. The examination was carried out using a microscope at magnifications ranging from 100x to 400x. **Conclusion:** Our conclusion is that copper sulfide not only coats the dentin of the main root canal, but also penetrates the dentinal tubules and the apical delta. This infiltration of copper molecules, facilitated by hydroxide through trans-canal currents, ensures the long-term sterility of the root canal, consequently minimizing the risk of apical reinfection.

**Keywords:** antimicrobial properties, copper-calcium hydroxide, copper sulfide, endodontic treatment, tooth preservation

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[P-15]

### **Aesthetic Cross-Disciplinary Approach in two patients: A Case Report**

Emire Çitaku<sup>1</sup>, Ekrem Çitaku<sup>2</sup>

<sup>1</sup>Dental Clinic Magic Dent

<sup>2</sup>University Dentistry Clinical Center of Kosovo

#### **Objective:**

The objective of this presentation is to present an aesthetic cross-disciplinary approach in two patients with diastema mediana and microdontia.

#### **Case:**

An adult female patient asked a solution for an aesthetic concern regarding the gap between her upper central incisors. Upon extraoral examination, her facial profile appeared normal, but an asymmetry in her face was noted. She had competent lips. Intraoral examination revealed she was in her permanent dentition, with healthy soft tissues and a Class I malocclusion. Notably, there was a 5 mm maxillary median diastema between her central incisors, and her second upper incisors exhibited microdontia. A male patient presented with concerns about the aesthetic appearance of gaps between his upper front teeth. Upon conducting an extraoral examination, it was evident that he had a well-balanced face with a normal facial profile and competent lips. Intraoral examination revealed healthy soft tissues, and the patient was in permanent dentition. Most of his teeth were of normal size and shape; however, his upper central and lateral incisors were noticeably smaller in size. Despite these variations, he exhibited a normal occlusion. Notably, there was a 5 mm maxillary median diastema present, with a 2.5 mm gap between the central and lateral incisors, and a 1.5 mm gap between the lateral incisors and canines. Following a thorough analysis of the patient's oral condition and a discussion of potential treatment options, a collaborative orthodontic-conservative interdisciplinary approach was agreed upon. The treatment plan consisted of two phases: Orthodontic Treatment: Fixed appliances were employed to address the spacing issues and align the teeth properly. Aesthetic Restoration: Composite veneers were utilized to restore the microdontic upper incisors, ensuring that they matched the form and size of the patient's other teeth. This comprehensive approach aimed to improve the patient's aesthetic concerns and enhance the overall appearance of his smile. Results: The cross-disciplinary treatment for these patients spanned approximately one year. During this time, a successful combination of orthodontic and conservative therapies was employed, resulting in highly satisfactory aesthetic and functional outcomes. Both patients were delighted with their transformed appearances.

#### **Conclusion:**

These cases exemplify the effectiveness of a cross-disciplinary approach, combining orthodontic correction and conservative restoration, in achieving optimal results for addressing microdontia and diastema mediana.

**Keywords:** Aesthetic, cross-disciplinary, approach, diastema mediana, microdontia



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[P-16]

### Color matching comparison of anterior resin composites using the dual-layer technique and the Vita Classical shade guide

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**Objective:** One of the most challenging steps in direct restorative treatment is color analysis. Prefabricated anatomical dual-layer color guides and custom shade guide preparation can be used to determine the shade selection to obtain the best possible resin composite shade for final restoration with the layering method. This study aims to compare shade differences ( $\Delta E$ ) between dual-layer resin composite shades and the Vita Classical shade guide. **Materials-Methods:** Six dual-layer technique resin composites [Enamel plus Hri; Micerium S.p.A. (EH), Enamel plus Hri Bio Function; Micerium S.p.A. (BF), IPS Empress Direct; Ivoclar Vivadent (ED), Filtek Ultimate; 3M ESPE (FU), Clearfil Majesty ES-2 Premium; Kuraray (CM), Estelite Asteria; Tokuyama Dental (EA)] were molded by layering the different body or dentin and enamel shades using a prefabricated histo-anatomic silicon mold (Custom\_eyes, Emulation). Resin composite samples and A1, A2, and A3 Vita Classical (Vita Zahnfabrik) shade tab were placed on a grey background, and the CIEL\*a\*b\* values were measured with a spectrophotometer (Vita Easyshade V, Vita Zahnfabrik) (n=10).  $\Delta E$  calculations were made with CIEL\*a\*b\* and the average values were obtained. All combinations were established as the closest matching shade ( $\Delta E \leq 3.3$ ). **Results:** The close  $\Delta E$  values were found FU with A1E-A1B (2.54) and EH with high-value E3-UD1 (3.16) for the A1 Vita Classical shade tab. FU with A2E-A2B was found to be the closest match both the A2 Vita Classical shade tab (2.15) and the A3 Vita Classical shade tab (2.72). Also, acceptable  $\Delta E$  values were found (3.15) when comparing EH with high-value E3-UD3 to A2 Vita Classical shade tab. For all other combinations of resin composites, there was no best match for A1, A2, and A3 Vita Classical shade tabs ( $\Delta E > 3.3$ ). **Conclusion:** The combination of enamel and dentin shades from Filtek Ultimate provided an acceptable color match for A1, A2, and A3 Vita Classical shades. Further evaluations are indicated with composites made in different thicknesses for suitable color determination.

**Keywords:** Color matching, Resin composite, Layering technique, Shade guide





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[P-17]

### Evaluation of mandibular bone changes in endocrine disorders using fractal dimension and histogram analysis

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**Objective:** This study aimed to compare the mandibular bone microarchitecture of patients with various endocrine disorders with a control group for consideration in implant planning.

**Materials-Methods:** In this retrospective study, 40 patients with type 2 diabetes, 40 patients with type 1 diabetes, 40 patients with hyperthyroidism, 40 patients with hypothyroidism and 40 individuals in the control group were included. Fractal dimension analysis and histogram analysis were performed on the panoramic radiographs from the anterior regions of the right and left mental foramen. In statistical analyses, ANOVA test was used for comparisons between three or more groups, Chi-Square test was used to examine the relationship between categorical data and Pearson correlation test was used to evaluate the relationship between numerical variables. The significance level was taken as  $p < 0.05$  for all tests.

**Results:** There was no statistically significant difference in mean age between the disease groups (hyperthyroidism:  $50.83 \pm 8.1$ , hypothyroidism:  $50.78 \pm 8.6$ , type 1 diabetes:  $50.85 \pm 13.5$ , type 2 diabetes:  $50.78 \pm 9.0$ ) and the control group ( $50.73 \pm 9.9$ ) ( $p > 0.05$ ). The number of females (hyperthyroidism  $n=31$ , hypothyroidism  $n=34$ , type 1 diabetes  $n=27$ , type 2 diabetes  $n=31$ , control group  $n=31$ ) was higher than males (hyperthyroidism  $n=9$ , hypothyroidism  $n=6$ , type 1 diabetes  $n=13$ , type 2 diabetes  $n=9$ , control group  $n=9$ ) in disease groups and control group. There was no statistically significant difference between the groups according to gender distribution ( $p > 0.05$ ). In fractal dimension analyses conducted on the right side of the mandible (FD right), no statistically significant difference was observed among the groups (hyperthyroidism:  $1.55 \pm 0.06$ , hypothyroidism:  $1.55 \pm 0.06$ , type 1 diabetes:  $1.52 \pm 0.09$ , type 2 diabetes:  $1.54 \pm 0.05$ , control group:  $1.54 \pm 0.06$ ) ( $p > 0.05$ ). Similarly, in fractal dimension analyses performed on the left side of the mandible (FD left), no statistically significant difference was found among the groups (hyperthyroidism:  $1.53 \pm 0.06$ , hypothyroidism:  $1.54 \pm 0.06$ , type 1 diabetes:  $1.54 \pm 0.07$ , type 2 diabetes:  $1.55 \pm 0.06$ , control group:  $1.55 \pm 0.07$ ) ( $p > 0.05$ ). In histogram analyses conducted on the right side of the mandible, no statistically significant difference was observed among the groups (hyperthyroidism:  $116.1 \pm 21.5$ , hypothyroidism:  $107.2 \pm 19.8$ , type 1 diabetes:  $113.1 \pm 24.3$ , type 2 diabetes:  $107.9 \pm 21.4$ , control group:  $111.7 \pm 18.5$ ) ( $p > 0.05$ ). Similarly, in histogram analyses performed on the left side of the mandible, no statistically significant difference was found among the groups (hyperthyroidism:  $110.2 \pm 18.8$ , hypothyroidism:  $109.2 \pm 23.5$ , type 1 diabetes:  $104.8 \pm 19.0$ , type 2 diabetes:  $107.3 \pm 19.0$ , control group:  $108.0 \pm 18.3$ ) ( $p > 0.05$ ). While there was no statistically significant relationship between FD right and Histogram right values ( $p > 0.05$ ), a statistically low-level positive relationship was observed between FD left and Histogram left values ( $r = 0.222$ ;  $p = 0.002$ ).

**Conclusion:** A successful implant treatment requires taking into account the microarchitectural structure of the bone. This study revealed that various endocrine disorders such as hyperthyroidism, hypothyroidism, type 1 diabetes and type 2 diabetes did not affect the microarchitectural structure of the mandibular bone when compared to the control group.

**Keywords:** mandibular bone, endocrine disorders, fractal dimension analysis, histogram analysis, panoramic radiography



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### [P-18]

#### Single-tooth implant rehabilitation in the anterior maxillae using computer-assisted surgery: a case presentation with three-year follow-up

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**Objective:** A single-tooth implant-supported restoration in the anterior maxilla requires an optimal decision-making process to meet necessary biological, functional and aesthetic demands. Among numerous factors that influence the outcome of the implant rehabilitation following exodontia: a compromised alveolar bone and soft tissue may lead to difficulties when a prosthetically driven implant placement is desired (Buser et al., 2004). To prevent hard and soft tissue deficiencies in the aesthetic zone, a treatment planning can be improved by a computer-assisted implant surgery – CAIS. CAIS allows a thorough planning of future implant position and production of three-dimensional printed surgical guides that aids implant insertion to the most desirable prosthetic position (Pimkhaokham et al., 2022). The aim is to present a case of multidisciplinary approach in treatment planning, implant placement and prosthetic rehabilitation of the missing #11 tooth using CAIS. **Case:** A 22-years-old patient was referred to the Oral Surgery Department with a traumatic fracture of the tooth #11. After piezosurgically assisted tooth extraction, socket grafting was performed with xenogeneic bone substitute and covered with resorbable collagen membrane. Six months following socket grafting, a treatment planning and implant placement procedure were performed by using CAIS. After 3 months, during implant uncovering phase, a ‘U’ shaped roll flap was performed to augment soft tissue buccal contour and milled PMMA provisional screw retained crown was delivered. After 4 months, a correct emergence profile was verified and definitive restoration was positioned. **Conclusion:** Over the three-year follow-up, radiographs revealed proper maintenance of the peri-implant crestal bone levels, while clinical photographs displayed a maximum value (10/10) for pink and white aesthetic scores (PES/WES). Patient was fully satisfied with functional and aesthetic outcomes. Computer-assisted implant surgery appears to be a plausible tool when performing implant rehabilitation in the anterior maxillae. CAIS provides a three-dimensional planning and guidance for both, implant bed preparation and implant placement, which might shorten the surgery time and patients’ morbidity.

**Keywords:** aesthetic zone, fully digital, implant

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[P-19]

## **Short-Implant Retained Overdenture Prostheses:Case Report**

Gizem Beste Yıldırım, Burcu Batak, Özge Nur Özbey

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**Introduction:**Conventional prostheses restore aesthetics and function in cases of complete edentulism. However, the limited stability of the prosthesis, especially in patients with excessively resorbed mandibular crest, may adversely affect the patient's quality of life. Overdenture prostheses with implant retainers are more effective than conventional full dentures, which restore functional activity and aesthetics in edentulous patients. It is a stable alternative. However, with tooth extraction, aging, and, excessive resorption of the alveolar crest may not make standard implant placement possible. Short-implants are used for overdenture treatment with less surgical protocols, especially in such cases where alveolar ridge insufficiency may prevent treatment with implants.

**Case:** In the systemic anamnesis taken from a 71-year-old female patient who referred to our faculty clinic with the complaint of complete edentulism, it was learned that she had hypertension, diabetes, osteoporosis and had been using a total prosthesis for 4 years. As a result of the clinical examination, it was determined that alveolar ridge resorption due to age and long-term use of total prosthesis, consequently decreased the stability of the mandibular total prosthesis. It was decided to make an implant retained mandibular overdenture. As a result of the panoramic x-rays and tomographies taken, it was determined that there was not enough bone level and thickness for standard implants. The patient has been informed about the possible risks. Two short- implants with a length of 5.2 mm (Bredents, Germany) were placed in the anterior region of the mandible. After a 3-month osseointegration period, an impression was taken and an overdenture was made. At the same time, an opposing posterior total prosthesis was made.

**Conclusion:** By using short implants, less traumatic surgery was provided and the risk of damaging the anatomical structures was also reduced. No clinical problems were observed as a result of 7-month follow-up of two short-implant retained overdenture prostheses placed in the mandible.

**Keywords:** Complete edentulism, overdenture, short-implant



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[P-20]

### Acquiring emergence profile and esthetic improvements in a class 2C UU case: case report

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**Objective:** In this case of severe buccal bone resorption (class 2c uu according to the classification of Tarnow ), it was aimed to achieve an ideal emergence profile with immediate implant placement and immediate loading in the esthetic zone.

**Case:** A 41-year-old female's left maxillary central tooth had been treated with root canal treatment and apical resection 2 times. Extraction of the maxillary left central tooth was decided due to trauma and severe bone resorption in the buccal wall. After extraction, an implant (NTA Implant®, Switzerland) was placed immediately. In order to preserve the long-term soft and hard tissue contour, connective tissue harvested from the tuber and small particle xenograft (Geistlich Bio-Oss®, Switzerland) were used, and a collagen membrane (RTM Cytoplast Osteogenics®, USA) was placed by using the tunnel method and ice cream cone technique. For the purpose of acquiring an emergence profile, temporary crown was designed with digital workflow by using PEEK (polyetheretherketon) material. Maryland type provisional prosthesis were produced to ensure full compatibility with the implant and prevent possible rotation. Following the instructions provided by the manufacturer, the temporary crown was screwed to the implant. 2 months after implant placement, gingivectomy was done with radiofrequency device (Surtron®, Italy) in the anterior area for gingival leveling. After the period of osseointegration, the implant-supported crown was produced of zirconia. Glass ceramic laminate veneers were produced for the natural teeth in the restored area. The patient's planned gingival leveling, smile esthetics and emergence profile of the implant-supported crown were achieved. **Conclusion:** A predictable treatment can be used with proper materials and techniques in immediate esthetic cases even if there is no buccal wall. It was observed that the buccal bone was in the planned position and the emergence profile and tissue contour of the implant-supported crown were compatible with the adjacent natural teeth during the two years. No clinical or radiographic symptoms of periimplantitis were observed.

**Keywords:** class 2 C UU, immediate implant placement and loading, emergence profile



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### [P-21]

#### **Enucleation of a Mandibular Radicular Cyst, Followed by Implant-Supported Dental Restoration: Case Report**

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**Objective:** Radicular cyst is the most frequent odontogenic cyst observed in mandible and maxilla: it is usually associated with carious, nonvital tooth. There are several treatment options for radicular cysts. These options are endodontic treatment, extraction of the problematic tooth if it's unrestorable, as well as procedures such as decompression, marsupialization, and enucleation with primary closure in cases of large lesions. The choice of treatment depends on various factors, including the size and location of the cyst, the characteristics of the cystic epithelial lining, the proximity of the cyst to adjacent vital teeth and important anatomical structures and the cyst's behavior, which encompasses clinical aggressiveness and radiological invasiveness. There are controversies as to whether bone graft material can provide a significant improvement in bone regeneration after cyst enucleation and whether this will actually benefit subsequent implantation.

**Case:** A 32-year-old male patient consulted our office with a chief complaint of pain. Intraoral examination displayed swelling (in the left mandibular vestibule in relation to teeth 44 to 46) that were tender to palpation. On clinical examination, teeth 44 and 45 showed mobility and were painful on horizontal and vertical percussion. An orthopantomogram displayed a well-limited radiolucent image, extending from tooth 44 to tooth 46 and occupying. It appeared unilocular, with well-defined, nonsclerotic borders, extending from distal aspect of 43 to mesial aspect of distal root of tooth 46. Aspiration of the lesion was performed under local anesthesia and it released blood and a presumptive diagnosis of radicular cyst was made. With a blade #15, a crestal incision followed by one relaxing incisions was performed before raising a full-thickness flap. After separating the lesion's membrane from the flap, enucleation was accomplished and the entire pathological specimen was collected and immersed in a fixative solution for histopathological examination. The flap was relocated with 3/0 silk interrupted sutures. Pathological report concluded that the lesion was a radicular cyst. Nine months following cyst enucleation, CBCT shows a complete bone regeneration of the whole area and two Swiss Tri® bone level implants were placed in locations of teeth 44 and 46 and were restored with cemented prostheses 3 months after their surgical placement.

**Conclusion:** This case report illustrates the successful management of a mandibular radicular cyst by enucleation and site rehabilitation without graft materials.

**Keywords:** Radicular Cyst, Dental Implants, Enucleation

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[P-22]

**Comparative Finite Element Analysis of Zygomatic Implants with Several Localization Alternatives in the Rehabilitation of Atrophic Maxilla**

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**Objective:** Rehabilitation of the severely resorbed maxilla is challenging. Placing a conventional implant is only possible with augmentation procedures, which has certain drawbacks. The zygomatic implant (ZI) method is regarded as an effective treatment since it has a shorter duration and less morbidity, usually with only one major surgery. The body of the zygomatic bone presents excellent dense cortical bone and provides sufficient primer stability. In the “sinus sloth technique” ZI is placed directly over the alveolar ridge through the maxillary antral wall. In the “extra sinus technique”, ZI is placed in zygomatic bone external to the maxillary sinus without maxillary sinus wall antrostomy. There is a lack of consensus regarding the best treatment configuration with different ZI techniques. Finite element analysis (FEA) is widely used to simulate clinical situations and investigate the biomechanical behaviours of materials. This study aims to compare the stress values with sinus slot and extra sinus ZI techniques with different implant combinations by taking advantage of FEA.

**Materials-Methods:** A 3D FEA model was constituted based on computed tomography (CT) data of a patient with an atrophic maxilla who was scheduled for ZI surgery. ZIs were virtually placed into 3D models with sinus slot or extra sinus techniques with two different combinations. Occlusal forces were applied to the models from the buccal direction. The von Mises stress values on all implants were analysed. Alveolar cortical bone in the molar area around the ZI underwent analysis to determine its minimum principal stress (compressive stress).

**Results:** The configuration of four ZIs and with the sinus sloth technique had the lowest stress values on the implants and the surrounding bone. Sinus slot technique showed lower stress values compared to the extra sinus technique in all combinations.

**Conclusion:** The combination of four ZIs with the sinus sloth technique can be considered biomechanically favourable, with better stress distribution on implants and supporting bone.

**Keywords:** atrophic maxilla, zygomatic implant, finite element analysis, stress distribution



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[P-23]

### Is Flapless Implant Surgery Always Successful with Surgical Guidance?

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**Objective:** Our aim is to evaluate alternative surgical approaches in patients with bleeding disorders in cases of complete edentulism and to produce easy solutions with a multidisciplinary approach.

**Case:** A 70-year-old male patient applied to our clinic due to toothlessness. In the anamnesis taken from the patient, it was learned that he had diabetes, prostate and hyperthyroidism and that he had a coronary stent due to a history of embolism. It was learned that he used Tamprost capsule, Janumet tablet, Levotiron tablet and Plavix tablet. According to the results of the consultation, it was learned that the patient had no obstacle to start surgical procedures, but the bleeding condition had to be kept under control. The patient had a total denture for the upper jaw, and a removable partial denture for the lower jaw was made by us. Since the patient had a bleeding problem, a flapless (punch) surgical technique was planned to be applied in order to ensure rapid soft tissue healing. CBCT was performed while the patient's current prostheses were in the mouth. The records were translated in STL file. Planning was made with dental software in line with the requests of surgeons and prosthodontists. Implant positions and angles were designed considering the prosthetic phase. Then, a personalized surgical guide was produced with a 3D printer (using biocompatible and FDA-approved photopolymer resin). The surgical guide was sent with the plaster model and fixation pins. Surgical guides are very useful in providing ease of flapless application, shortening the procedure time, and making an accurate and precise application about the position, depth and angle of the implant. However, sometimes unpredictable errors may occur in the positioning and angling of the implant applied with this guide. In this case, the procedures were also performed, but before the cover screws were inserted, the guide was removed and the implant placements were checked. And we observed that some implants did not settle at the desired depth. Brake it again and place it at the appropriate depth and the process is completed. After 2 days, we observed that the patient's valves were completely covered with epithelium, which was completed with a closing screw without suturing. The absence of the need for sutures was a great advantage in terms of postoperative comfort.

**Conclusion:** Faster and more comfortable treatments with digital dentistry strengthen our hands day by day and allow us to perform more successful treatments. We manage to minimize the margin of error by making digital designs and productions. In this case, we planned the surgical operation using a surgical guide, which is the ultimate in digital dentistry. During the operation, we observed that the implant was not placed at the ideal diameter and depth, as we thought it was due to the decreased sharpness of the drills of the surgical set. For this reason, even though we plan ideal treatments with digital dentistry, mastering all classical surgical methods and managing unexpected surgical complications is essential for success.

**Keywords:** flapless, punch, surgery, guide

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**[P-24]**

**Treatment possibilities and postoperative complications at extracapsular fractures of the mandibular condyle**

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**Objective:** Mandibular condylar fractures represent 25%–35% of all mandibular fractures. The treatment of mandibular condyle fractures remains controversial despite many studies regarding the subcondylar type of fracture.

The aim of this study is to analyze the outcome and recovery rates after open and closed treatment of extracapsular mandibular condyle fractures, regarding postoperative malocclusion, mouth opening, wound healing, pain, and swelling.

**Materials-Methods:** A retrospective cohort study based on 377 condylar fractures and prospective comparative study on a total of 16 patients were implemented, using two study groups – group A, consisted of 8 patients with placed closed vacuum drain, and 8 patients in group B, without closed vacuum drain, measured on 1st and 3rd postoperative days, whereas both the parameters were comparable on the 7th and 15th postoperative days.

**Results:** Evaluation of the early postoperative sequels, showed significantly higher values in group B, while malocclusion was the most frequent long-term complication after open reduction and rigid intermaxillar fixation (ORIF).

**Conclusion:** There was no statistically significant difference in the incidence of pain, mouth opening, swelling, and wound healing in patients with and without closed suction wound drainage after ORIF of condylar fractures. ORIF, using a retromandibular transparotid approach, is the appropriate treatment of choice for extracapsular condylar fractures of the mandible.

**Keywords:** extracapsular fractures, condyle, open reduction, postoperative complications





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[P-26]

### Oral lichen planus clinical correlations: Exposure to metal oral restorations

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**Objective:** Oral lichen planus (OLP) and oral lichenoid reaction (OLR) constitute clinical entities with strong but unclear etiologic relation to dental materials. The aim of this study was to evaluate a correlation between clinical form of OLP/OLR and the quantity of dental metal restorations in the oral cavity thus utilizing an exposure to metal index. **Materials-Methods:** 29 patients were chosen based on clinical (either reticular or erosive clinical forms) and histologic findings suggestive for OLP/OLR. The files of patients were retrieved from the archives of the Department of Oral Medicine/Pathology, School of Dentistry, Aristotle University of Thessaloniki, Greece during the period 2009-2019. The medical history of the patients did not include any disorder or medication associated with lichenoid lesions and the measurements took place concurrently with the establishment of the diagnosis, thus no treatment for the lichen planus had been administered prior to the measurements. Quantitative measurement of the percentage of dental surfaces restored through metal restorations and correlation with the clinical and histologic findings of OLP/OLR was evaluated. The EM index (exposure to metal) was evaluated through a scale 1-3 which corresponds to the percentage of dental surfaces restored through metal restorations. The statistical analysis was performed with the Pearson Chi-square test and the significance level was set at  $p \leq 0.05$ . **Results:** The EM index was measured by dividing each tooth into 5 surfaces (occlusal, mesial, distal, buccal, lingual), subsequently multiplying the number of available teeth with the number 5 to calculate the total number of surfaces, then counting the number of surfaces with metal restorations both fillings and crowns (in case of metal ceramic crowns, the respective dental surface is taken into account only in case of macroscopically exposed metal), dividing the number of surfaces with metal restorations with the total number of surfaces and multiply by 100 so that the results take the form of percentages (%) and finally classifying the percentages into 3 groups: 1: 0% metal restorations, 2: 1-25% metal restorations, 3: >26% metal restorations). The percentage in female patients ranged from 0% to 100% whereas in male patients from 0% to 60%. According to the clinical form of lichenoid lesion, the percentage ranged from 0% to 60% in the reticular lichen planus cases and from 0% to 100% in the erosive lichen planus cases. There was not any statistical difference between lichen planus cases, in total, and normal oral epithelium. However, the levels of EM were marginally similar between the Reticular Lichen planus and the Erosive Lichen planus (Fisher's Exact Test,  $p = 0.056$ ). **Conclusion:** In our study, EM index was higher in female patients and in erosive lichenoid lesions. No statistically significant correlation was established, since EM levels were marginally similar between the two clinical forms of lichen planus. These findings should be tested and supported by larger samples of patients, since the aforementioned Fisher's Exact Test,  $p = 0.056$  could turn below the threshold of 0.05 if more patients were included.

**Keywords:** lichen planus, lichenoid reaction, oral, metal restorations, exposure to metal



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[P-27]

### **Relationship between oral microbiome and gut – brain axis**

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**Objective:** The aim of the paper was to call attention to bidirectional communication between the microbiota and the brain and possible effects of oral microbiota to this link.

**Materials-Methods:** Gut-brain axis is increasingly becoming a vital factor in understanding general health and disease as a result of being responsible of homeostasis. Recent findings regarding gut-brain axis have led to figure out ‘the relationship between intestinal microbiota and immunity’. Within the next few years, the relationship between intestinal microbiota and immunity is likely to become an important component in oral health and disease too, because the researchers have seen the microbiotas in the oral cavity and gut are likely common.

**Results:** Previous work has mostly focused on gut microbiota and the characteristics of oral microbiota have not been dealt with in depth.

**Conclusion:** Our knowledge of microbiota is still largely based on very limited data.

**Keywords:** gut brain axis, intestinal microbiome, oral microbiome, pediatric dentistry, immunity

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[P-29]

**Drug Induced Lichenoid Reactions in the Oral Cavity: A review**

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**Objective:** In clinical practice, clinicians are often called to deal with the reactions of various drugs in the oral cavity. Lichenoid lesions are defined as those lesions that resemble both clinically and histopathologically those of lichen planus, but their appearance is due exclusively to the use of certain medicines. The purpose of this article is to highlight the drugs implicated in the occurrence of lichenoid reactions.

**Materials-Methods:** A search of the literature was performed, from 2010 to date, in the Pubmed- Medline database using the keywords ‘oral lichenoid drug reactions’, ‘lichenoid drugs lesions’ and ‘lichenoid eruptions’. Inclusion criteria were that the articles were written in English and that adequate documentation was provided, either through comprehensive literature review, or through high quality figures.

**Results:** Lichenoid reactions can result from the systemic use of various medications. It is estimated that the prevalence of lichenoid eruptions ranges from 0.5% to 6% of the general population. The average time of onset of symptoms is 6 to 12 weeks, without excluding their appearance after several months. Drugs that have been adequately studied for causing such reactions are anti-hypertensives (such as ACE inhibitors), NSAIDs, diuretics, beta-blockers, anti-malarials and oral hypoglycemics. Recently, biologic agents including monoclonal antibodies like imatinib, infliximab etc, which are used to treat both various cancers and autoimmune diseases, have been implicated in causing lichenoid reactions. The clinical appearance resembling lichen planus involves lesions located mainly on the buccal mucosa and the tongue.

**Conclusion:** Although lichenoid reactions to medications are not a common clinical entity, the clinical practitioners should be aware of their early recognition and treatment in the mouth, as well as the discontinuation of the responsible medication in cases where this is feasible, of course always after consultation with the responsible treating physician.

**Keywords:** oral lichenoid drug reactions, lichenoid drugs lesions, lichenoid eruptions

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## [P-30]

### Use of smartphones and the importance of communication in dentistry during the covid pandemic

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<sup>2</sup>Dr Mustafa Sehovic Public Medical Center, Tuzla, Bosnia and Herzegovina

**Objective:** Due to 2020 Covid pandemic the availability of dental health care, for both healthy and Covid patients was scares.

The goal of our presentation is to show the importance of good dental practice, trust and communication through smartphones for the purpose of dental health care access.

**Case:** Mother of the boy(8) called the pediatric dentistry office, because of sores located on the inside of the lower lip. She stated that the sores are painful, the child cannot eat and has a fever. Mother was instructed to take photos of the changes in the child's oral cavity using smartphone. Through a detailed analysis of the photos, it was diagnosed as aphthous changes and suggested that lysozyme with vitamin B6, 6x a day should be administered and was given instructions for maintaining oral hygiene. It was advised to eliminate acidic and salty ingredients from the child's diet and fluids to take. Vitamins to strengthen immunity were suggested. Mother contacted the doctor's office daily, informing it about the improvement of the condition after receiving the instructions.

After 7 days the changes disappeared.

A 35-year-old nursing mother, called the pediatric dentistry office. She stated that she had been Covid + for 5 days, and was reporting pain and swelling in the area of the lower jaw. She was febrile. She was instructed to send photos, intraoral and extraoral. Based on the photos obtained, it was concluded that there was a large swelling in the left side of the cheek. By examining the intraoral photos, which the patient took following our instructions, the inflamed, edematous mucosa in the area behind the teeth 37 was noticed. The patient stated that she took amoxicillin tbl, 500 mg, 3x1, after contacting her pediatrician. After 2 days, called back and stated that she had problems opening her mouth. Due to the stated condition, the oral surgeon was contacted and suggested using amoxicillin + clavulonic acid tbl. 1000 mg, 2x1, analgesics, a cold compress and rinsing the mouth with a lukewarm hypertonic solution. The patient was instructed to call in every day, and to visit the dental office as soon as possible in order to make a clinical examination, and OPG scan for final diagnosis. The patient went to the doctor's office in 2 days, OPG scan was performed, a diagnosis of difficult eruption of the tooth 38 was made, circumcision was performed. The condition was improved after 10 days of taking antibiotics.

**Conclusion:** The use of smartphones and digital dentistry made it easier for dentists to work during and after the pandemic. This way, it was possible to help parents and children in assessing the state of their oral health and providing adequate professional advice, without the need to visit the dental office, which would endanger general health during the pandemic period.

**Keywords:** Communication, smartphone, covid, photos





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[P-31]

### **Mouthguards for the prevention of dental injuries**

Mirjana Djurickovic, Aleksa Djurickovic, Milan Martinovic  
Faculty of Medicine, University of Montenegro

**Objective::** To investigate the frequency of use of mouthguards in children aged 10-15 who are training contact sports - basketball, handball and mixed martial arts (MMA) in the territory of the municipality of Podgorica. **Materials-Methods:** 51 athletes participated in the research, 37 male and 14 female (22 basketball players, 21 handball players and 8 MMA athletes). Respondents filled in questionnaire, which contained 4 questions about basic data, 7 questions about sports and training and 22 questions about the use of mouthguards and tooth injuries.

**Results:** The average training length of the respondents is 3 years, and they train 6 times on average per week. The majority of athletes (44 respondents, 86.2%) do not use mouthguards during training and matches; and the main reason is lack of information (78.4%). The same percentage (78.4%) doesn't know why they don't use a protector, while much less common reasons are the discomfort of the protector (3.9%) and finance (17.7%). Respondents who use mouthguards (7 respondents) have semi-finished protectors, of which only one child uses the protector from the very beginning of training. Eighteen respondents (35.2%) had a tooth injury during training or a match, most often it was a fracture of the tooth crown (75.3%)

**Conclusion:** Most athletes do not use mouthguards in training and matches, but the basic ones the reason is lack of information about their importance

**Keywords:** Mouthguards, trauma, children



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[P-32]

### Diagnostic dilemmas in the most common oral lesions and diseases

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**Objectives:** The diagnosis and treatment of lesions of the oral cavity are an integral part of oral health care, hence the early detection and treatment of these lesions will greatly improve the quality of life of patients and the survival rate in cases of oral cancers.

**Aim:** To present the most common oral changes and lesions, their clinical characteristics and differential diagnostic possibilities, in order to avoid mistakes and ensure an accurate diagnosis.

**Methods:** research was done exploring specialized databases PubMed, MEDLINE, EBSCO, Science Direct, and Scopus for the period 2010-2023, by use of MeSH terms: pigmented oral lesions, diffuse and bilateral pigmented lesions, focal pigmented lesions, differential diagnosis.

**Results:** The most common oral manifestations were categorized in groups as follows: localized (intravascular, extravasated blood, melanocytic, tattoo) and generalized (hereditary, with systemic diseases, physiologic and medications associated).

**Conclusions:** In order to minimize wrong diagnoses and achieve more accurate ones, it is necessary to consider the main complaints of patients, medical and dental history, and clinical manifestation, not excluding paraclinical examinations. Laboratory tests, and in many cases histopathological examination, which is known as the gold standard in the diagnosis of oral pathology, are used to confirm the clinical diagnosis.

**Keywords:** oral cavity lesions, pigmented lesions, differential diagnosis



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[P-33]

### **Mandibular odontogenic keratocysts - treatment**

Dzenad Ganjola, Snezana Raznatovic

JU KC CG, Stomatoloska poliklinka Podgorica, Montenegro

**Objective:** Experience based surgical treatment of 37 mandibular odontogenic keratocysts, with special reference to their recurrence, and to review the literature on this subject  
**Materials-Methods:** A retrospective analysis was conducted of all odontogenic cysts treated in the department of oral surgery and oral medicine between 2015-2020. Out of total 219 cysts 37 mandibular odontogenic keratocysts were histopathologically diagnosed preoperatively. They were surgically treated through an intraoral approach by resection without continuity defects. The lower border of the mandible and/or the posterior border of the ramus was left intact. In cases where teeth were in continuity with the lesion, they were extracted. In cases where cortical perforation occurred, any associated overlying mucoperiosteum was excised. All patients were reviewed annually for a follow-up period 2-4 years.  
**Results:** All keratocysts were found in the mandible: 29 in the ramus and angular region, and 8 in the body of mandible. No recurrences of the operated odontogenic keratocysts were observed during the follow-up period.  
**Conclusion:** Removal of odontogenic keratocysts by resection without continuity defects is a satisfactory method of treatment according to our findings.

**Keywords:** mandibular odontogenic keratocysts, mandible, histopathologically diagnosed

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[P-34]

**An evaluation of maxillary molar immediate implant placement with crestal sinus lifting: A case series**

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**Objective:** The purpose of the present study was to evaluate the clinical success of implants placed in fresh extraction sockets with simultaneous maxillary sinus floor elevation using the osteotome technique and bone graft materials. **Methods:** Eight maxillary molars in 8 patients were included in the case series. 8 immediate implants were placed into socket after maxillary molar extraction. Remaining bone defects were augmented with autolog bone grafts. All the patients required the extraction of a maxillary first molar-close to the maxillary sinus- and were scheduled for immediate implant placement with sinus floor elevation. One dental implant was placed per patient, the graft materials used in sinus augmentation and all implants were allowed to heal for 6 months prior to prosthetic rehabilitation. No implants failed after prosthetic rehabilitation with an 18-month follow-up period and no significant bone loss was detected at the final follow-up visit. **Conclusion:** When adequately performed, the surgical procedure described as immediate implant placement and simultaneous sinus floor elevation appears to be unproblematic and predictable in terms of clinical success.

**Keywords:** immediate, implant, extraction, sinus



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[P-35]

**Nasal membrane perforation occurred during cyst enucleation in the maxilla anterior region**

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**Objective:** Radicular cysts are seen the most common cysts in the jaws. It occurs at the apex of the devital tooth following pulpal necrosis that develops as a result of caries or trauma. They are round or oval, well-circumscribed radiolucent lesions associated with a tooth root that can be diagnosed on routine periapical or panoramic films. When the cyst cavity becomes infected, it causes pain and swelling, and patients usually apply to the clinic with these complaints. Tooth mobility, root resorption, displacement and loss of vitality may be encountered in the large cysts. Radicular cysts are more common in the maxilla than in the mandible. They are slow-growing lesions and usually do not reach very large sizes. When the size of the lesion is less than 1cm, most clinicians recommend the endodontic treatment; however, marsupialization or enucleation is preferred as the surgical method for large lesions. The purpose of this case report is to present the rarely encountered nasal base perforation in the enucleation of cysts in the maxilla anterior region adjacent to the nasal base and its treatment.

**Case:** In this case report, a 60-year-old male patient applied to the maxillofacial surgery clinic with a complaint of buccal swelling in the anterior region of the maxilla. In the radiographic examination, it was seen that the dimensions of the radiolucent lesion were 2x3x5.5 cm, adjacent to the nasal floor, and included right canine, right lateral, right central, left central and left canine tooth. Root canal treatment was performed on the teeth associated with the lesion. Then a biopsy was taken from the lesion and the histopathological diagnosis was radicular cyst. Mobile left central tooth, which was inside the lesion and had no bone support, was extracted and marsupialization treatment was applied from this area and it lasted two years. There was a little reduction in the volume of the lesion, but the lesion was still adjacent to the nasal floor. Since the volume of the lesion did not reduce after marsupialization treatment, enucleation was decided under the general anesthesia. Triangular flap was elevated and perforation of the nasal membrane occurred while the lesion was being enucleated. The perforation site was sutured with 6.0 vicryl suture. There was no intra-operative bleeding and then the flap was closed using 3-0 silk suture. The patient was called for control on the 1 st, 3 rd, 7 th and 10 th postoperative days. Sutures were removed on the 10 th day. The patient had no complaints about bleeding or infection.

**Conclusion:** Cysts adjacent to the nasal membrane should be carefully enucleated, and if perforation occurs, the membrane should be sutured and monitored the patient for the risk of bleeding.

**Keywords:** Maxilla, Nasal membrane perforation, Radicular cyst

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[P-36]

**Influence of Bleaching Agents on the Surface Properties of Novel Indirect Restorative Materials**

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**Objective:** The aim of this in vitro study was to investigate the effects of whitening agents of different type, concentration and application procedures, on surface roughness and microhardness of indirect esthetic restorative materials with different manufacturing methods.

**Materials-Methods:** The indirect restoration materials tested in the study are: 3D-printed composite (saremco print CROWNTEC; SAREMCO Dental AG) produced by additive manufacturing, resin nano ceramic (Lava Ultimate; 3M Espe), by subtractive manufacturing, and composite resin (Enamel plus HRi; Micerium, Italy)] by conventional moulding technique according to the manufacturer's instructions. 50 disc-shaped samples were prepared from each test material ( $\varnothing=8$  mm, h=2 mm). The samples were polished with 600-800-1200-2000 grit silicon carbide sheets. The specimens were divided into 5 subgroups according to the bleaching agents applied (n = 10/group): control (the samples were put in the incubator in distilled water for 14 days), Whiteness Perfect (16% carbamide peroxide was applied for 3 hours a day for 14 days), Whiteness HP Blue (35% hydrogen peroxide was applied in one session, for 40 mins), Opalescence PF (16% carbamide peroxide, 6 hours a day, for 7 days), Opalescence Boost (40% hydrogen peroxide was applied in one session, 20 min applications twice). After the bleaching procedure surface microhardness were measured using the micro hardness testing machine under 300 gf of loading in 15 seconds. Three indentations were made on each specimen and the Vickers hardness values were averaged. The surface roughness measurements of each indirect restorative material after the bleaching procedure were measured with a contact profilometer (perthometer M1, Mahr, Germany). Normality of data distribution was tested using the Shapiro–Wilk test. Statistical analysis was performed using a two-way analysis of variance (ANOVA) and Tukey's multiple comparison tests at a significance level of  $p<0.05$ .

**Results:** Material type and bleaching agents had a significant impact on hardness and surface roughness values ( $p<0.05$ ). Lava Ultimate group showed the highest hardness values, while Saremco Print-CROWNTEC showed the lowest ( $p<0.05$ ). The differences between the control and bleaching agent groups of each material were not found to be statistically significant ( $p>0.05$ ). Opalescence Boost bleaching agent showed no significant effect on surface roughness for all indirect restoration materials. Enamel Plus HRi bleached with Whiteness HP Blue showed the highest surface roughness values ( $p>0.05$ ).

**Conclusion:** Type of indirect restorative materials and bleaching agents had an impact on microhardness and surface roughness.

**Keywords:** Three-Dimensional Printing, CAD/CAM, Microhardness, Surface Roughness

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[P-37]

## **Oculo-auriculo-fronto-nasal syndrome: A case report**

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### Objective:

Oculo-auriculo-fronto-nasal syndrome (OAFNS) is a rare congenital disorder combines the features of frontonasal dysplasia (FND) and the oculoauriculovertebral spectrum (OAVS). Dysmorphic features of OAFNS include hypertelorism, flat broad nose, vertical groove down the middle of the face, microtia, preauricular tags, facial asymmetry, mandibular hypoplasia and epibulbar lipodermoids.

The aim of this case report is to present the medical and orthodontic aspects of a 6-year-old patient with Oculo-auriculo-fronto-nasal syndrome.

### Case:

The 6-year-old patient with operated unilateral cleft lip, bilateral primary cleft palate and facial asymmetry was referred to our clinic with OAFNS. Genetic chromosome analysis revealed a normal female karyotype with no family history of frontonasal dysplasia. The patient had surgery to repair her ventricular and atrial septal defect when she was 7 months old and lip reconstruction surgery when she was one year old. She has hypertelorism, midline defect of the frontal bone, notched broad nasal tip, wide nasal bridge, absence of the nasal tip, mandibular hypoplasia, thoracic scoliosis.

Oral clinical examination revealed unilateral (right-sided) cleft lip and bilateral primary cleft palate, high-vaulted palate with narrow maxillary arch, transversal maxillary deficiency. All deciduous teeth were extracted due to deep caries a year ago. Permanent 1st molars and lower incisors were present in the maxillary and mandibular dental arches with Angle Class I molar relationship. Lateral cephalometric analysis revealed skeletal Class II relationship with retrognathic maxilla and mandible. High angle growth pattern was observed in vertical direction. CBCT examination revealed that the patient has no congenitally absent teeth. The path of eruption of the upper permanent incisors are abnormal.

### Conclusion:

As multidisciplinary treatment approach including medical and dental professionals is quite important for the treatment of patients with OAFNS, dentists and orthodontists should be aware of this syndrome.

**Keywords:** Oculo-auriculo-fronto-nasal syndrome, Frontonasal dysplasia, craniofacial clefts, cleft lip and palate



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[P-38]

### Addressing Dental Crowding: An Effective Treatment Approach without Extractions

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<sup>1</sup>University Dentistry Clinical Center of Kosova

<sup>2</sup>Dental clinic “Magic Dent”

#### Objective:

The objective of this presentation is to present an Effective treatment approach without extractions in addressing dental crowding in teenage female patient, with periodontal tissue disease.

#### Case:

A 14-year-old female patient sought treatment due to the presence of crowded teeth and concurrent periodontal tissue issues.

#### Clinical Findings:

Extraoral Examination: The patient exhibited facial asymmetry and a flat profile.

Intraoral Examination: The patient had permanent dentition but displayed poor oral hygiene. A Class I malocclusion was observed along with primary bimaxillary crowding. The teeth were of normal shape and size. Additional findings included a midline deviation in the mandible, a locked bite of tooth d.15, and a cross-bite on the right side.

Treatment: In this patient, a non-extraction therapy approach was implemented using self-ligating system braces. During the final phase of treatment, retention appliances were applied to maintain the achieved results.

Results: The treatment provided the following outcomes:

Overjet successfully reduced to 2 mm, Overbite was effectively corrected to 2 mm.

Significant improvement in alignment, with successful correction of tooth inclinations and rotations.

Resolution of the previously noted issues of a locked bite and cross-bite.

Proper alignment of teeth within the dental arches.

Achievement of an optimal relationship between the teeth and jaws.

The patient expressed a high level of satisfaction with her enhanced appearance, attesting to the success of the treatment.

Additionally, the treatment effectively alleviated all previously noted inflammatory symptoms.

Remarkably, there was no observed relapse six months post-treatment. The entire orthodontic treatment spanned a duration of one and a half year.

#### Conclusion:

Crowded teeth represent a prevalent orthodontic issue with implications extending beyond mere aesthetics. Beyond the obvious cosmetic concerns, crowding can also give rise to dental health challenges, including an increased risk of tooth decay and periodontal disease. Orthodontic interventions, while contributing to the attainment of a more attractive smile, play a crucial role in enhancing overall oral health. By addressing crowding, orthodontic treatment not only improves the appearance of teeth but also mitigates the risk of dental problems, fostering healthier and more resilient oral structures.

**Keywords:** Dental crowding, self-ligating system, treatment





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[P-39]

### Eruption tooth failure in non syndromic patient- Case report

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**Introduction.** Dental eruption constitutes the physiologic process where a tooth is vertically displaced from its initial non-functional, developmental position towards its functional position. Teeth eruption shows natural variations in timing for each child, which are pretty normal. On the other hand, the following are the problematic conditions that can interlude the eruption process: genetic abnormalities, nutritional deficiency, development disorders, Dawn's syndrome, prematurity and low birthweight. Tooth eruption disorders may be expressed in various clinical conditions. Sometimes interceptive measurements could be helpful to improve the situation, but in more complicated cases multidisciplinary treatment is necessary. The aim. Through this presentation we will show our experience in treating a non-syndromic patient with tooth eruption failure.

**Material and method.** Patient F.Gj, 11 years old male, came at the clinic with his concerned parents because in the upper jaw only two teeth were erupted. The clinical examination confirmed missing of all permanent teeth in the upper dental arch, except teeth 16 and 26. Panoramic x-ray confirmed the presence of all unerupted permanent teeth in both jaws, except third molars. CBCT was useful to define the full and normal evolution of 4 anterior maxillary, up in the maxilla, horizontally positioned, almost parallel to the occlusal plane and with no obstacles in the eruption's path. During anamnesis, parents revealed that their son was not suffering from any syndrome, had no history of trauma, and the parents themselves had no problems with tooth eruption. The patient had a normal weight at birth, but later on in life was underweight. Time after time the pediatrician prescribed to the child supplement of Iron, because of low levels of Iron. The multidisciplinary team work protocol was decided: partial removal of bone cover under normal path's eruption of maxillary anterior teeth; observation time under x-ray examination; surgical exposure of anterior maxillary teeth's crown; orthodontic treatment to move these teeth toward normal position by using different tools and biomechanics according to the phase of treatment. **Results.** After 4 months of first surgical intervention, a second one was necessary to fix buttons on the exposed crowns and start traction. All permanent teeth were present in the upper jaw after 2 years, except first upper premolars, extracted due to the missing space for upper canines. The patient and parents were very happy. Orthodontic treatment continued to improve: anterior cross bite, narrow maxillary dental arch and occlusal relations. **Conclusions.** Delays in tooth eruption are closely related to the need for orthodontic or multidisciplinary treatment. Accurate diagnosis of etiological factors, a careful treatment plan and patient cooperation are very important for the final treatment.

**Keywords:** teeth eruption disorder, multidisciplinary treatment, non-syndromic patient



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[P-40]

### Methylenetetrahydrofolate reductase deficiency: A case report

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#### Objective:

Methylenetetrahydrofolate reductase (MTHFR) deficiency is the most common genetic cause of increased levels of homocysteine in the plasma (hyperhomocysteinemia) which can be accompanied with low levels of vitamin B12. Mutations in the MTHFR gene can affect the body's ability to process amino acids (namely, homocysteine) which can lead to some adverse health outcomes. Conditions that associated with MTHFR gene mutations include homocysteinemia, ataxia, peripheral neuropathy, microcephaly, scoliosis, anemia, cardiovascular diseases, mental health conditions and behavior disorders. The aim of this case report is to present the medical and orthodontic aspects of a 13-year-old female patient with Methylenetetrahydrofolate reductase deficiency.

#### Case:

A 13-year-old female patient was referred to our clinic with the chief complaint of “having extra teeth” who was diagnosed with Methylenetetrahydrofolate reductase (MTHFR) deficiency. The patient has symptoms such as microcephaly, lethargy, seizures, hypotonia, developmental delay, eating disorder, cytopenia, Hemolytic uremic syndrome (HUS), cerebral atrophy, glomerulopathy, and thrombosis consistent with the deficiency.

Clinical and radiographic examination revealed skeletal Class I relationship and a normal growth pattern in the vertical direction. Intraoral examination showed that the patient had Angle Class II canine and molar relationships on both sides with minimum arch length discrepancy. The upper dental midline is shifted 2 mm to the right, whereas the lower dental midline coincides with the facial midline. Upper right and left deciduous second molars were retained. Panoramic X-ray and CBCT evaluation showed abnormal path of eruption of both upper second premolars. Upper right second premolar is impacted horizontally whereas upper left second premolar is situated palatal to the deciduous second molar.

#### Conclusion:

Methylenetetrahydrofolate reductase deficiency may cause dental and medical problems that need to be treated with multidisciplinary approach including orthodontics, oral surgery, radiology, genetics, and endocrinology. To generate appropriate treatment plans, the dentists and physicians should be aware of this condition.

**Keywords:** Methylenetetrahydrofolate reductase deficiency, homocysteine, endocrinology, orthodontics, impacted teeth



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[P-41]

### A practitioner's perspective to the Orthodontic fixed appliance therapy

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#### Objective:

Therapy with fixed appliances is more than common in everyday practice of an orthodontist. Depending on the level of knowledge, experience and available materials, orthodontists always find their way for an ideal solution. On that path everyone of them has some special tips, some special habits which are result from their longtime experience. The aim of this study is to learn the opinions and standpoints of orthodontists about their everyday practice.

#### Materials-Methods:

A questionnaire was given to orthodontists, employed at the Clinic of Orthodontics in Skopje, RNM. It consisted of 14 questions, regarding treatment of bimaxillary crowding, class I (Angle), non-extraction cases. 22 doctors answered from their own experience.

#### Results:

The results showed different opinions about age, time of treatment start, types of wires used and frequency of wire changing, elastic vs. metal ligatures, retention devices, and treatment results satisfaction.

#### Conclusion:

Orthodontic work depends mostly from level of knowledge, training experience, positive attitude and available materials.

**Keywords:** fixed appliance therapy, bimaxillary crowding, Class I (Angle)



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[P-42]

### Facial convexity in macedonian subjects

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**Objective:** The assessment of the patients' soft tissue profile is a critical step in orthodontic diagnosis and treatment planning. Achieving a pleasing esthetic profile is an important goal of orthodontic therapy, and can influence the treatment plan and mechanotherapy. The aim of the present study were to evaluate the convexity angles in Macedonian participants with different sagittal irregularities. The examination was performed on 90 profile cephalograms on Macedonian subjects with permanent dentition, aged 16-21 years, divided in Class I, II/1 and III malocclusions, with symmetrical gender distribution and no previous orthodontic treatment. Examined parameters were angle of facial convexity ( $N'-Sn'-Pg'$ ) and angle of total facial convexity ( $N'-Pr'-Pg'$ ). **Results:** The analysis of the size of the angle of facial convexity and angle of total facial convexity showed that the highest average value was in the subjects of class III, followed by class I and the lowest average values were in the subjects with II/1. For  $p < 0.05$ , the analysis of variance indicated a significant difference between the three groups of malocclusion, in both sexes. There is significant linear positive weak correlation between age and the parameter  $N'-Sn'-Pg'$  (with increasing age the value of this parameter also increased). **Conclusion:** Our study has shown that the biological range of facial soft tissues values needs to be determined according to age, sex and orthodontic anomalies for each ethnic group.

**Keywords:** esthetic profile, orthodontic therapy, cephalograms



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### [P-43]

#### Is there any difference in arch dimension measurements at digital vs. plaster models?

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Digital models are a reliable alternative to conventional plaster models that are accurate, efficient, easy to use, and allow visualization of the planned treatment results.

The Aim: To make a comparison of arch dimensions measurements (width, length, and height) made on digital and plaster models.

Material-Methods: Orthodontic plaster models of 60 patients with dental crowding, aged 13-18 year were observed. Linear measurements of arch dimensions were performed first manually with a digital caliper and then digitally with 3Shape's OrthoAnalyzer TM software program on the scanned plaster models with 3Shape D800 TM scanner. Dental arch width, length and height by Harper were performed. Arch width was measured as intercanine, interpremolar (IPM4, IPM5) and intemolar (IM6) distance. Arch length was measured as the distance between the distal surface of the first permanent molar and the point of contact between the central incisors. Arch height was measured as the distance between the distal surfaces of the first permanent molars and the septal margin of the central incisors, following the linea mediana. Results: There is no statistically significant difference in the width of the dental arches between plaster and digital models. There is a statistically significant difference, in the length and height of both dental arches in favor of smaller length dimensions in digital models, and in addition to larger height dimensions in digital models. Conclusions: Measurements on digital models are suited for reliable diagnostic measurements, which compare well to those obtained from plaster casts, the current gold standard.

**Keywords:** conventional plaster models, digital models, gnathometric analysis



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### [P-44]

#### A multidisciplinary approach to the management of avulsed permanent incisor

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**Objective:** Traumatic avulsion of permanent maxillary incisors is one of the most severe dental injuries, which usually necessitates complex treatment. The appropriate management of clinical challenges depends on the specific characteristics of each situation. This case report presents a successful multidisciplinary treatment of traumatically avulsed maxillary central incisor, achieved through orthodontic, surgical and restorative treatment. **Case:** A 14-year-old boy was referred to the Clinic of Orthodontics, with a history of replanted maxillary right central incisor. Orthodontic analysis revealed a Class II division 2 malocclusion, deep bite, moderate crowding and a missing mandibular incisor. The treatment plan consisted of three phases to ensure satisfactory functional and aesthetic outcomes. The first phase involved growth modification and correction of Class II malocclusion using twin block appliance. The orthodontic treatment continued in the second phase with fixed appliances in upper and lower jaw. Replanted maxillary right central incisor with advanced root resorption, left first premolar, and mandibular left first premolar were extracted. The aim of the second phase was to close space, resolve crowding, and provide functional occlusion. The maxillary right central incisor was replaced with progressive mesial substitution of the lateral incisor, canine, and first premolar. The final phase included canine crown reshaping, crown lengthening and the composite restoration of the lateral incisor to mimic the missing central incisor, allowing favorable aesthetic results. **Conclusion:** Orthodontic space closure and the substitution of the avulsed permanent maxillary central incisor with the lateral incisor is a valid treatment option. The complexity of the treatment could be successfully overcome with interdisciplinary management and personalized treatment planning.

**Keywords:** traumatic avulsion, missing maxillary incisor, central incisor substitution

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**[P-45]**

**Is root coverage using a coronally advanced flap with a subepithelial connective tissue graft a preferable treatment option for treating gingival recession defects?**

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**Objective:** Various surgical techniques have been proposed for treating gingival recession. Coronally advanced flap (CAF) with a subepithelial connective tissue graft (SCTG) is frequently used for the treatment of gingival recession defects. This case aimed to completely cover the gingival recession in the lower left canine to achieve a good aesthetic result and to find a solution to the sensitivity.

**Case:**

**Method:** The patient was a systemically healthy, non-smoker 38 years old woman with 3 mm gingival recessions in the mandibular canine. The patient had two previous operations for the gingival recession in this area without complete success. The defect was Recession Type 1 (RT1) in the classification of Cairo. Following local anesthesia, the exposed root surface was carefully planned with hand instruments to remove plaque, calculus, and soft or carious tooth structure and to flatten the root in areas of root prominence. Two oblique vertical incisions were extended, beyond the mucogingival junction (MGJ), and the muco-periosteal flap was raised to the MGJ. SCTG was harvested from the molar-premolar area of the palate by modified single incision technique. The connective tissue graft was placed over the exposed root surface. The partial-thickness flap was then coronally positioned and sutured using 5-0 monofilament sutures. Recession depth was assessed at baseline and 4 months postoperatively. **Results:** At the 4-month examination complete root coverage was observed. Periodontal probing depth (PPD) was 1 mm and the thickness of the gingival tissue was 3 mm. The patient has not complained of root hypersensitivity. Also, the aesthetic results were very favorable for the patient.

**Conclusion:** In the results of this clinical case, adequate improvement was achieved both aesthetically, functionally, and biologically. The CAF with the SCTG may be effective to provide root coverage at gingival recessions associated with gain in the clinical attachment level (CAL).

**Keywords:** coronally advanced flap, subepithelial connective tissue graft, gingival recession defect, root coverage

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[P-46]

**Determination of dental anxiety level and oral health-related quality of life of the patients attending periodontology clinic**

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**Objective:** Dental anxiety is a problem that develops against dental treatment and practices, has a negative effect on the patient's oral health and affects a large population. It may affect oral health-related quality of life of individuals. The aim of this study was to analyze the relationship between oral health-related quality of life and dental anxiety by determining levels of oral health-related quality of life and dental anxiety of patients who referred to our clinic. **Materials-Methods:** 300 individuals were included in this study. The participants were asked questions to determine their individual information. Oral health-related quality of life was detected by using the Oral Health Impact Profile-14 (OHIP-14). Level of dental anxiety was evaluated by using Modified Dental Anxiety Scale (MDAS). Periodontal clinical parameters were evaluated by measuring plaque index, gingival index, probing pocket depth, clinical attachment level and bleeding on probing. **Results:** There was no relationship between gender, frequency of dental visit, frequency of brushing and oral health-related quality of life and dental anxiety levels ( $p > 0.05$ ). A positive correlation was observed between periodontal parameters and MDAS and OHIP-14 values ( $p < 0.001$ ). There was a statistically significant and positive correlation between MDAS and OHIP-14 scores ( $p < 0.001$ ). **Conclusion:** Learning the factors causing dental anxiety and the procedures to reduce dental anxiety during treatment may help dental treatment to be more successful and improve oral health.

**Keywords:** Dental anxiety, modified dental anxiety scale, oral health-related quality of life



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[P-47]

### **Pyogenic granuloma: a case report**

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**Objective:** Pyogenic granuloma (PG) is a benign soft tissue tumor of the mucous membrane and skin occurring in response to a variety of stimuli such as traumatic injury, local irritation or hormonal factors. Clinically, PG is lesion that can vary in color from pink to dark red, brown and purple, sessile or stalked, bleeding easily spontaneously or as a result of irritation. The purpose of this case report is to present the treatment of pyogenic granuloma in the lower right region.

**Case:** In the routine intraoral examination of a 35-year-old systemically healthy female patient, a bleeding mass was detected on the right lower molar region. According to the anamnesis, the mass had existed for 2 months and bleeding frequently occurred. It was thought that the lesion developed due to poor oral care and dental calculus. Non-surgical periodontal treatment was performed. Then, the lesion was surgically removed in the second session. The tissue was placed in 10% formol solution and sent to histopathology.

**Conclusion:** After histopathological examination, the lesion was diagnosed as pyogenic granuloma. The patient was followed up after the biopsy procedure. No recurrence was observed during this period. The recurrence rate of the lesion is 3%-23%. Therefore, postoperative follow-up is important. The lesion should be excised to include all borders.

**Keywords:** excisional biopsy, local irritation, pyogenic granuloma, trauma



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### [P-50]

#### **The influence of nonsurgical periodontal therapy on the values of serum lipids in normal body mass and obese subjects**

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The aim of this study is to investigate the effect of nonsurgical periodontal (NSPT) therapy on serum lipid values in obese and normal weight individuals.

**Materials-Methods:** The study was conducted at the Faculty of Medicine in Foca and the University Hospital Foca, it included 60 systemically healthy subjects divided into 4 groups (n=15). Group I consisted of obese subjects suffering from periodontitis (OP), group II subjects of normal body weight suffering from periodontitis (NP), group III obese subjects with healthy periodontium (OH) and group IV subjects of normal body weight with healthy periodontium (NH). Body mass is defined by body mass index (BMI). Obese patients were matched to the normal weight patients by age ( $2\pm$  years) and gender. The state of the periodontal health is defined in accordance with the 2017 classification. The research included subjects with clinically healthy periodontium and periodontitis patients corresponding to stages II and III as well as classes A and B. Periodontal health and oral hygiene were evaluated by Plaque index (PI) by Silness-Löe, Bleeding index by Mülemann Son (BI), probing pocket depth (PD) and clinical attachment level (CAL). Patients affected with periodontitis underwent NSPT at the baseline of the study. Periodontal health, oral hygiene, total cholesterol (HOL), triglycerides (TRG), LDL cholesterol (LDL) and HDL cholesterol (HDL) were determined at the baseline for all subjects and three months after the therapy in patients with periodontitis. **Results:** At the baseline of the study, the statistical significance of the difference was confirmed for TRG values between OH and NH ( $p<0.05$ ), for HOL values between OH and OP ( $p<0.05$ ) and LDL values between OH and OP ( $p<0.05$ ). Three months after the treatment of the periodontitis, a significant increase in HDL cholesterol was recorded in the NP group of subjects ( $p<0.05$ ). Statistically significant difference was observed three months after the baseline for the HDL values between NP and OP groups. **Conclusion:** Periodontal therapy improved periodontal health and oral hygiene status in OP and NP groups and has led to an increase in HDL cholesterol value and thus a reduction in the risk of cardiovascular diseases in NP patients.

**Keywords:** periodontitis, lipid status, nonsurgical periodontal therapy, obesity



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[P-51]

### Creating Emergence Profile with Temporary Crown Applications: A Case Series

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**Objective:** Anterior region restorations require a multidisciplinary approach and often involves high patient expectations. Achieving ideal aesthetics in these cases relies heavily on factors such as lip positioning, smile line, periodontal tissues, and gingival emergence profile. The prosthetic replacement of missing anterior maxillary teeth requires a technical precision. In this case series, 4 different cases are presented in which a adequate emergence profile was achieved by soft tissue conditioning with temporary crowns in the anterior region.

**Case:** In four patients who applied to our clinic with the complaint of missing anterior teeth, soft tissue conditioning was performed to provide gingival aesthetics. Temporary crowns were prepared to create a slight stasis in the gingiva. Patients were called to controlling appointments once a week. Soft tissue conditioning was controlled in the following appointments and gradually induced by adding the required amount of composite resin. Following soft tissue conditioning, the patients' final restorations were completed and patients were scheduled for control appointments.

**Conclusion:** Optimal emergence profile design aims to reduce any future aesthetic and biological complications. In dental and implant-supported fixed prostheses, soft tissue conditioning with temporary crowns and bridges before final restorations increases the success of the prosthesis and ensures that aesthetic, mechanical, functional and hygienic requirements are optimised. It is an easy application that can be offered to the patient as a minimally invasive method.

**Keywords:** Temporary Crown, Emergence Profile, Esthetics

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[P-52]

### Pain management of the osteoarthritis and disc displacement without reduction with arthrocentesis and hyaluronic acid injection as an addition to stabilization splint: a case report

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**Objective:** Disc displacement without reduction, osteoarthritis and osteonecrosis are among temporomandibular disorders (TMDs) which may be restricting and painful during jaw movements. These situations may evolve to one another respectively if macro or micro trauma (such as bruxism) continues. Stabilization splints, analgesic medications and surgical interventions such as saline arthrocentesis and hyaluronic acid injections were shown to be effective in the treatment of these TMDs. In this case report, it was aimed to present the treatment of a 68 years old female patient referred to our clinic with TMD related pain and jaw movement restrictions.

**Case:** In initial clinical examination made according to diagnostic criteria for temporomandibular disorders (DC/TMD), pain on palpation of masseter muscles and right TMJ, 29 mm restricted mouth opening ended by pain on right TMJ, restricted lateral movement to the left side and protrusion, deflexion to the right side during mouth opening, crepitation sounds on right TMJ were determined. On the panoramic x-ray, unclear right condyle contours, narrowed right TMJ space and radiolucencies on the neck of right condyle were detected. Intra-oral signs as obvious linea alba and teeth marks on the tongue were detected and patient had complains about teeth and muscular pain when woke up. Possible osteoarthritis, disc displacement without reduction, local muscular pain and bruxism were diagnosed. Stabilization splint was applied onto lower jaw and anti-inflammatory analgesic was prescribed. Chewing muscle's pain was eliminated after two months of stabilization splint use during sleep. However, pain on the right TMJ while opening the mouth was not resolved and mouth opening was 32 mm. T1- and T2-weighted sagittal and frontal magnetic resonance imaging (MRI) was done on both TMJs on opened and closed mouth positions to see the location of the disc in detail. Contour discrepancies on right condylar disc, anteriorly displaced disc on both mouth positions, 12 mm diameter degenerative osteonecrosis area on the right condyle, degenerative bone marrow edema on the neck of right condyle, and subchondral degenerative alterations and marrow edema on the right temporal bone were detected. In order to resolve the pain, clean the TMJ space and lubricate the joint surfaces, patient underwent to arthrocentesis. Joint space was first washed with saline solution to get rid of the inflammatory synovial fluid. After the relief lasted for one week, pain came back when opening the mouth. Another arthrocentesis was planned with both saline and hyaluronic acid injections. After hyaluronic acid injection, patient's pain was resolved completely during jaw movements and mouth opening was reached to 35 mm. Patient was advised to use stabilization splint regularly, not to chew hard food, be careful about not to clench teeth during daytime.

**Conclusions:** If stabilization splint and analgesic medications do not resolve the pain in painful osteoarthritis and disc displacement without reduction cases, MRI should be taken to see possible further damages. Osteonecrosis may be the cause of the pain. If saline arthrocentesis does not eliminate the pain, hyaluronic acid injections may be a good choice in addition to saline arthrocentesis.

**Keywords:** temporomandibular joint, osteoarthritis, stabilization splint, arthrocentesis, hyaluronic acid injection





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[P-53]

### Implant-supported fixed prosthesis produced with a combination of digital and conventional workflows

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**Objective:** Patients with a strong gag reflex often experience discomfort and functional limitations when treated with prosthesis fabricated using conventional impression techniques. Digital technology in prosthetic treatments shows considerable potential as a viable solution. This case report describes the successful application of an implant-supported fixed prosthesis in a 52-year-old female patient with a strong gag reflex, achieved through a combination of conventional and digital techniques. Moreover, the digital impression technique offers distinct advantages over conventional impression techniques, particularly in terms of improved patient comfort and acceptance, especially among individuals with a strong gag reflex. This case report describes a workflow that integrates both digital and conventional techniques in the fabrication of an implant-supported fixed prosthesis. **Case:** Six implants were placed in the edentulous maxilla and four implants in the edentulous mandible. After a successful implant osseointegration period, multiunit abutments chosen intraorally and torqued on the implants with 15 Ncm according to the manufacturer's recommendation. Scan bodies were used according to the implant system and hand tightened, according to the manufacturer's recommendation for intraoral scanning. Abutment-level digital impressions were taken with a digital intraoral scanner (TRIOS; 3shape, Denmark). Both STL files from each scanned jaw were imported in a dedicated CAD software (Exocad DentalCAD, exocad GmbH, Darmstadt, Germany), and merging of the files was performed by an experienced laboratory technician. The virtual model is created. Following this, a milled polyurethane definitive cast was fabricated, and the vertical dimension was recorded using the base and wax created on this cast. Centric relation, and the vertical dimension of occlusion were assessed based on facial soft-tissue landmarks. In the dental laboratory, an articulator was used to achieve the correct occlusal vertical dimension and centric relation between the final maxillary and mandibular cast. A three-dimensional metal bar framework was designed. Passive fit of metal framework tested intraorally. Following this, the implant-supported fixed prosthesis was produced using conventional techniques. Articulating paper was used for occlusal adjustments. Then, the prosthesis was torqued to the multi-unit abutments at 15Ncm, and the screw access holes were filled with polytetrafluoroethylene tape and light-polymerized composite resin. Lastly, comprehensive oral hygiene instructions were provided to the patient to ensure the ongoing maintenance of their new prosthesis. **Conclusion:** The implant-supported fixed prosthesis significantly improved the patient's comfort and overall functionality, enhancing her quality of life. The integration of digital and conventional techniques enabled an accurate impression process without triggering the patient's gag reflex. Furthermore, the implant-supported fixed prosthesis offered an excellent fit and occlusion. This case highlights the potential of merging digital technology with conventional dental-techniques to manage complex clinical cases. Utilizing a digital workflow for transferring information between the patient and the laboratory played a pivotal role. In the present case, the digital workflow was coupled with a conventional workflow. Opting for a complete digital workflow could have been considered as a viable alternative. The full digital workflow enhances time efficiency and significantly streamlines processes.

**Keywords:** digital impression, full-arch rehabilitations, full-arch prosthesis, dental implants, digital dentistry

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[P-54]

**Replacement implant-retained ear epithesis using semi-digital workflow: A case report**

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**Objective:** Defects in the facial region are generally observed due to congenital abnormalities, traumatic injuries or tumor surgeries. Apart from the loss of function, these defects cause aesthetic problems for the patients. Epitheses are good aesthetic restorative treatment option for most cases with advantages. However, fabrication of an epithesis is a time consuming and labor intensive process to provide esthetics and facial symmetry. Also limited lifetime of epithesis because of deterioration of silicone material led clinicians to search for more practical fabrication methods. The aim of this presentation is to use dental digital scanning and 3D printing devices in two fabrication stages of a replacement implant retained ear epithesis.

**Materials and Methods:** A 35 years old male patient applied to prosthodontics department to renew an ear epithesis. The previous prosthesis had lost its fit and colour. Also grown up of the intact ear resulted in size and shape difference of the prosthetic ear. So, a new auricle sculpturing required. The intact ear was scanned using an intraoral scanner. The STL file transferred to the blender software and a mirror image of the ear was generated. Then, the retentive bar system that splints implants and provide retention for the epithesis scanned using the intraoral scanner. Resin models of the bar and the mirror image of the ear were fabricated using a DLP dental 3D printer. A wax replica of printed ear obtained using silicone impression material. The printed bar was embedded in the impression of the defect site. Prosthesis was fabricated in a conventional way after this stage.

**Conclusion:** The ear epithesis fabricated with this semi-digital method was successful in terms of aesthetics and symmetry. Also the time for sculpting the wax patern of the ear decreased and the production has become more comfortable for the clinician.

**Keywords:** epithesis, auricle epithesis, Digital Workflow



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[P-55]

### Implant Supported Full Mouth Restoration with Unknown Implant Brands: A Case Report

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#### Objective:

Purpose of this case report is describing the treatment of the patient with natural teeth which has major periodontal problems that can not be treated, implants in poor condition, bad occlusion and implants with unknown brands. Case: 57 years old male patient applied to the clinic with a fixed partial denture on the upper jaw from tooth number 14 to 24. Abutment teeth were in a poor condition periodontally and after the removal of the bridge none of them was promising to remain. At the lower jaw he had 6 implants. Two of them were failed but due to being splinted to the healthy implant they were not showing mobility. Although a severe abscess existed. Remaining natural teeth on the lower jaw were either fractured or showed high mobility. All the natural teeth required extraction and infected implants needed removal. Unfortunately the clinic that patient got his implants done was closed and he couldn't get any information about the brand of implants. After the removal of the crowns on implants we have seen that abutments were almost not trimmed and they could be torqued with a hexagon screw with 1.25 mm diameter. At the extraoral examination patient did not require too much soft tissue support. Since we have placed 7 implants on both upper and lower jaw a fixed partial denture was our treatment plan. After the removal of the infected implants and placement of the new implants we have waited 3 months for osseointegration. An open tray impression received for the upper jaw. For the lower jaw after closed tray impression new abutments trimmed on the model and undercut areas on the old abutments detected. Preparation of old abutments are made after the evaluation of insertion path on Exocad program. Vertical dimension determined with wax trims. Old restorations vertical dimensions were too high for the patient. Old abutments have been trimmed after determination of vertical dimension and occlusal plane. A temporary bridge for both lower and upper jaw was made by milled PMMA block to control vertical dimension, new occlusal plane and esthetics. A severe bone loss had happened at lower left jaw due to the infected implants and since changing abutment was not an option pink porcelain usage was mandatory. Color of the gingiva has been determined with samples of the pink porcelains that have been prepared earlier. Milled PMMA temporary restoration was imported for determining the borders of restoration at soft tissue since patient had very thin attached gingival tissue. A conventional impression has been taken later on trimmed abutments and rest of the transactions have been done.

**Conclusion:** Patient was satisfied with function, function and esthetic wise. Old abutments which we couldn't change being not trimmed was a lucky situation for treatment. Sometimes factors and conditions that have occurred earlier can't be controlled and procedures can't be performed ideally. In this case indirect digitalization enabled a better preparation and temporary crowns made the results predictable for the patient.

**Keywords:** dental implants, fixed dentures, implant supported denture



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[P-56]

### Creating an emergence profile in anterior single missing teeth

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**Objective:** Dental implants are frequently preferred to replace missing teeth. It is important to meet the aesthetic expectations of the patient, especially in implant-supported restorations in the anterior region. In order to achieve ideal aesthetics and function in anterior implant-supported restorations, the harmony of the crown with the soft tissue around the implant must be ensured. In this case, a method of creating a gingival emergence profile in an implant-supported restoration is described. **Case:** A 23-year-old male patient was admitted to our clinic with the complaint of anterior single missing tooth. In the clinical and radiologic examination, it was learned that he lost his tooth number 12 after a crown-root fracture due to a trauma many years ago. Other than that, there was no problem in the smile line and occlusion. A narrow diameter implant (3.3 x 10mm, Medentika, Germany) was placed at the bone level within the guidelines, ideal for the anterior region. After 3 months of osteointegration, the implant was uncovered and a healing abutment (Medentika bone level healing abutment) was placed. It was decided to perform gingival contouring to achieve the aesthetic appearance and create a natural soft tissue contour with the patient's expectation in anterior tooth loss. Then, flowable composite resin (Clearfil Majesty Flow, Kuraray) was added circularly around the healing cap. Compatibility was ensured by an intraoral check. Then, the composite was polished with resin discs and the healing cap was placed and the gingival profile shaping started. After 2 control sessions, it was seen that periimplant gingival tissues were shaped in the desired form. And the production of implant-supported prosthesis has started. Digital impressions were taken using an intraoral scanner (TRIOS 3shape, Denmark). To this extent, in the first step, the healing caps were removed and the shaped gingiva was scanned. In the second step the scan body was placed and scanned. The digital impressions taken from the upper and lower jaws were sent to the laboratory technician in STL file format. The desired restoration form was designed using the virtually created (Exocad DentalCAD) model. A screw-retained upper lateral crown restoration was modeled on the Ti-base abutment. The color was decided on A2 (Vita classical A1-D4) together with the patient. After making sure that everything was in order, porcelain was applied to the buccal surface using the cut back method. Aesthetics, function, phonation, marginal adaptation and occlusion were checked. The Ti-base abutment was torqued with a force of 25Ncm on manufacturer recommendation. The patient was called for a check-up and no problems were encountered after the checks. **Conclusion:** Natural soft tissue contours are an important point to provide a natural appearance in anterior single tooth deficiencies. The soft tissue emergence profile is very important for the form of the restoration. This shaping can also be done with temporary restorations. Shaping with composite resins, as we did in this case, is highly preferred by clinician.

**Keywords:** emergence profile, gingival tissue, shaping





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[P-57]

### Patients' knowledge and satisfaction with porcelain veneers concerning soft tissue alternation

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**Objective:** The need for treatment of unaesthetic front teeth is constantly increasing. In such situations today, the use of conservative and aesthetic treatments, such as direct and indirect porcelain veneers, is increasingly preferred. The aim of this study was to evaluate a patient's knowledge and satisfaction with porcelain veneers concerning soft tissue alternation. **Materials-Methods:** A survey and clinical examination was carried out on a total of 30 patients after placement of porcelain veneers. All subjects were clinically examined and filled out a specially made questionnaire consisting of questions related to aesthetics, satisfaction and oral hygiene maintaining. Clinical examination included color change, change in taste, gum hyperplasia and pain. The data analyses were based on the respondents in the questionnaires and clinical findings and were calculated using Statistical software SPSS for Windows version 23. **Results:** From the total number of patients, 70% were females and 30% were males. 50% of the respondents were from 22 – 35 years old, 43,3% were from 36 – 50 years old and 6,7% were 51 years and more. According to their education level, 73,4% had or were in process of getting faculty degree and 13,3% were with high school and more than faculty degree respectively. 93,3% of the respondents didn't have any health problems and only 33,3% declined as non-smokers. 73,3% of patients brush two times a day, 16,7% more than two times and 10% once a day. 90% of the patients were satisfied with aesthetics. The most common problems were gum hyperplasia (43,3%), color change (53,3%), change in taste (30%) and pain (40%). **Conclusion:** Our study showed better awareness and dental hygiene in females and satisfactory level of awareness and satisfaction with porcelain veneers. Patients who are fully familiar with the treatment, with the possible side effects as well as the importance of regular and proper oral hygiene maintenance, show a higher degree of satisfaction with the porcelain veneers.

**Keywords:** porcelain veneers, satisfaction, soft tissue alternation

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[P-58]

**Orbital prosthesis for reconstruction of COVID-19-associated mucormycosis: Two case report**

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**Objective:** Mucormycosis, also known as black fungus, is a rapidly progressive and rare invasive fungal infection with high mortality. Various bacterial and fungal co-infections have also been reported during the course of COVID-19 disease. Especially in the later stages of the pandemic, an increase in the incidence of mucormycosis, especially invasive fungal infections such as candidemia and invasive aspergillosis, was observed due to inappropriate antibiotic and steroid use, deviations from infection control measures, and dramatic hospitalization. The aim of this presentation is to restore the aesthetic function of 2 patients with orbital defects caused by COVID-19-related mucormycosis with prosthetic treatment. **Materials-Methods:** Two patients with orbital exenteration after post-COVID-19 mucormycosis were recruited for reconstruction with orbital prostheses. Different retentive systems were planned for two patients: implant retention and adhesive retention. For implant retention, three implants were placed in the supraorbital rim and the lateral aspect of the infraorbital rim. After a 2-month osseointegration period, the magnetic abutments were inserted, and an implant-retained orbital prosthesis was fabricated. Other patient was not willing to undergo any surgical procedure for a while. Then an adhesive-retained orbital prosthesis was fabricated. **Results:** Orbital prostheses provided esthetically pleasing reconstruction for patients who had orbital defects because of post-COVID-19 mucormycosis infection. The patient with implant-retained orbital prostheses had no complications at 1-year follow-up. Peri implant soft tissues were healthy. However, recurrence of the infection was detected in the patient with adhesive-retained prosthesis. An infective layer was also detected on the silicone prosthesis. The patient stopped to wear the prosthesis and underwent medical treatment. Patient with implant-retained prostheses reported higher satisfaction with regard to the use prosthesis. **Conclusion:** This report represented implant and adhesive retained prosthetic rehabilitation of two patients after orbital exenteration because of mucormycosis infection. This approach resulted in acceptable functional and cosmetic results, and the patient has resumed social interactions. Implant retention provided higher comfort for the patient than adhesive retention.

**Keywords:** COVID-19, mucormycosis, orbital prosthesis

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[P-59]

**Quality of life and obturator functioning scale for maxillectomy patients: A pilot study for Turkish patients**

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**Objective:** The most frequent treatment modality for patients diagnosed with a maxillary malignancy is surgical removal of the tumour. This very often leaves an oronasal and/or oroantral defect, resulting in severe functional problems concerning mastication, deglutition, and speech. Therefore, an appropriate substitute for the tissue lost is inevitably necessary to restore function and improve quality of life (QoL). A prosthesis used to close a palatal defect in a dentate or edentulous mouth is called an obturator. A well-constructed obturator can have a positive effect on individual's QoL. The aim of this study was to evaluate subjectively functions such as mastication, swallowing, and speech along with aesthetics and psychological status in patients with maxillary obturators and to assess objectively the retention and stability of obturators.

**Case:** This cross-sectional study was conducted at the Prosthodontic Department, Faculty of Dentistry, University of Gazi, Turkey. The study population comprised of patients with a maxillary defect who attended the Prosthodontic Department. Patients were enrolled consecutively using the following inclusion criteria: adult of either sex, a maxillary defect, and wearing of an interim or definitive obturator for at least 1 month. Five patients were investigated in a pilot study. These patients had maxillary obturators made at Gazi University Faculty of Dentistry Prosthodontics Department. This preliminary study was performed to help assess the intelligibility of the questionnaire and the scales used, the feasibility of clinical evaluation of obturators.

**Result:** All of five patients could answer translated Turkish version of Quality of life obturator function questions. After completing the questionnaire, the interview to make sure that the meaning of each part of it was clear and understandable revealed that patients could clearly understood questionnaire items. Evaluating questionnaire answers of five patients, high scores for quality of life and obturator function scale.

**Conclusion:** Translated Turkish version of Quality of life obturator function scale questions can be applied on Turkish patients who use obturator prostheses. Obturator prostheses can be used in maxillectomy patients as a functional treatment modality.

**Keywords:** Obturator, Maxillectomy, Obturator function scale



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[P-61]

### Contemporary techniques in preparing fixed partial dentures

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**Introduction:** Technological development is bringing a revolution in dentistry and in prosthodontics as well. New adapted techniques and methods in the fabrication of fixed prosthetic, has facilitated the work and cost for the dental staff and reduced the time of fabrication. Aesthetic demands from patients have increased thus resulting in developing new materials and techniques. These materials are embracing digital technology in every step from diagnosing, to preparing and treatment plan. **Aim of the study:** The evaluation of the latest techniques and materials for the fabrication of fixed partial dentures, compared to conventional ones. **Objectives:** Evaluation of the ease of manipulation of new laboratory techniques in the realisation of fixed partial works. Assessment of the need for postgraduate qualifications on new dental techniques. Comparison of laboratory costs in the realisation of fixed prosthetic works with digital and conventional method. Estimation of the work time necessitated to fabricate the FPD, according to each method. Evaluation during laboratory stages of digital impression. Determining the relationship between the aesthetics expected by the patient and the material selected for restoration. Determination of the relationship between the selected material and cost per patient. Evaluation of the marginal closure, stability and durability of fixed partial prosthetic restoration, based on the technique used. **Materials-Methods:** This study was carried out for a period of 11 months, from July 2022 to May 2023. In this study participated dental technicians, dentists and patients. The evaluation was carried in the beginning of the workflow, during the cementation and follow up after 1-3 months. The patients included in the study were randomly selected. The distribution of the questionnaire for dental technicians was carried out in several dental laboratories in Tirana. They were asked about their knowledge about contemporary and traditional techniques in preparing fixed partial dentures. **Results:** The difficulty scale applying new methods is 67% but for applying these techniques post graduated studies and high education courses are needed in 100% of cases. The cost and time for the fabrication of the fixed dentures in the dental laboratory results lower as 44% and 64% respectively. There are more problems in conventional methods in 84% of cases. Compared to conventional technique, higher success resulted in new techniques with 58%. The work carried out with the digital impression is successful in 82% of cases. The highest esthetics is evaluated in zirconium fixed prosthetics by 45%. Better stability and retention in fixed dentures performed with new techniques and in zirconium resulted in 48% of cases. **Conclusion:** Applying new techniques and materials in fixed prosthetics results in achieving better aesthetics and functionality. Using new techniques the errors encountered with conventional methods have been avoided, also costs and working time of the have been reduced.

**Keywords:** Metal sintering, CAD/CAM, E-mpress, intraoral scanner, digital impression





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[P-62]

### Rehabilitation of Maxillary and Mandibular Tumoral Defects with Implant Supported Prosthesis: Case Report

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**Objective:** It is aimed to present the rehabilitation of a 64-year-old male patient with a large maxillary and mandibular defect after tumor resection with implant-supported hollow bulb obturator in the maxilla and implant-supported hybrid prosthesis in the mandible. **Case:** A 64-year-old male patient was treated for squamous cell carcinoma of the left maxillary sinus in 2017 and for squamous cell carcinoma of the left mandibular soft tissue due to metastasis in 2020. The patient applied to our clinic for the rehabilitation of the large defects that occurred. With the digital modeling made as a result of the measurements taken, 3 implant-supported hollow bulb obturators were planned for the upper jaw but one of them failed because of the radiotherapy dose which is 60 gray and implant-supported hybrid prosthesis was planned for the lower jaw. In addition to addressing the eating and speaking problems of the patient with oronasal opening, lip and cheek support, and aesthetically acceptable appearance was provided. **Conclusion:** In post-treatment follow-up, implant-supported prostheses provide a higher level of retention and stabilization in patients with such large defects, as long as the financial situation allows.

**Keywords:** Hollow Bulb Obturator, Implant, Prosthetic Rehabilitation, Tumoral Defect



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[P-63]

### Multidisciplinary approach in peri-implantitis cases

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#### Case:

A 66-year-old female patient applied to the Oral and Maxillofacial Surgery clinic with a complaint of pain. When the patient was examined, it was seen that she had a cantilevered implant-supported fixed prosthesis with implants in areas 42, 33, 35 and 36. After clinical and radiographic evaluations, the patient was diagnosed with peri-implantitis. The implant was explanted due to bone loss around implant number 33. Afterwards, the Prosthetic Dentistry Clinic was consulted and the cantilever was cut and the patient's use of the current prosthesis was deemed not to pose a biomechanical problem.

It was thought that the patient's peri-implantitis was caused by inadequate hygiene and lack of attached gingiva and the patient was referred to the Periodontology clinic. The patient was treated primarily with non-surgical periodontal approach and systemic antimicrobial agents. Mechanical debridement was completed by cleaning the area around the implants with titanium curettes and washing the area with plenty of 3% hydrogen peroxide solution. Simultaneously, systemic antibiotics containing Amoxicillin-Clavulanic Acid (Augmentin, GlaxoSmithKline İlaçları San. ve Tic. A.Ş., Türkiye) were prescribed to the patient at a dose of 1 g twice a day for 7 days. After the inflammation findings disappeared, in order to increase the keratinized tissue around the implants, a free gingival graft was taken from the palatal region after the recipient bed was prepared buccal to the implants and fixed to the recipient bed with 5/0 polypropylene non-resorbable sutures (Propylene, Doğan, Trabzon), and the area was closed with an eugenol-free periodontal paste.

Postoperatively, the patient was advised to use mouthwash (Klorhex, Drogan, Ankara) containing 0.12% chlorhexidine gluconate for 1 minute twice a day for 7 days, and 500 mg paracetamol analgesic tablets (Parol tablet, Atabay Kimya San. ve Tic. A.Ş., Türkiye) were recommended to be used twice on the first day for pain control, and then as pain developed. The sutures and periodontal paste were removed on the 10th day after the operation. It was observed that the donor site in the palatal region was healed.

#### Result:

The surgical area was observed to heal without complications. In the follow-ups after the procedure, an increase in the width of keratinized tissue in the buccal region of the implants was detected. The cantilever part of the patient's existing prosthesis was cut, then polished and cemented using self-cure resin cement (Cem implant, BJM Lab, Israel).

**Keywords:** bone loss, implant, peri-implantitis, prosthesis



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[P-64]

### **Soft Tissue Management at Delayed Implant Loading in the Aesthetic Zone- A Case Report**

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**Objective:** The aim was to describe the transfer of the emergence profile using an indirectly fabricated modified impression post while focusing on the management of the gingival framework at the healed site of implant placement.

**Case:** A 27-year-old male patient visited the Department of Oral Surgery, University of Belgrade with missing anterior teeth 12 and 11. Teeth were extracted due to a cystic formation in the mentioned region. After proper treatment planning, endo-osseous implants (Straumann BLT 4.1 mm) were placed in the position of teeth 12 and 11, using a bone xenograft (Geistlich Bio-Oss), and according to the restoratively driven implant placement. Following the delayed implant loading protocol, implants were exposed, and a temporary bridge was connected within four months post-implantation. In order to start soft tissue conditioning, the material was removed from the deep contour of the crown to obtain an adequate emergence profile. Also, the superficial contour of the crowns was developed to support marginal mucosa and papillae and to mimic the contralateral site. A provisional two-unit bridge was fabricated with functional occlusal contact with opposing teeth. During the three months of temporization, three-dimensional peri-implant soft tissue changes were validated, and the provisionals were re-contoured every two weeks to mold the tissue. After 12 weeks, when adequate soft tissue architecture was achieved, the impression for definitive crowns was taken via individual transfer technique using polyvinyl siloxane (Elite HD, Zhermack) to register the emergence profile of the provisional crowns. This served as a customized impression where the transfer was tightened to analog and the gap between transfer and polyvinyl siloxane was poured with autopolymerizing acrylic resin.

**Conclusion:** This case report includes the planning, execution, and outcome stages of delayed implant loading in the anterior region of the maxilla. To accomplish the best possible outcome for the patient, it is crucial to make an individual plan. Delayed implant loading provides a needed time for both osseointegration and soft tissue maturation, but it can be demanding when it comes to precise contouring of the final restorations in highly aesthetic areas. Screw retained method of the implant-supported bridge has the advantages of known retention, easier retrievability, easy contouring of the superficial and deep contour of the provisional crowns, the possibility of re-tightening, exclusion of cement use, and was thus chosen for the patient in this case report.

**Keywords:** soft tissue management, screw-retained crowns, aesthetic zone, individual transfer impression technique

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[P-65]

**Splints; How Long Should be Used?**

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**Objective:** An occlusal splint is a removable appliance covering some or all of the occlusal surfaces of the teeth in either the maxillary or mandibular arches. They are frequently used to relax jaw muscles, prevent Temporomandibular jaw trauma, protect dentition, and control headaches. An occlusal splint can be considered as a non-invasive treatment approach for patients with TMD, especially those with signs and symptoms of restriction of mandibular movement and pain. **Conclusion:** In this literature review, it shows that occlusal splints are complex devices that can be used in treating bruxism, headaches, postural imbalances related to TMDs, and decreased VDO (Vertical dimension of occlusion). It appears to the literature, there is no concern about how long the appliance should be worn.

**Keywords:** Splint, TMD, Occlusion



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[P-66]

**Implant-Supported Full-Arch Restoration with A Malpositioned Implant In The Esthetic Zone Using Custom Abutment**

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**Introduction:** The success of an implant treatment is not only based on the achievement of the osseointegration but also on the health of the surrounding soft tissues, dentogingival esthetics and patient satisfaction. This is especially crucial for anterior implants where esthetics play a predominant role in the treatment success. Esthetic complications can be caused either by malpositioned implants or by inappropriate number and/or size of utilized implants. Although customized abutments are not completely alternative to surgical relocation in a case where implants positioned incorrectly, they are the prosthetic parts that enable the prosthesis to be obtained in an optimal way.

**Objective:** The objective of this study is to explain the ideal prosthetic treatment of an implant that is incorrectly positioned in the esthetic zone with a custom abutment.

**Case:** A 72-year-old female patient was referred to our faculty from another clinic for an implant-supported fixed prosthesis. In the clinical examination, it was observed that 6 implants were placed in the lower jaw and 7 implants in the upper jaw. An implant in the anterior region of the upper jaw was placed outside the crest with an extreme labial angle. No problem was observed in the osseointegration of the implants during clinical and radiological examination. Since the thickness and height of the residual bone was insufficient to place a new implant in the anterior region and the patient refused a new surgical procedure, it was decided to use the existing implant. The entryway of the permanent restoration was evaluated with the use of a software and it was seen that the malpositioned implant was placed with 42,6° in the orofacial direction. The existing stock abutment options for the malpositioned implant were inadequate to ensure the entryway of the prosthesis and provide the esthetics. For this reason, a premill abutment was designed and manufactured with a CAD/CAM software (exocad GmbH) in accordance with the patient's smile line and the entryway of the prosthesis. Then, the esthetic and functional properties of the permanent prosthesis were evaluated by producing a provisional restoration, which was made from polymethyl methacrylate (PMMA) with 3D printing. Necessary arrangements have been made for the final restoration. The distance between implants and the length of the edentulous space have limited the use of zirconia as a restoration material therefore porcelain-fused-to-metal restoration was preferred. Finally, an implant-supported full-arch restoration was applied to the patient using a custom abutment.

**Conclusion:** Positional and angular complications may occur with implants that are not prosthetically planned. Choosing the ideal abutment, especially in the anterior region, is important for the biological compatibility of the final prosthesis, as well as for providing the entryway and achieving an esthetic restoration. It is thought that the use of custom abutments produced by CAD/CAM is a good alternative to stock abutments for implants which are incorrectly positioned in the esthetic zone.

**Keywords:** custom abutments, full-arch restoration, implant dentistry

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[P-67]

**Intraoral scanning or scanning the cast model; which is the accurate way?**

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**Objective:** Conventional impression methods were the cornerstone of dentistry for many years chiefly for the manufacture of the prosthetic restorations. In the process of time, the need for the minimization of the possible errors and inaccuracies and maximization of patient's comfort; brought forth an idea of a more ideal way of data acquisition with the smaller number of production steps of restorations: CAD-CAM systems. Rapidly developing modern technology presented different ways of taking impressions with these systems; either directly from the patient's mouth or by scanning the cast models acquired by the means of conventional impressions. This study aimed to evaluate the accuracy of the two ways of scanning: digital intraoral and extraoral digitization; and compare their precisions. Digital workflow is composed of three diversified stages: data acquisition, design and manufacturing. In data acquisition, a digital scanner discerns the significant points on a scanning surface along an assured accuracy, thus determining a surface topography. Accuracy is usually defined by using two similar, yet independent terms: trueness and precision. Trueness implies to the closeness of a measurement to the actual value and precision infers the reproducibility between the repeated measurements. The “accuracy” of a digital scanner determines its quality and the quality of a scanner determines its ability of exposing the characteristics of a scanned surface such as waviness, flatness or the roughness. Various issued studies compare the types of digital scanners (intraoral and extraoral) by means of their accuracies in data acquisition for partial or complete arch restorations. Some studies advocate that there is a statistically significant difference between intraoral and extraoral scanner accuracies, in favor of the extroral digital scanners.

**Results:** Surface reproduction ability of a digital scanner is crucial in terms of perceiving small- scale objects for the imminent design and manufacturing phases of the digital workflow. Several studies comparing the intraoral and extraoral scanner accuracies use the triangulation method in which the nearest three points on the surface are selected and connected to form a triangular shape. A plane is fitted in the formed triangle abolishing any discontinuities between the points. These triangulation points and the precision of linear measurements are investigated in the context of generating a surface topography. Above mentioned studies suggested that extraoral scanners administer a relatively similar or slightly better precision.

**Conclusion:** Studies indicated that intraoral features such as patient movement, limited mouth opening, salivation and humidity are the major contributors to the lower precision rates in the intraoral scanners.

**Keywords:** Accuracy, Digital Scanner, Impression



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[P-68]

### Evaluation of the Bond Strength of Different Types of Artificial Teeth by Using the Surface Treatments of Denture Bases Manufactured with Different Methods

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#### Objective:

This in vitro study aims to evaluate the impact of various surface treatments on the shear bond strength (SBS) of three types of artificial teeth and three types of denture base resins (3D printed, CAD/CAM-milled and heat-polymerized) and the effects of thermocycling (aging) on the bonding strength for various denture base materials and denture teeth.

#### Materials-Methods:

Acrylic disks (15 mm x 15 mm x 8 mm) were designed using STL data (Standard Tessellation Language) Meshmixer® software (version 3.5.474) to represent the denture base. Samples were produced from 3D printer and CAD/CAM in accordance with the STL data obtained by scanning with the 3 Shape Trios branded intraoral scanner of the maxillary first molar tooth. Each groups 64 molar teeth separated in subgroups according to their surface treatments into four subgroups (n=16): no treatment (control), 250µm air abrasion (Alumina-blasting), monomer application (60 seconds), air abrasion + monomer application subgroups. According to manufacturer recommendations, the treated teeth were bonded to the acrylic disk of denture base resins. For each material combination, 16 specimens were prepared and divided into 2 groups including control and aged. Eight samples from each group were simultaneously exposed to the same thermal temperature by repeated immersion in cold water at 5°C and then in hot water at 55°C for a dwell period of 30 seconds and a transfer period of 10 to 15 seconds. The process was repeated for 5000 cycles and recorded with the counter in the device. Specimens were subjected to shear bond strength test by a universal testing machine with a 1 mm/min crosshead speed.

#### Results:

A statistically significant difference was observed in the mean values of shear bond strength among the groups utilizing the conventional, CAD/CAM, and 3D Print methods (p=0.0001). The study revealed that the bond strength exhibited by the conventional group was significantly higher compared to both the CAD/CAM and 3D Print groups (p=0.0001). Additionally, the shear bond strength seen in the CAD/CAM group was significantly higher than that of the 3D Print group (p=0.0001). A statistically significant difference was observed between the shear bond strength averages of no surface treatment, sandblasting, monomer and sandblasting+monomer groups (p=0.0001). The shear bond strength of the sandblasting+monomer group was found to be statistically significantly higher than the no surface treatment, sandblasting and monomer groups (p=0.0001).

#### Conclusion:

The shear bond strength values varied among the three different methods used in the manufacturing of complete dentures. The combination of monomer application and air abrasion for surface treatment has been identified as the most effective surface treatment for enhancing the strength of the bond between acrylic denture teeth and denture base resin. The conventional method was found to have a higher shear bond strength than the CAD/CAM and 3D print groups.

**Keywords:** Bond strength, Denture base, Artificial teeth, CAD-CAM, 3D print

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[P-69]

**Prosthetic rehabilitation of an amelogenesis imperfecta patient: Case report**

Dersim Gökce

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**Objective:** Amelogenesis imperfecta (AI) is a genetic anomaly of enamel development that is inherited and affects the structure, amount and composition of the enamel in primary and permanent teeth. This disease is phenotypically; It can be classified into four main types: hypoplastic, hypocalcified, hypomature and hypomature-hypoplastic taurodontism.

**Case:** A 28-year-old male patient applied to our clinic due to loss of aesthetics and function in his teeth. Intraoral examination revealed the presence of amelogenesis imperfecta. Root canals of teeth whose root canals were infected due to tooth tissue weakness and the presence of caries were treated. Then, all teeth were prepared to be treated with zirconium-based aesthetic restorations. It is planned to increase the occlusion of the patient whose occlusion has decreased due to tissue loss in the teeth.

**Conclusion:** All restorations were cemented individually with glass ionomer-containing cement. No problems were encountered during the 1-year follow-up of the patient.

**Keywords:** Amelogenesis imperfecta, genetic anomaly, zirconia



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[P-70]

**Effective decompression as a conservative treatment for a large cystic lesion: two case report**

Andis Qendro, Alma Demiraj, Ledia Lamce  
University Hospital Center Mother Theresa

**Objective:** This study aimed to evaluate the effectiveness of decompression as an initial procedure, as well as factors with potential to influence outcome.

**Case:** We report two clinical case:

One of a 28-year-old female patient who was diagnosed with a large cystic lesion of mandible. The proposed treatment was surgical decompression for 12 months, followed by surgical plan treatment. Another case is a 60- year-old male patient who has diagnosed with a large cystic lesion of the maxilla

**Conclusion:** Decompression is an effective procedure in treatment of large cystic lesions of jaws in order to conserve soft, bone and dental tissues, eliminate facial disfigurement, preserve masticatory capacity and reduce consequences for the patient

**Keywords:** Decompression, Conservative Treatment, Jaw Cysts

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[P-71]

**Open Reduction Of Unilateral Symphysis Fracture With Two Miniplates: Case Report**

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**Objective:** Mandibular fractures, common in maxillofacial traumas, present risks like pain, swelling, and airway blockage if untreated. Diagnosis involves patient history and radiographic methods like panoramic radiography and Cone-Beam CT. Surgical management, often open reduction and internal fixation, requires precise plate placement. Options include two miniplates or a single large plate plus an arch bar for stabilization. **Case:** Patient, post-motorcycle accident, presented with facial injuries including lip lacerations and limited mouth opening. Diagnosis revealed vertical favourable simple symphysis fracture. The patient was prescribed amoxicillin and metronidazole antibiotics two days before the surgery. Surgery involved mental nerve block anesthesia, IMF screws placement, and two miniplates fixation. The patient was discharged with a Barton bandage applied and advised to rest at home.

**Conclusion:** The patient, a young ASA 0 individual with good oral hygiene, experienced disrupted occlusion due to trauma. Bilateral miniplate usage for additional stabilization was deemed the most successful and rapid solution. Elastic IMF for 2 to 6 weeks is necessary to prevent complications like pseudoarthrosis or malocclusion. Postoperatively, the patient wore elastic bands for IMF for 4 weeks, and no malocclusion or dehiscence was observed.

**Keywords:** intermaksiller fixiation, miniplate, symphysis fracture, trauma, semi-rijit fixiation

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