

The background features a large graphic of dental implants and teeth. On the left, a blue dental implant with a red base is shown. On the right, a row of white teeth is visible, with a metal implant base underneath. The background is split into blue and orange sections by a curved yellow line.

# ICP-TPID JOINT MEETING

25th Scientific Congress of Turkish  
Prosthodontics and Implantology Association

**4-7 NOVEMBER 2021**

HILTON DALAMAN  
SARIGERME RESORT & SPA

**BOOK OF CONGRESSES**

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Emmanouil  
(COT)  
Georgios  
(ISSC)  
Prof.  
ndence  
otmail.com  
Professor, Department of  
Prosthodontics, School of Dentistry, National  
and Kapodistrian University of Athens

Patients Compared  
CBCT Cast-Scanning. An  
Study  
CT  
Patients were enrolled in the study full-arch maxilla  
were acquired using stock metal trays and the dual  
andibular intraoral scanner (IOS) was also  
were cast and subsequently scanned with  
and tomography (CBCT) scanner. The casts were  
IncelSeries Dental Wings). DICOM files from  
The STL files from the CBCT and IOS devices were  
ance files from the Desktop Scanner using a 3D  
al analysis was carried out using SPSS software.  
um) than CBCT (median = 62um), a statistically significant  
ndabilities ( $z = 4.6, p < 0.005$ ). Concerning the IOS, the anterior  
preservation of smaller error (42-16um) as opposed to the posterior teeth (47-16um).  
significant difference (IC95% -2.4, p=0.019). There were no significant differences in  
mean accuracy between maxilla and mandible or between left and right quadrants.  
arch digitization using the Trios IOS is significantly more accurate compared to CBCT  
ring of the relevant plaster models. Anterior teeth Trios IOS is statistically more accurate  
compared to posterior teeth IOS.

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Dear Colleagues,

We are proud and honored to organize in collaboration with ICP – The International College of Prosthodontists the 25th iteration of our scientific congress in the 45th anniversary of the founding of the Turkish Prosthodontic and Implantology Association.

Prosthetic Dentistry has the highest number of specialists among any other branches of dental medicine in Turkey, and its scientific work inside and outside Turkey has been a source of several accomplishments. This is due in no small part to the unity we exhibit. Following the previous iteration of the event, which took place two years ago with the attendance of 500 colleagues, the traditional congress will run from **November 4 to 7, 2021 at Hilton Sarıgerme Dalaman Resort & Spa** in line with pandemic-related measures. The congress, which is set to carry on the unity and solidarity of recent years, will feature a program full of scientific and professional content based on your needs, as well as courses and workshops which are free of charge and open to dentists and dental technicians. Together with ICP, we have organized an engaging event at **Hilton Sarıgerme Dalaman Resort & Spa**, one of the most attractive hotels in the region, to bring our community together and alleviate some of the stress of these challenging times. The congress will include lunch events in a cordial environment, as well as meet & greet opportunities with colleagues from various organizations at the gala dinner. The event will be enriched with shows and performances by various artists during the congress and the gala dinner, and we highly recommend that you do not miss out on these.

The Organizing Committee appreciates your feedback and suggestions about the congress.

Sincerely,

Prof. Dr. Yasemin Özkan  
Head of TPID



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Dt. Şükrü Can Akmansoy

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Prof. Dr. Canan Bural



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## PROGRAM

### 1. Day | 4 NOVEMBER 2021

15:00	- <b>OPENING CEREMONY</b>
15:30	- <b>CHARLES GOODACRE</b> Which Type of All-Ceramic Crown wil Produce the best Esthetic Result ? Zirconia Versus Lithium Disilicate.
16:30	- <b>Coffee Break</b>
16:45	- <b>CARLOS PARRA</b> Facially Generated Treatment Planning a Balance between Esthetics, Function and Scientific Evidence

### 2. Day | 5 NOVEMBER 2021

10:00	- <b>OMID MOGHADDAS</b> Evaluation of Etiologic Factors in Esthetic Failures "Surgical & Prosthetic Issues"
11:00	- <b>Coffee Break</b>
11:15	- <b>AMI SMIDT</b> Aspects in Comprehensive Prothodontic Treatment : The Time Perspective and The X-1 Concept
12:15	- <b>Lunch</b>
13:30	- <b>CHARLOTTE STILWELL</b> Strategic use of Implant Abutments for Removable Partial Dentures (RPDs)
14:30	- <b>VINCENT FEHMER</b> Current Developments and Indications for High Translucent Zirconia Restorations
15:30	- <b>Coffee Break</b>
16:00	- <b>Workshops and Oral Presentations</b>

### 3. Day | 6 NOVEMBER 2021

10:00	- <b>MARCO FERRARI</b> Aesthetic Prosthesis with a Focus on Using Lithium Disilicate Materials.
11:00	- <b>Coffee Break</b>
11:15	- <b>MAJA CHIMIELEWSKA</b> Digital Dentistry – Repeatable Protocols Reliability and Growth Possibilities
12:15	- <b>Lunch</b>
14:00	- <b>Workshops and Oral Presentations</b>

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## ORAL PRESENTATION

### Room 1

5 November 2021 16:00-17:15

### Moderator

Assoc. Prof. Dr. RİFAT GÖZNELİ

ID.34

Tuççe Çetin

3D evaluation of implant-abutment microgap after thermodynamic cycling: A Pilot Study

ID.41

Gökçen Ateş

Photogrammetric Impression Technique For The Rehabilitation of Multiple Dental Implants

ID.14

Nurcan Durmaz

Providing aesthetic appearance through smile design in patients with maxillomandibular defects : Case report

ID.118

Ecem Yıldırım

Complications Of Implant Supported Overdentures

ID.2

Hüseyin Sultan

Influence of Operator Experience and Scanner Type On Scanning Time of Intraoral Scanners

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## Room 1

5 November 2021 17:15-18:30

### Moderator

Assoc.Prof.Dr. ÇAĞATAY DAYAN

**ID.11**

Filiz Yağcı

**UV-C Disinfection For Dentures: A Pilot Study**

**ID.20**

Selin Tekin

**The Effect of Surface Treatments on the Connection of Different Soft Primer Materials with the Prosthesis Base**

**ID.91**

Işıl Karaokutan

**Staining resistance of denture bases produced with different techniques**

**ID.79**

Mehmet Gökberkkaan Demirel

**The Consequences of Maxillary First Premolar Lost by Finite Element Analysis**

**ID.80**

Berkkan Albayrak

**Evaluation of Different Academic Groups' Success in Shade Matching with Digital Photographs**

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## Room 2

5 November 2021 16:00-17:00

### Moderator

Assoc. Prof. Dr. İBRAHİM DURAN

**ID.43**

Sinem Ok Tokaç

**Five Years Clinical Evaluation of Ceramic Inlays and Onlays Fabricated with Two Systems**

**ID.61**

Tansu Şennur Güven

**Tooth and implant-supported crown removal with Er:Yag-laser: A pilot study**

**ID.64**

Murat Feriz

**The Concept of Aesthetics and Smile Design in Dentistry**

**ID.66**

Işıl Turp

**Effect of Viscosity of Intermedium on the Retention of Double Crowns**



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## Room 2

5 November 2021 17:00-18:30

### Moderator

Assoc.Prof.Dr. OĞUZHAN GÖRLER

ID.12

Sina Saygılı

Advantages of Using Digital Technologies in Minimally Invasive Aesthetic Applications:  
A Case Report

ID.31

Ayşe Gözde Türk

Comparison of Different Cleansing Agents for Decontamination of Lithium  
Disilicate Ceramics

ID.72

Sinem İşler

The Dentists' Awareness of Information and Experience About the Digital Partial Dentures

ID.3

Beril Şahiner

Evaluation of the Effect of SmartPeg Screwed at Different Torque Values

ID.82

Doğu Furkan Kaya

Artificial Intelligence in Dentistry Knowledge and Experience Awareness About Color  
Selection Using

ID.29

Zeynep Şen Yılmaz

Approach to the COVID-19 Vaccine in Geriatric Individuals

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## Room 3

5 November 2021 16:00-17:00

### Moderator

Assoc. Prof. Dr. YALÇIN DEĞER

ID.4

Selim Çömelekođlu

**Selection of Lithium Disilicate Ingot in No-Prep Laminate Veneers Restorations: Case Series**

ID.21

Ođuzhan Özdemir

**Replacement of single tooth with immediate implants and immediate loading in the anterior maxilla: case report**

ID.23

Beril Koyuncu

**Complications and Solutions in Hybrid Prosthesis**

ID.5

Mustafa Gündođdu

**Smile Design from Biology to Function**

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## Room 3

5 November 2021 17:00-18:30

### Moderator

Assoc. Prof. Dr. SERRA AHMET OĞUZ

ID.25

Ayşe Koçak Büyükdere

**Finite Element Stress Analysis of Marginal Bone Loss in Anterior Implant**

ID.33

İrem Çöttert Mercan

**In-Vitro Comparison of Implant-Supported Single Crowns and Abutments Manufactured with Different Techniques**

ID.35

Özge Arifağaoğlu

**Oral health-related quality of life in patients with temporomandibular disorders and effect of anxiety: a case-control study**

ID.110

Hüner Elif Karabulut Abdioğlu

**Evaluation of Condylar Guidance Parameters in the Different Occlusion Types by Using Digital Pantographic Recording Systems**

ID.49

Mehmet Akça

**Implant Supported Hybrid Prosthesis Using a High-Performance Polymer (Pekkton) Framework: Case Report**

ID.56

Stefani Eken

**Effect of Ceramics and Cements on the Color Stability of Hybrid Abutments**

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## Room 1

6 November 2021 14:00-15:00

### Moderator

Assoc.Prof.Dr.EMİR YÜZBAŞIOĞLU

ID.32

Taha Yaşar Manav

Relation in Color of Three Segments of Vital Maxillary Incisors and Canines

ID.38

Buse Atak Ay

Dentist's Awareness of Covid-19 Disease and Their Approach to Prosthetic Treatments

ID.39

Bercestte Polat Akmansoy

Radiographic Assessment of Alveolar Bone Resorption in Mandibular Edentulous Patients:  
Pilot Study

ID.45

Nisa Emir

Esthetic Perception of Width/Length Ratio in Maxillary Anterior Teeth Among Preclinical and  
Clinical Dental Students.

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## Room 1

6 November 2021 15:00-16:00

### Moderator

Assoc.Prof.Dr.ÖZGÜN YUSUF ÖZYILMAZ

**ID.48**

Nihan Ceylan

**Reestablishment Of Esthetic Appearance By Using 'Botulinum Toxin A' On A Gummy Smile Case**

**ID.40**

Yakup Kaptı

**Opinions of Dentistry Students on Distance Education in the Period of Covid-19**

**ID.87**

Nisa Emir

**Esthetic Perception of Width/Length Ratio in Maxillary Anterior Teeth Among Preclinical and Clinical Dental Students.**



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## Room 1

6 November 2021 16:00-17:00

### Moderator

Assoc.Prof.Dr.BUKET EVREN

**ID.89**

Mehmed Çanakçı

**Dentist's Knowledge About Artificial Intelligence and Attitudes Towards Artificial Intelligence**

**ID.92**

Büşra Uğurgelen

**Evaluation of preclinical and clinical students' perspectives on the effect of lip line and dental midline on smile aesthetics**

**ID.93**

Selin Güzel

**Physiological impact of prolonged use of surgical masks on dental students**

**ID.96**

Selen Elif Uz

**Preclinical and Clinical Students' Perceptions of Smile Line and Buccal Corridor on Smile Esthetics**

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## Room 1

6 November 2021 17:00-18:30

### Moderator

Assoc.Prof.Dr.PINAR ÇEVİK

ID.9

Özcan Akkal

**Multidisciplinary Treatment Approach to the Patient with Skeletal Class 3 Malocclusion:  
Case Report**

ID.119

Aslı Başak Satık

**Full Mouth Rehabilitation of Patients With Four Implant Supported Fixed Protheses Produced  
by Different Materials: Two Case Reports**

ID.117

Cihan Özgür

**Patient Knowledge About Dental Implant Treatment**

ID.109

Nagehan Baki

**Comparative Biomechanical Analysis of All-on-4® and Trefoil™ Implant Treatment Protocols**

ID.6

Oğuzhan Sarı

**Esthetic and Funtional Rehabilitation of Crowded Maxillary Anterior Teeth**

ID.47

Melike Özlem Eken

**Rehabilitation With Tooth-Implant Supported Screw Retained Telescopic Prosthesis:  
Case Report**

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## Room 2

6 November 2021 14:00-15:00

### Moderator

Ass.Prof.Dr.CEREN KÜÇÜK

**ID.98**

Öykü Ceren Kahraman

**Mechanical Properties of 3Y-TZP Zirconia: Spark Plasma-Sintering VS. Conventional Method**

**ID.102**

Seray Çapar

**Evaluating Of Color Changes Of Different Thicknesses Of Monolithic Lithium Disilicate Glass Ceramic Blocks Due To Different Firing Times For Glaze**

**ID.113**

Pınar Çevik

**The effect of different surface treatments on the bond strength between PEEK and maxillofacial silicone elastomer**

**ID.121**

Burcu Yılmaz

**The effect of simulated gastric fluid on surface hardness of provisional prosthetic materials**

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## Room 2

6 November 2021 15:00-16:00

### Moderator

Assoc. Prof.Dr. ÖZLEM KARA

ID.115

Yeşim Ölçer Us

The Effect of Simulated Gastric Fluid on the Color Properties of Hybrid-Ceramic CAD-CAM Restorative Materials

ID.120

Emir Yüzbaşıoğlu

The Effect of Dietary Simulating Solvents on the Color Properties of 3D Printed Restorative Materials

ID.15

Abdurrahman Şahinbaş

Do Manufacturing Techniques And Materials Affect Internal Fit?

ID.27

Elifnaz Özen

Effects Of Blumia Nervosa On Mechanical Properties Of Different Cad-Cam Materials

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## Room 2

6 November 2021 16:00-17:00

### Moderator

Ass.Prof.Dr.MUSTAFA GÜNDOĞDU

ID.36

Ferruh Semir Smail

In Vitro Analysis Of The Marjinal And Internal Fit Of Single And Multi- Unit Metal Frameworks By Using Soft Metals And Conventional Method

ID.58

Özge Genç

Bonding Performance of Saliva Contaminated Monolithic Zirconia After Different Surface Treatments

ID.60

Mine Helvacioğlu Özkardes

Comperative Evaluation of the Translucency of Different CAD/CAM Materials

ID.70

Burcu Yılmaz

The effect of simulated gastric fluid on surface hardness of provisional prosthetic materials



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## Room 2

6 November 2021 17:00-18:30

### Moderator

Ass.Prof. Dr. KÜBRA YILDIZ DOMANIÇ

**ID.46**

İzim Türker

**Wear evaluation of CAD-CAM dental ceramic materials by chewing simulation**

**ID.94**

Mehmet Esad Güven

**1 Year Clinical Evaluation of Titanium Base Zirconia FDP'**

**ID.65**

Sinem Vural

**Stress Distribution of All-Ceramic Implant-Supported Conometric Abutment Single Crown Restorations: A Three-Dimensional Finite Element Analysis**

**ID.59**

Simel Karaca

**Effect of Different Impression Techniques on Accuracy in Multiple Implants**

**ID.28**

Mustafa Ufuk Sancılı

**The effect of simulated gastric fluid on color stability of provisional prosthetic materials**

**ID.75**

Zeliha Taştan

**Evaluation of Dentists' Perspective on the Use of Digital Impressions during Construction of Complete Dentures**

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## Room 3

6 November 2021 14:00-15:00

### Moderator

Ass.Prof.Dr. SİNEM OK TOKAÇ

ID.67

Tamer Türkay

Implant-supported overdenture rehabilitated with dynamic protocol: Case Report

ID.69

Kaan Yilmazer

How Many Times Can a MultiPeg™ be Autoclaved?

ID.77

Kübra Şirin

Evaluation of Patient Satisfaction in Implant-Supported Fixed Partial Denture Applications

ID.78

Aslı Sıncı

Rehabilitation of partial and total edentulism with Toronto Bridge Prosthesis; 3 case reports

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## Room 3

6 November 2021 15:00-16:00

### Moderator

Ass.Prof.Dr. GÜLSÜM SAYIN ÖZEL

#### ID.83

Yelda Soğancıoğlu

Investigation of Hospital Information and Management System for the Evaluation of Data on Implant Supported Prosthetic Treatment Applications

#### ID.84

Mehmet Fatih Özmen

Stress distributions created by short and regular implants placed in the anterior maxilla at different angles, part 1: a finite element analysis

#### ID.85

Simay Kocaağa

Implant stability measurement of delayed and immediately temporary loaded implants: 2 case reports

#### ID.86

Berk Esin

Evaluation of Dental Implant Knowledge of Partially Edentulous Patients

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## Room 3

6 November 2021 16:00-17:00

### Moderator

Ass. Prof. Dr. AYŞE KOÇAK BÜYÜKDERE

ID.97

İclal Sena Bayram

**Establishing a Proper Emergence Profile for Posteriorly Placed Implants : Case Report**

ID.100

İpek Çıklaçiftci

**Proper forming of soft tissue emergency profile with peek abutment for canine teeth:  
a case report**

ID.101

Hatice Bengin Bayram

**Establishing an Emergence Profile in Anterior Region Implant Supported Restoration:  
Case Report**

ID.105

Hilin Taş

**Accuracy of the digital impressions for implants applied to edentulous patients; a literature  
review**

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## Room 3

6 November 2021 17:00-18:30

### Moderator

Ass.Prof.Dr. ÖZGE ARİFOĞLU

ID.114

Kıymet Çalık

Prosthetic rehabilitation of edentulous patients by using the "Toronto hybrid prosthesis":  
3 case reports

ID.108

Ceylan İlhan

The effect of One-Abutment at One-Time Protocol on peri-implant soft tissue health and margin-  
al bone loss around dental Implants; A systematic review

ID.18

İkbal Leblebicioğlu Kurtuluş

Developing a deep learning network for the recognition of dental implant systems

ID.122

Eren Aygün

Clinical Performance of Zirconia-Ceramic Posterior Fixed Partial Dentures After 10 Years:  
a Retrospective Study

ID.107

Yalçın Emre Kaya

Evaluating of mechanical characteristics of different thicknesses of lithium disilicate glass  
ceramic blocks due to repeated firing for glaze



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## POSTER PRESENTATION

ID.55

Sevda Miray Soydaş Smail - Mine Helvacıoğlu Özkardeş - Seda Özmen  
Pınar Yılmaz Atalı- Erkut Kahramanoğlu

**A Multidisciplinary Approach For An Aesthetic Rehabilitation of Maxillary Anterior Region**

ID.71

Hasret Demirci

**A Ten-Year Prosthetic Story of A Hemimaxillectomy Patient**

ID.116

Kader Tatar - Ribaz Kakai - Neslihan Çökük

**Achieving An Aesthetic Smile By Taking Advantage of Digital Technology: A Case Report**

ID.53

Berk Yüzbaşıoğlu - Bedirhan Dökülmez - Elifnur Güzelce

**Anterior Bölgede Renklenmiş Restorasyonların Polikromatik Feldspatik Cad/cam Seramikler İle Rehabilitasyonu: Vaka Sunumu**

ID.26

Elvin Gunel - Huseyin Kurtulmus

**Cementation Protocol In Laminate Veneer Restorations**

ID.44

Berkay Atilgan - Ahmet Caliskan - Ergun Bozdogan - Fatma Unalan

**Comparison of Flexural Strength of Cobalt-Chromium Dental Alloy Fabricated and Soldered By Different Techniques**

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## ORAL PRESENTATION

ID.34

Tuğçe Çetin - Umut Aslan

Marmara University Faculty of Dentistry

### 3D Evaluation of Implant-Abutment Microgap After Thermodynamic Cycling: A Pilot Study

**Purpose:** To analyze three-dimensionally the micro-gap variation between hybrid abutment crowns and internal hybrid-connected implants with different taper angles before and after thermodynamic loading. **Materials and Methods:** Three groups were formed with 5 implants with each implant systems have different conical connection angle (15° Straumann Bone Level Implant STR, 8° GC AADVA Implant AAD and 11° Astra-Tech OsseoSpeed EV AST). A total of 15 hybrid abutment-crowns were fabricated by CAD/CAM system for implants which have different hybrid conical connection designs from polymethylmethacrylate (PMMA) blocks. The volume of the microgap value at the implant-abutment connection interface was measured before and after the thermodynamic cycle. The measurements were made by using 3-dimensional images obtained with scanning the samples with micro CT at both time points, and comparisons between groups (Kruskal-Wallis [KW]) were performed.

**Results:** Minimum mean microgap value (%2,71) was observed in the STR group before aging. The largest mean microgap value (%9,59) belonged to the AST group. It was determined that the micro gap values of all groups increased after aging. After aging, the minimum mean microgap value (%3,16) was determined in the STR group again. There was a significant difference between the groups in terms of the increased micro gap value (KW:  $P = .003$ )(AST>AAD>STR). **Conclusions:** The microgaps between hybrid abutment crowns and implants increased after thermodynamic cycling. The geometry of the internal connection can affect the microgap variation.

Implant-Abutment Microgap, Hybrid Abutment Crown.

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ID.41

Gökçen Ateş

Istanbul University Faculty of Dentistry

## Photogrammetric Impression Technique For The Rehabilitation of Multiple Dental Implants

Dentistry has developed from its past to today by becoming just about completely digitized. With the introduction of intraoral scanners (IOSs), the digitization process has become easier for clinicians. IOSs have important advantages in reducing human errors, patient burden, material complications, vomiting reflex and improving the fit of the prosthesis. Previous studies agreed that IOSs are clinically acceptable substitutes for conventional impression procedures in single crowns and short span fixed dental prostheses. However, the impression for the full-arch restorations with IOS is still a challenge for clinicians. The photogrammetric system (PG) is an option instead of IOS for multiple implant-supported restorations. The PG has been used virtually in many science fields and Lie and Jemt introduced this accurate technic in dentistry. Photogrammetry (PG) is a technique for determining geometrical characteristics of objects and their 3D spatial orientation by recording digital images following a specific protocol. In photogrammetry, scans are recorded by an extraoral receiver, eliminating the need for overlapping images with intraoral scanners and, theoretically, positioning the 3-dimensional (3D) implants more accurately than intraoral scanners. The authors defined that the photogrammetric method was used to achieve levels of trueness and precision comparable with the conventional impression method. These case series aim to describe the use of the photogrammetric system as an accurate technique to record 3D implant positions of a full-arch maxillary fixed implant-supported rehabilitation.

Photogrammetry, Dental Implants, Dental Impression Technique



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ID.14

Nurcan DURMAZ

Istanbul Aydın University Faculty of Dentistry, Department of Prosthodontics

## PROVIDING AESTHETIC APPEARANCE THROUGH SMILE DESIGN IN PATIENTS WITH MAXILLOMANDIBULAR DEFECT: CASE REPORT

**OBJECTIVES:** During the prosthetic rehabilitation of patients with maxillomandibular defects, improving the chewing function, and providing lost dentofacial aesthetic and phonation increases the success of the prosthesis. For this purpose the anterior tooth relations must be re-adorned in a new dimension to provide necessary space for the restorations planned and to improve the occlusal relations. The aim of this case report is to present the prosthetic rehabilitation of four patients with maxillomandibular defects.

**MATERIAL AND METHODS:** 24-45 years old four male patients applied to Istanbul Aydın University Faculty of Dentistry, Department of Prosthodontics with the complaint of chewing and aesthetic problems due to advanced traumatic bone loss. After extraoral and intraoral examination of patients with anterior maxillomandibular defects, surgical and prosthetic treatments have been planned. The loss of masticatory function, aesthetic, and phonation were restored with immediate prostheses following surgical interventions and then, permanent prosthodontic treatments. While correcting the occlusal vertical dimension and outlook by prosthetic rehabilitation, specific rules and methods of 'smile design concept' were used. Facial analysis, Golden Ratio, and Recurrent Dental Ratio methods have been used to restore the aesthetics of patients similar to their pre-traumatic outlook. Meanwhile, phonation tests have been applied for checking the dimensions.

**RESULTS:** Aesthetics and functionality were achieved by treatment of three patients with metal-ceramic fixed partial dentures, and one patient with removable dentures. No complications related to aesthetics or function have been examined after the first and second year control appointments of the patients.

**CONCLUSION:** Facial analysis, golden ratio, and recurrent dental ratio methods, which are essential components of smile design applications, increase the success of prosthetic rehabilitation of patients with maxillomandibular defects.

**Key Words:** Maxillomandibular defect, smile design, facial analysis, golden ratio.



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ID.118

Ecem Yıldırım - Gülbahar Işık-Özko

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## COMPLICATIONS OF IMPLANT-SUPPORTED OVERDENTURES

**Abstract:** The purpose of this study is to determine the complications of implant supported overdenture and the relationship between demographic/prosthetic data's and complications. Thirty-four participants, who had received implant supported overdenture treatment in Istanbul University, Faculty of Dentistry and had been using their prostheses for at least three months, were included in this study. The results have been statistically analyzed by using SPSS software. The patients who have took part in our research is 59% female and 41% male. The average of the patient's age is 65. The most common complications were peri-implantitis and soft tissue complications. A statistically significant correlation was found between age, type of prosthesis, prosthesis location, material used, type of attachment, occlusion, opposing dentition data and complications. There was no statistically significant relationship between gender, marital status, smoking and complications.

**Key words:** Implant-supported overdenture, complications, dental implant, edentulous

**Introduction:** Overdenture is defined as; "Any removable dental prosthesis that covers and rests on one or more remaining natural teeth, the roots of natural teeth, and/or dental implants; a dental prosthesis that covers and is partially supported by natural teeth, natural tooth roots, and/or dental implants." in The Glossary of Prosthodontic Terms 1 . Many studies found that overdentures have benefits includes preservation of residual alveolar bone, improvement in masticatory efficiency, increase in retention and stability of denture, and increased satisfaction to patients 2,3 . The McGill and York consensuses stated that; whilst it is accepted that the two-implant overdenture is not the gold standard of implant therapy it is the minimum standard that should be sufficient for most people, taking into account performance, patient satisfaction, cost and clinical time 4,5 . Despite the advantages of this type of dentures, clinical complications are frequent (6-11). The most common complications of implant supported overdentures are loss of implant, peri-implantitis and soft tissue complications, the need for relining or repairing the resin portion of the denture, replacement or activation of retentive elements, loss of retention and attachment systems, pop- out of denture teeth, denture base material fracture. Edentulousness, which greatly reduces people's self-confidence, is a condition that weakens chewing and speaking functions. With traditional full dentures, it is very difficult to completely eliminate all of these deficiencies. In particular, excessively resorbed alveolar ridges, in which the retention, stability and functional abilities of dentures are reduced, is the biggest problem of dentists. In addition, in edentulous mouths, mandibular complete dentures finished with classical treatment methods can be displaced close to 10 mm with the effect of chewing forces during function. It has been reported that retention and stability problems affecting its use are experienced. These and many other problems have led to the need to seek alternative methods to conventional prosthetic applications and have led to the emergence of oral implantology. Dental implants, whose long-term success has been demonstrated by clinical studies, have become an effective treatment alternative in today's dentistry and are used in the treatment of tooth deficiencies in more and more patients every day. Current literature indicates that the success rate of dental

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implants is 88%-97%. These studies initially focused on the osseointegration of implants. However, with the increasing applications of implant supported prostheses, various complications have been encountered. Short and long-term complications of an implant that is successfully osseointegrated into the bone while it is in function with prosthetic superstructure components negatively affect the success of the treatment. For this reason, complications of implant-supported prostheses have been evaluated in recent years. studies are increasing. Complications and repair procedures are factors that reduce treatment satisfaction and success for both the patient and the physician. The physician needs to know the potential complications related to implant treatment, the frequency of their occurrence and their solutions. Accordingly, some complications can be reduced by creating a treatment plan. In addition, informing the patient in advance reduces the problems that may arise between the patient and the physician. The aim of this study is to evaluate the types of complications which is seen in patients with implant-supported overdentures and to identify their relationship with the demographic/prosthetic data's.

**Material and Method:** Total of thirty-four participants who had received implant overdenture treatment in the Istanbul University, Faculty of Dentistry, Department of Prosthodontic Clinics and had been using their prostheses for at least three months were included in this study. A questionnaire including demographic information, prosthetic information, and complication information was administered to all participants. Statistical analyzes were performed using SPSS software. Conformity to normal distribution was examined by Kelmoogrov-Smirnov and Shapiro Wilk tests. It was found that the variables were not normally distributed. Mann-Whintey U test was used for the comparison of two groups and Kruskal Wallis test was used for three or more groups. P <0.05 was considered significant.

**Results:** According to the result of this study; twenty-four participants from total number had complications, nine of these participants had only 1 complication and fifteen participants had more than 1 complications. The gender distribution of the study was twenty females to fourteen male participants. Complications were seen on thirteen women and eleven men. The incidence of complications was found higher in men. In this study, there was no statistically significant difference between gender and presence of complications. The mean age of the participants was sixty-five years. The complication rate was found fifty three percent in patients under the mean age and eighty two percent in patients sixty-five years and older. In this study, a statistically significant difference was found between the age range and the presence of complications, and the incidence of complications is higher in elderly individuals There were fifteen participants have bar attachments, ten patients have locator attachments, and nine patients have ball attachment. In this study the most complications were seen in participants have ball attachment. There is a statistically significant relationship between complications and types of attachment. The most common complications were painful and/or inflamed areas on the soft tissue (10 participants - 28.9%) and this complication were seen in 6 men and 4 women. A statistically significant relationship was found between attachment type and presence of complications. The inflamed area was the most common complication of ball attachment and locator attachment. In the bar attachment type the most common complication was the fracture or debonding of artificial tooth or teeth. The data's show more complications were seen on acrylic based overdentures compared to metal-acrylic based overdentures. On the other hand, there is a statistically significant relationship was found between rehabilitated area and the inflamed soft tissue area. The inflamed soft tissue area was seen in patients who have ball attachment as an attachment

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type. There is also a statistically significant relationship between attachment type and inflamed soft tissue area. In this study, a significant difference was found between the opposing dentition and the presence of complications, and it was observed that the least complication occurred in occlusion with natural teeth. The most common complications were seen in the patients who have complete denture on the opposite jaw.

**Conclusion:** Within the limitation of this study, the following conclusion can be drawn. The most common complication in patients using implant-supported overdentures is painful and/or inflamed areas on the soft tissue, therefore implant-supported overdentures require denture adjustments. There is a statistically significant result between age, area of rehabilitation, the material used, type of attachment, and complications. Further studies are needed to confirm these initial findings.

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## ID.2

Hüseyin Sultan - Dilara Şeyma Alpkılıç

İstanbul Üniversitesi Diş Hekimliği Fakültesi

### Influence of Operator Experience and Scanner Type on Scanning Time of Intraoral Scanners

**Purpose:** The purpose of this in vitro study was to evaluate the effect of operator experience and scanner type on scanning time with intraoral scanners.

**Material and methods:** An edentulous gypsum model with 7 implants was prepared. Two operators with different levels of experience scanned master model 10 times by using 4 different intraoral scanners (Aadva IOS, GC Europe; CS3600, Carestream; Emerald S, Planmeca, TRIOS 3; 3Shape), resulting in 10 standard tessellation language files(STL) for each group (n= 80). The time elapsed during the scanning procedure was recorded. Mean and standard deviation values were calculated. One-way ANOVA followed by Tamhane'sT2 test was used to evaluate the scanning time.

**Results:** A statistically significant difference was found between intraoral scanners and scanning time ( $p=0.000$ ). The shortest scanning time was observed by an experienced dentist with the CS3600 (124.5 sec) and Trios 3 (128.7 sec) scanners, while the longest scanning time was observed with the Aadva (355.7 sec) scanner performed by an inexperienced dentist ( $p< 0.00$ ). A statistically significant difference was found for each scanner in terms of user experience.

**Conclusion:** Scanning time of intraoral scanners is affected by operator experience and scanner type.



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ID.11

Filiz Yağcı - Aşkın Nur Tuğluk

Erciyes University Faculty of Dentistry Department of Prosthodontics

Pınar Sağıroğlu

Erciyes University Faculty of Medicine Department of Medical Microbiology

## Uv-C Disinfection For Dentures: A Pilot Study

**Purpose:** Prosthetic restorations have to be sterilized or disinfected prior to deliver to patient or prior to send to dental laboratory to avoid cross-infections. However chemical disinfectants are shown to cause many alterations in the structure of the prosthetic materials and, can be toxic and allergic to living tissues. The aim of this study was to investigate the effectiveness of UV-C disinfection on denture base materials.

**Materials and Methods:** Disc shaped polymethyl metacrylate specimens were prepared and divided into 3 groups and contaminated with E.coli, S.aureus ve C.albicans. Then every group was divided into three subgroups for UVC irradiation of 1, 3, and 5 minutes. After UV-C irradiation, specimens were incubated for 24 hours at 35°C in a tryptic soy broth medium in an incubator and the growth was inspected. Also suspension was transferred to sabouraud dextrose agar plates and incubated at 35°C for 24 hours.

**Results:** For C.Albicans a timedependent reduction was observed. Only 3 and 5 minutes of UV-C irradiation inhibited the growth. E.coli and S.aureus were shown to be inactivated by all three irradiation times.

**Conclusion:** Bactericidal and fungicidal effects of UV-C irradiation was shown on denture base acrylic resin. Future studies are needed to evaluate the effect of UV-C on other microorganisms and on different materials.

UV-C disinfection, denture

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ID.20

Selin Tekin

Recep Tayyip Erdogan University, Faculty of Dentistry, Department of  
Prosthodontics, Rize

Prof. Dr. Zeynep Yeşil Duymuş

Atatürk University, Faculty of Dentistry, Department of Prosthodontics

## The Effect of Surface Treatments On The Connection of Different Soft Primer Materials With The Prosthesis Base

**Purpose:** Soft lining materials, due to their flexibility and soft structure, are used in full and partial dentures to prevent or reduce the negative effects of hard denture base materials on the supporting tissues. Soft lining materials have significant disadvantages that limit their clinical use, such as hardening over time, losing their flexibility, causing bacterial and fungal colonization, showing porosity, water absorption, discoloration, separation from the denture base and reducing the resistance of dentures to fracture. For this reason, the study was carried out to examine the effect of surface treatments on the bond strength of different soft lining materials to polymethyl methacrylate (PMMA) based denture base material.

**Materials and Methods:** In the study, 40 samples of conventional hot acrylic resin were prepared using ASTM D 638-08 standard, 60 mm long, 15 mm thick and 2.5 mm thin. The samples were randomly numbered and divided into four groups (n=10). After different surface treatments (control, sandblasting, laser and monomer application) were applied to the samples divided in the middle, acrylic resin-based and silicone-based soft primer was applied to half of the samples, as recommended by the manufacturer. The bond strength of the samples was examined in the Universal test device. The obtained data were statistically evaluated with two-way analysis of variance and multiple comparison (Tukey) test.

**Results:** As a result of the analysis of variance; It was determined that the effect of surface treatments and soft lining material type on bond strength was significant ( $p<0.05$ ).

**Conclusion:** It is seen that even the soft lining materials available in the market today, suitable for long-term use, cannot be permanently and adequately bonded to the denture base. Therefore, some surface treatments can be applied inside the denture to ensure that the soft lining materials adhere better to the denture base.

**Keywords:** Prosthetic base material, soft lining material, bond strength.

Prosthetic base material, soft lining material, bond strength.

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ID.91

Işıl Karaokutan

Pamukkale University

Gulsum Sayin Ozel

Istanbul Medipol University

## Staining Resistance of Denture Bases Produced With Different Techniques

**Purpose:** To evaluate the color stability of heat-pressed, CAD/CAM, and 3D printed complete denture resins.

**Materials and Methods:** A total of 90 disk shape resin specimens were manufactured from conventional heatpolymerizing, CAD/CAM subtractively manufactured, and additively manufactured denture resins (n=30); were divided into three groups according to staining solution as coffee, red wine, and distilled water (as a control). Baseline color measurements were performed with a spectrophotometer. The specimens were immersed in solutions for a total of 7 days at 37 °C and second measurements were performed. Color changes were calculated with the CIEDE 2000 ( $\Delta E_{00}$ ) formula. Color differences were assessed using two-way ANOVA ( $p = 0.05$ ), and the paired t-test was used to compare the L, a, and b parameters in each group before and after staining.

**Results:** Significant color differences were found among the resins and staining solutions. All of the color differences were found in the clinically acceptable range ( $\Delta E_{00} < 1.8$ ) except in the heatpressed group in red wine. Red wine was found to be the most colorant agent among the solutions tested. The heat-pressed resin group demonstrated significantly higher  $\Delta E_{00}$  in comparison to the other groups in all aging media ( $p < .001$ ). Conclusion: The staining resistance of denture resins was influenced by the production technique. Subtractively manufactured, and additively manufactured denture resins were not inferior to conventional resins in terms of color stability.

additively manufacturing; dental prosthesis coloring; denture base; subtractively manufacturing



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ID.79

Mehmet Gookberkkaan Demirel - Reza Mohammadi - Ali Riza Tuncdemir

Necmettin Erbakan University

## Research Article

**Aim:** The aim of this study In maxillary first premolar tooth deficiency, occlusal loads on different materials that are frequently used in the clinic; is to examine the stress levels transmitted to the abutment teeth and applied restorations and the stress distribution in the restorations.

**Material and Method:** In order to examine the stress level and distribution in maxillary first premolar deficiency, a two-layer restoration with two different bridge designs was designed with CAD and a vertical load of 700N was transmitted to the restoration and stress levels on the abutment teeth and restorations were determined by finite element analysis (ABAQUS). The stress distribution in the restoration was investigated. In order to carry out this examination, tooth number 14 was considered to be missing. To compensate for the deficiency, a bridge design (6Br) with the abutment of the first molar and second premolar, the pontic of the first premolar and a bridge design (3Br) with the abutment of the second premolar and canine, and the pontic of the first premolar were made. Von Misess analysis was carried out using different substrate material (Cr-Co (CC) / 3-YTZP (YZ) / lithium disilicate (LD) / leucite (L)).

**Results:** The maximum Von Misess (mVM) values for all applied infrastructure materials were lower for 3Br. While mVM values appeared as L<LD<YZ<CC for 3Br, they emerged as L<LD<CC<YZ for 6BR. For 3Br, higher stress was transmitted to the canine tooth in all materials, while higher stress was transmitted to the second premolar in all materials for 6Br.

**Conclusion:** In maxillary first premolar deficiency, bridges applied by extending the cantilever from the first and second premolars to the first premolars are always more stressed, and if possible, it would be more appropriate to plan a conventional bridge by using the canine as a support instead of the first molar.

Cantilever, Compressive Strength, Finite Element Analysis, Fixed Bridge Restoration, Substructure Material

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ID.80

Berkman Albayrak

Bahçeşehir University School of Dental Medicine

Sina Saygılı - Tonguç Sülün

Istanbul University Faculty of Dentistry

## Evaluation of Different Academic Groups' Success In Shade Matching With Digital Photographst

**Purpose:** It's aimed to investigate the effectiveness of using intraoral scanners and cross-polarization technique in digital photographs for shade matching applied in clinical practice and also to evaluate the effect of clinical experience level on shade matching success.

**Materials & Methods:** Color analysis was performed on the maxillary right central teeth of 10 subject models with a spectrophotometer, which is accepted as the gold standard. Digital impressions of these subjects were made with an intraoral scanner and the colors of the same teeth were determined by using the software. Finally, cross-polarized and non-polarized photographs were taken with standard settings. Each shade of Vita Toothguide 3D-MASTER scale was also photographed. 4 different groups, including prosthodontics faculty members, PhD students, dentistry students who completed their internship and dental technicians matched the shades and the photographs obtained with both techniques on a computer screen. Data were analyzed with IBM SPSS V23. Distribution conformity was examined with Shapiro Wilk test and Kruskal Wallis test was used to compare data that were not normally distributed. The compatibility of the intraoral scanner and the spectrophotometer was examined with Kappa. Significance level was accepted as  $p < 0.05$ .

**Results:** There was no significant statistical difference between the groups based on clinical experience in the shade matching performed on both cross-polarized and non-polarized photographs ( $p > 0.05$ ). Shade matching performed with cross-polarized photographs was found to be significantly more successful than non-polarized photographs ( $p < 0.05$ ). Intraoral scanner and spectrophotometer data were found to be poor in terms of strength of agreement ( $\kappa = 0,101$ ).

**Conclusion:** While clinical experience does not influence the success rate of shade matching, cross-polarized photography technique is found as a more reliable method. Shade matching performed with an intraoral scanner has not been found appropriate in clinical practice.

cross-polarized, digital dental photography, photograph calibration, shade matching

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ID.43

Sinem Ok Tokaç

Istanbul Kent University

Yılmaz Umut Aslan - Yasemin Ozkan

Marmara University Faculty of Dentistry

## Five Years Clinical Evaluation of Ceramic Inlays and Onlays Fabricated With Two Systems

**Purpose:** The aim of the study was to evaluate the 5-year clinical performance of ceramic inlays and onlays made with pressable lithium disilicate glass-ceramic (IPS e.max Press, Ivoclar Vivadent) and CAD/CAM technology (IPS e.max CAD, Ivoclar Vivadent).

**Material and Methods:** Sixty-five restorations (35 IPS e.max Press and 30 IPS e.max CAD) were placed by two operators on 25 patients (mean age 33 years). All restorations cemented with dual-cured resin cement (Variolink DC, Ivoclar Vivadent) and Syntac Classic (Ivoclar Vivadent) adhesive system. The restorations were evaluated by two operators at baseline and every year thereafter annually for five years, using modified United States Public Health Service (USPHS) criteria. Results: After the five-years clinical evaluations three CAD/CAM and one pressable restorations were fractured, secondary caries was observed on three restorations (three of them CAD/CAM), and two restorations showed debonding (one CAD/CAM, one heat pressed restorations). A general success rate of 86% was recorded. The Fisher exact test revealed significant difference between heat-pressed and CAD/CAM ceramic systems ( $p < 0.05$ ). The McNemar chi-square test showed significant differences in relation to marginal discoloration, marginal integrity, and surface texture between the baseline and three-year recall for both systems ( $p < 0.001$ ), with an increased percentage of Bravo scores.

**Conclusion:** These two types of ceramic materials demonstrated acceptable clinical performance after five years. In cases of with the advancement of design algorithms and milling units of CAD/CAM accuracy, the expertise with the Cerec device and the clinical skills of the operator during preparation also impact the outcome of CAD/CAM fabricated restorations.

clinical evaluation, CAD/CAM, lithium disilicate ceramic

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ID.61

Tansu Şendurur Güven - Rifat Gözneli

Marmara University, Faculty of Dentistry, Department of Prosthodontics

## Tooth and Implant-Supported Crown Removal With Er:yag-Laser: A Pilot Study

**Purpose:** Since removal of a resin-luted all-ceramic restoration is a challenge, the use of lasers becomes very popular, nowadays. Thus, for removal of orthodontic bracelets and laminate veneers, Er:Yag lasers are commonly used. However, removal of resin-luted all-ceramic crowns -whether tooth or implant supported-with lasers is still confusing due to its effectiveness and effects on abutment underneath. This pilot study was aimed to examine laser heat transmission to the vital tissues during Er:Yag laser application in appropriate removal time of implant and tooth supported crowns.

**Materials and methods:** Three samples, prepared for testing were respectively; tooth-supported lithium-disilicate (E.maxCAD; Ivoclar-Vivadent, Liechtenstein), implant-supported zirconia on titanium, implant-supported lithium-disilicate on zirconia abutment. Samples were designed as maxillary first premolar and tooth reduction was made in similar sizes of implant-supported titanium and zirconia abutments, with chamfer finish line. Crown thicknesses were standardized as; margin:1mm, axial/proximal:1.5 mm and occlusal:2 mm. Lithium-disilicate crowns were luted with resin (Variolink Esthetic DC; Ivoclar-Vivadent, Liechtenstein), zirconia crown was luted with zinc-polycarboxylate cement (Pentron; Spofa Dental, Czech Republic). Er:YAG laser (Fotona; Stegne7, Ljubljana, Slovenia) was used for removing crowns. Laser was applied to implant supported crown with parameters; 4.5W, 15 Hz, 300mJ, 10mm in distance, air/water spray at 2/2 with noncontact mode, until removal. Laser parameters changed to 5 W, 10 Hz, 500 mJ for tooth supported crown. Heat transmission values on tooth and implant abutments, and, removal time were measured for each sample.

**Results:** Lithium-disilicate crown on tooth was removed in 2:40 (min:sec) and temperature change was observed as 4.2 degrees. Lithium-disilicate crown on zirconia abutment removed in 4:40 and temperature change was observed as 2.8 degrees. Zirconium crown which is cemented with zinc-polycarboxylate cement on titanium abutment can not be removed.

**Conclusion:** In this pilot study, it was observed that using laser for removing crowns is safe.

**Keywords:** All-ceramic, Er:Yag laser, heat transmission, implant, removal time.

All-ceramic, Er:Yag laser, heat transmission, implant, removal time

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ID.64

Murat Feriz - Yılmaz Umut Aslan - Yasemin Kulak Özkan

Marmara University, Faculty of Dentistry, Department of Prosthodontics, Istanbul/TURKEY

## The Concept of Aesthetics and Smile Design in Dentistry

**Purpose:** Through the evaluation of the dental factors with the new technological developments the perception of subjective aesthetic is being examined with tangible, scientific and technologic criteria in order to explain the "smile design" concept that has become popular at the present time.

**Material and Method:** Literature survey was conducted on the data base of Pubmed, Science Direct and Embase through the search of the key words "aesthetics," "digital smile design," and "dental photography" and 40 different publications were examined. Considering the convenience, 8 particular literature was used during the process of writing this review.

**Conclusion:** The use of dynamic smile documents in smile design in conjunction with the DSD protocol can speed up diagnosis and ensure consistency in treatment plans. More logical and direct treatment sequences can lead to final definite results by lowering and improving risks.

**Keywords:** aesthetic, digital smile design, dental photography



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ID.66

Işıl Turp

Bezmialem Vakıf University

## University Effect of Viscosity of Intermedium On The Retention of Double Crowns

**Purpose:** The aim of the study is to evaluate the effect of intermedium viscosity on the retention force of double crowns with different retention mechanisms and materials.

**Materials and Methods:** Double crowns, which have a conus angle of 2° were fabricated from material couples of zirconia-electroformed gold (ZG), PEEK-PEEK (PP), PEEK-PEEK with an occlusal gap between the primary and secondary crown (PP-gap), zirconia-PEEK (ZP), zirconia-PEEK with an occlusal gap between the primary and secondary crown (ZP-gap). The intermedium between the primary crown and secondary crown was filled with fluids of various viscosities (1,50,100,350,1000 cSt) and the retention forces were evaluated by a universal testing machine with a crosshead speed of 20 mm/min after a seating force of 50 N was applied. Results: PP-gap group displayed the highest retention forces for all viscosities among other groups (35,73N for 1 cSt, 23,7N for 1000 cSt). Viscosity variations did not cause any significant differences in retention except 1000cSt. 1000cSt viscosity caused a significant decrease in retention force for PP-gap and ZP-gap groups.

**Conclusion:** Viscosity of 1000 cSt caused a decrease in retention due to inhibited seating of secondary crown on primary crown especially for the groups having an occlusal gap. Smaller values of viscosity did not change the retention.

double crown, viscosity, retention

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ID.12

Sina Saygılı

Istanbul University

Berkman Albayrak

Bahçeşehir University

## **Advantages of Using Digital Technologies In Minimally Invasive Aesthetic Applications: A Case Report**

When a definitive aesthetic treatment is determined, it is crucial to grant the patient's wish with the necessary dental treatment. Thus, conservative treatments that are the solution to aesthetic problems involving morphologic modifications and provide the result that the patient expects should always be the first therapeutic option. In this context, ceramic laminate veneers, also known as "contact lens," are capable of providing an extremely faithful reproduction of the natural teeth with great color stability and periodontal biocompatibility. Minimal or no preparation veneers are heavily advertised as the answer to our patients' cosmetic needs, which they can be if they are used correctly in the appropriate case. This report is about ultraconservative restorations to achieve functional and aesthetic rehabilitation through treatment planning. Thus, clinicians should be aware that the preparation for laminate veneers remains within enamel, to ensure the bond strength and avoid or minimize the occurrence of postoperative sensitivity. Laminate veneers, minimal invasive, digital dentistry, dental software, intraoral scanning



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ID.31

Ayşe Gözde Türk - Mubın Ulusoy

Ege University, Faculty of Dentistry

Gulsah Goktolga Akin

Sakarya University, Faculty of Dentistry

## Comparison of Different Cleansing Agents For Decontamination of Lithium Disilicate Ceramics

**Aim:** The aim of this in-vitro study was to investigate the efficacy of three cleansing agents for decontamination of lithium disilicate (LD) ceramics.

**Material and Methods:** Six LD ceramics (IPS e.maxPress, Ivoclar Vivadent, Schaan, Liechtenstein) (4x4 mm) were fabricated. Composite discs were also fabricated with the same size of ceramics. Ceramic discs were contaminated with a light body impression material. Ceramic discs were then divided into 3 groups according to the cleansing method Group I (Ivoclean), Group E (Ethyl alcohol) and Group U (Ultrasonic cleaning with detergent). Composite and ceramic discs were cemented with adhesive cement (Variolink N). The composite-ceramic discs were embedded in polymethylmetacrilate. Specimens were then cut with low-speed diamond knife (Isomet, Buehler, IL, USA) into 1x1x8 mm bars. There were 18 bars for every group. The bars were positioned in a universal testing machine (Lloyd, Hampshire, UK) for microtensile test (0.5 mm/min, 50kgf load cell). Data were recorded then statistically analyzed with Levene, one-way ANOVA and Tukey tests ( $p=0.05$ ).

**Results:** The highest bond strength were seen in Group E (ethyl alcohol) ( $41.28 \pm 12.05$  MPa) and the lowest were seen in Group U ( $30.51 \pm 11.64$  MPa) ( $p=0.048$ ). There were no statistically significant differences between Group I ( $34.88 \pm 15.51$ ) and Group E, Group I and Group U either.

**Conclusion:** Ethyl alcohol showed effective cleaning and the highest bond strength value than the Ivoclean and ultrasonic cleaning. All cleaning methods in this study showed acceptable bond strength values within the acceptable clinical ones.

lithium disilicate ceramics, Ivoclean, microtensile bond strength test.

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ID.72

Sinem İşler - Şebnem Begüm Türker

## The Dentists' Awareness of Information and Experience About The Digital Partial Dentures

**Purpose:** Some problems on design and production stage during the construction of conventional partial removable dentures could be solved with today's technology. The purpose of this study was to examine the awareness and attitudes of dentists towards the production of removable partial dentures by digital methods.

**Material Method:** Electronic survey system was run for this study. The survey includes 26 questions whose respondents were specialist dentists, dentists and dental students including the clinical application. Ethical approval was received. SPSS V23 software program was used for the statistical analysis. Kolmogorov-Smirnov parametric test, and Chi-Square test were used to analyze the datas. ( $p < 0,05$ ).

**Results:** 54.1% of the participants were dentist, 28.4% were specialist dentist and 17.4% dental student including the clinical application ( $n=110$ ). Although half of the participants were had information about digital dentistry, 87,2 of the participants were had any information about the development in digital partial dentures facility. 68% of the participants did not have a CAD/CAM device in their clinic. 80.2% of the participants were preferred CAD-CAM devices due to time saving advantages. Frequently, dentists preferred used digital framework for the fixed partial denture design as an inley/onley restoration. While 52.6% of the participants produced removable partial dentures with conventional methods in 4-5 sessions, 72.8% of the participants reported that they would be produced with digital methods in 2-3 sessions. 96.5% of the participants had any experienced with digital partial dentures design and manufacturing.

**Conclusion:** The groups showed a similar attitude and level of awareness in terms of the parameters evaluated in the study. In general, the participants wanted to have some information about the production technique of digitally manufactured removable partial dentures.

removable partial dentures, digital dentistry

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## ID.3

Beril Şahiner - Kaan Yılmaz

İstanbul Üniversitesi

Merve Köseoğlu - Hakan Akın

Sakarya Üniversitesi

### Evaluation of The Effect of Smartpeg Screwed At Different Torque Values on Isq Values

**Objectives:** The objective of the present study was to investigate the effect of screwing the SmartPeg with manually or different torque values with the help of a wrench on the ISQ values obtained as a result of measurement with the resonance frequency analysis device.

**Materials and Methods:** A 38x20x42 cm artificial bone imitating Type II bone was produced in a laboratory (Pacific Research Laboratories) for in vitro measurements. One dental implant (BlueSKY, Bredent) with the length of 7 mm and the diameter of 3.5 mm were used in this study. The implant was placed in the artificial bone under water cooling. SmartPeg placed on the implant and was tightened by hand, and with the help of the wrench (MegaGen Implant) with a torque of 5, 10, and 15 N cm. For in vivo measurements, same measurement procedures were followed in the patient's mouth. In vivo and in vitro measurements were performed by a single researcher to ensure standardization in the study. In 8 groups (in vivo and in vitro), a total of 320 ISQ values were obtained (n=10) and data were recorded. The statistical analysis of the data obtained was performed using the SPSS program (version 22.0, SPSS). After the Kolmogorov-Smirnov test, it was determined that the data were normally distributed. In the statistical analysis of both in vivo and in vitro measurements, 1-way ANOVA and post-hoc Tukey test were performed to compare differences between the groups.

**Results:** According to both in vivo and in vitro test results, the lowest ISQ values were obtained from measurements after tightened by hand, while the highest ISQ values were obtained from measurements with 15 N cm. Significant difference was found in ISQ values between groups of torque wrench and tighten by hand ( $p < 0.05$ ). However, smart peg was damaged after the torque value of 15 N cm application.

**Conclusios:** SmartPeg should be tightened 5-10 N cm torque values with a special wrench to obtain an objective and reliable determination of ISQ values during RFA.

**Keywords:** Resonance Frequency Analysis, ISQ value, torque, dental implant.

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ID.82

Doğu Furkan Kaya - Şebnem Begüm Türker

Marmara University, Faculty of Dentistry, Department of Prosthodontics, Istanbul, Turkey

## Awareness of Knowledge and Experience In Color Selection Using Artificial Intelligence In Dentistry

**Purpose:** The aim study was to evaluate examine the perspective of artificial intelligence technology, visual and digital color selection methods, dentists' attitudes and artificial intelligence to assess whether they are aware of the relevant developments.

**Material Method:** Specialist dentists, dentists, Phd and specialist dentist student were participated in to the study. The surveys in which all questions were answered were included to the study. SPSS V23 program, and chi-square test were used for statistical to evaluate the data. ( $p < 0.05$ ).

**Results:** 34.4% of the participants were male and 65.6% were female ( $n=128$ ). While 96.9% of the participants use the visual technique in color selection, none of the participants use artificial intelligence. 70.4% of the participants's patients are more satisfied with the color selection made using digital systems. 81.3 percent of the participants do not have knowledge about the use of artificial intelligence in dentistry. While 87.1% of the participants stated that they would prefer color selection with artificial intelligence, they could not prefer it due to high cost and insufficient technology. 90.3% of the participants remarked that color selection with artificial intelligence is comfortable and artificial intelligence will become more popular in the future. Conclusion: In the limitation of this study. However while most of the participants want to use artificial intelligence in color selection, they do not use artificial intelligence due to reasons such as high cost, insufficient technology and data error margin. Key Word: Artificial intelligence, color matching, digital dentistry

Artificial intelligence, color matching, digital dentistry

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ID.29

Zeynep Şen Yılmaz - Funda Bayındır

Ataturk University

## Approach to the COVID-19 Vaccine in Geriatric Individuals

**Background:** This survey aims to understand the demands and hesitations of individuals over the age of 65 who applied to the Department of Prosthetic Dentistry of Atatürk University during the COVID-19 epidemic, to evaluate their attitudes and to investigate their thoughts about the COVID-19 vaccine.

**Methods:** The study was carried out with data collection method by survey . This survey study was applied to 122 individuals over the age of 65 who applied to the Department of Prosthodontics, Faculty of Dentistry, Atatürk University. Options in the questions asked; strongly agree, agree, disagree and strongly disagree. Data were evaluated strongly agree and agree answers are affirmative; disagree and strongly disagree answers as negative. The results were performed using descriptive and frequency analysis.

**Results:** As a result of the analysis, 76.2% of the respondents stated that they had not had the COVID-19 disease before, and 46.7% stated that they were afraid of catching the COVID-19 virus. 94.3% of the participants were vaccinated; 67% of the vaccinated individuals stated that they thought they would have a mild illness because they were vaccinated. 60.4% of the respondents reported that they were not adequately informed by their doctor before getting vaccinated. 90.1% of the participants believed that the vaccine would protect them from catching the COVID-19 disease, 78.5% stated that they thought that children should be vaccinated as well. have reported. 93.3% of the individuals who participated in the survey stated that they would consider getting vaccinated even if the vaccine was paid.

**Conclusion:** Our study showed that 90.1% of the participants believed in the protection of the COVID-19 vaccine and the participants had a high willingness to be vaccinated, 1.6% thought to be vaccinated but were in favor of waiting for a while, and 4.1% did not consider getting vaccinated because they were worried about the negative effects of the vaccine.

**Keywords:** COVID-19, Vaccine, Dentistry, Geriatric, Attitude, Willingness



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## ID.4

Selim Çömekeoğlu - Yılmaz Umut Aslan

Marmara University, Faculty of Dentistry, Prosthodontics Department,  
Istanbul, Turkey

### Selection of Lithium Disilicate Ingot in No-Prep Laminate Veneers Restorations: Case Series

**Aim:** No-prep ceramic laminate veneers are non-invasive treatment options in rehabilitations of esthetic demanding cases. The aim of this case series is to understand the basic philosophy to select appropriate ingot in no-prep laminate veneer.

**Materials and methods:** Five patients are included in this case series. Twenty-five no prep laminate veneers were made. All patients' treatment is undergone in the same method. Lithium disilicate ceramic (IPS e.max Press, Ivoclar Vivadent, Lichtenstein) materials in different translucency were used in fabrication of laminate veneers. Staining technique is used in production. Restorations were cemented with resin cement (Variolink Esthetics LC, Ivoclar Vivadent, Lichtenstein).

**Results:** All patients were highly satisfied. There were no mechanical or biological complications observed.

**Conclusions:** Appropriate selection of the ingot is crucial in the treatment of no-prep laminate veneers. Translucent ingots which fabricated with staining method gives highly esthetics treatment outcomes in high esthetic demanding patients.

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Keywords

Maximal Overlap  
CBCT Scanning  
Full-Arch Scanning

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Accuracy of IOS in Full-Arch  
Dentate Patients Compared  
to CBCT Cast-Scanning  
in vivo Study

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ID.71

Oğuzhan Özdemir

Acibadem International Hospital, Istanbul

**Replacement of single tooth with immediate implants and immediate loading in the anterior maxilla: case report**

Especially in the anterior maxilla due to esthetic concerns, implant placement is highly sensitive. Timing of implant placement, angulation of implant, position of implant in M-D and B-P aspect, bone volume are the determinant factors effecting the out come of the therapy. According to the current literature, the success rate of immediate implants plus immediate loading is high but depends on the experience and skill of the practitioner and technique sensitive. In this lecture, an anterior implant case will be presented entirely.



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ID.23

Beril Koyuncu - Övül Kümbüloğlu

Ege University Faculty of Dentistry

## Complications and Solutions In Hybrid Prosthesis

**Purpose:** Implant fixed complete dental prosthesis (IFCDP) is a commonly preferred treatment option in the rehabilitation of completely edentulous patients since the "removability" of the prosthesis is no longer possible. The purpose of this oral presentation is to exhibit the common prosthetic and biological complications with acrylic veneered hybrid dentures with sample cases and recommend remedies for these complications. Debonding of the acrylic teeth and delamination (or fracture) of the acrylic veneering material are the common technical complications with hybrid prosthesis. Patients with severe bruxism are possible candidates for this type of complication. The cantilever height is another factor that should be focused on. The prosthesis should be repaired after retrieval and occlusal adjustments should be made. An occlusal nightguard may be needed as well. Screw access channel may have to be positioned buccally because of the facially inclined implants. In order to overcome the angulation problem, a Toronto bridge approach may be a wise solution for hiding the screw channel. Angulated multi-unit abutment options should be tried as well. Access channels can be closed by composites with an elaborate finishing and polishing stage. Poor oral hygiene is a contraindication for hybrid prosthesis. Bacterial accumulation under the prosthesis resulting with mucositis is stated as the most common biological complication with the hybrid prosthesis. Non-convex intaglio surface is strictly advised for better oral hygiene. The recalls should be more frequent in order to control the intraoral tissues and for the maintenance of the denture. Oral irrigators should be recommended.

**Conclusion:** Hybrid prosthesis is the appropriate treatment option for the completely edentulous patients who demand for implant fixation, even though mechanical and biological complications may occur. In order to minimize the risks, the clinician should be well-informed on the complications and the solutions in case of a need.

Fixed Full-Arch Restoration, Implant Complications

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ID.5

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Enes Bastem

Department of Periodontology, Faculty of Dentistry, Atatürk University

## Smile Design From Biology To Function

**Purpose:** Patient demand for esthetic dental treatments has increased. This case report describes esthetic, biological and functional treatment of a patient who applied to clinic due to esthetic concerns and complaints. Case report. A 30-year-old female patient referred to the clinic with the esthetic complaints at maxillary anterior region. After clinical and radiographic examination and diagnostic workup, treatment options were explained and discussed, it was decided on an esthetic treatment of the ten maxillary teeth with lithium disilicate ceramic restorations. First, a full-thickness flap was elevated, overfilled restorative material was removed and then the flap was sutured. After healing period, current composite restorations were replaced. A diagnostic wax-up was prepared and transferred to the mouth for clinical evaluation. In this step, esthetic and function were carefully evaluated by the clinician and patient. After the current planning is approved, the teeth were prepared. Lithium disilicate ceramic restorations were fabricated and adhesively cemented. Conclusion. The multidisciplinary intervention is essential for the achievement of the proposed treatment that combined biological, functional, and esthetic concepts.

Esthetic, biology, function

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ID.25

Ayşe Koçak Büyükdere

Kocaeli University

Begüm Karademir

Okan University

## Finite Element Stress Analysis of Marginal Bone Loss In Anterior Implant

**Purpose:** The aim of this study is to evaluate the stress values of different abutment and superstructure materials in bone, implant, abutment and crown by using finite element analysis in implants with 2 mm marginal bone loss. In the study; It was aimed to evaluate the tensile stresses, compression and Von Mises stresses in cortical bone, trabecular bone, implants and abutments and infrastructures in a total of 8 models.

**Materials and Methods:** In the study, oblique and horizontal force was applied 2 different scenarios on a single implant to the right central tooth region of the upper jaw and stress distributions occurring in the implant, abutment, bone tissue and crown were performed with three-dimensional finite element stress analysis in each modeling. In scenario 1 implant was osseointegrated and in scenario 2, the marginal bone loss as 2 mm in the neck area of the implant was modeled; titanium and zirconia abutments and feldspatic porcelain with zirconia substructure analysis were performed.

**Results:** The stress values of the horizontal force in each model were higher than the oblique forces in the abutment, implant and bone. In each model; The stress values resulting from both oblique force and horizontal force were listed as abutment, implant, cortical bone and trabecular bone, from largest to smallest. In implant models with marginal bone loss, the maximum principal stress was high in the cortical bone, in both the titanium abutment and the zirconium abutment.

**Conclusion:** Regardless of marginal bone loss; stress differences caused by material change of titanium and zirconia abutments were similar between models when both oblique force and horizontal force were applied. Although the stress values did not change under horizontal loading in the models with marginal bone loss, it was observed that the stress areas increased.

Implant, Finite element stress analysis, marginal bone loss

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ID.33

Irem Cotert Mercan

Private Practice

Mubin Ulusoy

Ege University Faculty of Dentistry

## In-Vitro Comparison of Implant-Supported Single Crowns and Abutments Manufactured With Different Techniques

**Purpose:** Of the late years, modified-hybrid restorations in which the abutment and crowns are manufactured as onepiece and screwed to the implant are referred to as "hybrid-abutment-crowns". Another modification of the hybrid-abutment-crown design is that the veneer porcelain is baked directly onto the abutment and screwed to the implant. In this study, the fracture strengths of implant-supported single-crown restorations manufactured with different materials and techniques are evaluated.

**Materials and Methods:** 40 implants were divided into four groups according to the abutment material and production technique. (PrefabTi: prefabricated titanium abutment and screwmentable titanium substructured porcelain crown; FabZr: prefabricated zirconia abutment and screwmentable zirconia substructured porcelain crown; CADCAMTi: Hybrid-abutment-crown obtained by baking veneer porcelain directly on the titanium representative abutment manufactured by CAD/CAM; CADCAMZr: Hybrid-abutment-crown obtained by baking veneer porcelain directly on a zirconia representative abutment manufactured by CAD/CAM and supported with Ti-base) Restorations were manufactured in accordance with the upper 1st premolar morphology. Following the thermocycle process, the fracture strength measurements were carried out. Fracture mode analyzes were performed with digital microscope and radiographic examination.

**Result:** The group with the highest fracture strength is CADCAMTi group with 385,84 27,68 N. This group is followed by 313,18 39,97 N; 272,69 35,03 N and 156,71 19,83 N for the CADCAMZr, PrefabTi and PrefabZr groups, respectively. The differences between the mean fracture strength of the groups were found to be statistically significant. The most common failure mode in the PrefabTi group was deformation of the screw, hex and implant. Internal-hex level fracture was observed in all of the samples in the PrefabZr group. While the most common failure mode in the CADCAMTi group was restoration fracture accompanying screw, hex, and implant deformation; most of the specimens in the CADCAMZr group showed separation of the abutment-crown complex from Ti-base and deformation of the titanium components.

**Conclusion:** The fracture strengths of hybrid-abutment-crowns obtained as single piece were found to be significantly higher than screwmentable crowns. It can be said that the production of the system in one-piece instead of two-pieces increases the fracture strength.

abutment, dental implant, hybrid-abutment-crown, fracture strength

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Özge Arifağaoğlu - Cansu Koseoglu Secgin - Bulem Yuzugullu

BASKENT UNIVERSITY

## UNIVERSITY"Oral Health-Related Quality of Life In Patients With Temporomandibular Disorders and Effect of Anxiety: A Case-Control Study

**Purpose:** This study aims to evaluate oral health-related quality of life in patients with temporomandibular disorders which either have masticatory muscle pain, disc displacement with reduction or both and determine these disorders' association with their anxiety.

**Materials and methods:** The study consisted 150 patients suffering from temporomandibular disorders and 50 healthy patients as the control group. Patients were diagnosed, then divided into three diagnostic groups according to the DC/TMD (Diagnostic Criteria/Temporomandibular Disorders) Axis I form which were masticatory muscle pain (Group MP), disc displacement with reduction (Group DD) or both (Group MPDD). The participants filled the OHIP-14 (Oral Health Impact Profile-14) and GAD-7 (Generalized Anxiety Disorder-7) questionnaires for oral health-related quality of life and anxiety assessment, respectively. Statistical analysis was performed using the Kruskal-Wallis test, Mann Whitney U Post-hoc paired comparison tests with Bonferroni correction and the Spearman's correlation coefficient.

**Results:** 121 of the patients (60.25%) were female and 79 (39.75%) were male with the age ranging from 18 to 68 (mean age:  $37.32 \pm 13.62$ ). Gender distributions, mean ages, educational and occupational status were similar among groups. The OHIP-14 global and domain scores and distribution of GAD-7 levels were significantly different among the groups ( $p < 0.001$ ). For psychological discomfort and disability domains, Group MPDD scored statistically the highest, followed by Group MP, DD and control ( $p < 0.05$ ). Correlation analyses showed that, within Group MPDD, there were positive correlations between GAD-7 and all OHIP-14 scores ( $r = 0.438, p < 0.001$ ).

**Conclusion:** Oral health related quality of life is negatively affected by TMDs, and OHRQoL seem to decrease as the severity of anxiety increases. Therefore, physical conditions and anxiety of the TMD patients should be simultaneously considered for treatment and maintenance.

Temporomandibular disorders, OHRQoL, OHIP-14, GAD-7, anxiety



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Hüner Elif Karabulut Abdioğlu - Yılmaz Umut Aslan

Marmara University

## Evaluation of Condylar and Anterior Guidance Parameters ByUsing Digital Pantographic Recording System On Individuals WithDifferent Occlusion Types

**Objectives:** The aim of our study is to investigate the relationship between canine guided occlusion and groupfunction occlusion with condylar and anterior guidance parameters in healthy individuals.

**Materials andMethods:** According to the current occlusion type, 30 volunteers without temporomandibular joint diseaseand tooth defi ciency; they were divided into two groups as canine guided occlusion and group functionocclusion groups. Mandibular movements in both groups were recorded using Arcus digma (KaVo EWL GmbH, Leutkirch, Germany) system. Both anterior guidance and condylar guidance parameters wercalculated with the Arcus digma system and these parameters were compared for both occlusion groups."Student T Test" was used for statistical analysis.

**Results:** No statistically signifi cant difference was foundbetween the canine guided occlusion and the group function occlusion groups in terms of condylar andanterior guidance parameters. Sagittal protrusive incisal guidance angle was higher than protrusive condylarguidance angle in both groups.

**Conclusions:** There was no difference between the different types of occlusionin terms of condylar and anterior guidance parameters, and it was observed that these parameters changedindividually rather than the occlusion type.

Canine guided occlusion, group function occlusion, pantograph, condylar guidance, anterior guidance



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Mehmet Akça - Stefani Eken - Gülsüm Sayın Özel

Istanbul Medipol University

## Implant Supported Hybrid Prosthesis Using A High-Performance Polymer (pekkton) Framework: Case Report

**Purpose:** Polyetherketoneketone (PEKK), is a high-performance polymer, was recently introduced in the dental field with potentially wide-ranging applications. These case reports describe hybrid prostheses supported with tilted implants systems using a high performance and polymer (Pekkton) framework for a fully edentulous maxilla and mandible.

**Material methods:** In these case reports 3 patients were reported for pekkton substructure hybrid prostheses. One of them pekkton framework design was different as facet design two of them were toronto design. Tilted implant systems were applied for the lower and upper jaws due to vertical and horizontal bone losses in our patients and hybrid prostheses solutions were applied with a pekkton infrastructure to provide the missing lip support and profile. Case 1(56 year old woman) and case 2(52 year old man),were rehabilitated with, maxillary and mandibular hybrid prostheses with pekkton substructuretoronto-design and zirconia crowns. Case 3 (32 year old man) was rehabilitated with, maxillary and mandibular hybrid prosthesis with pekkton substructure facet design and acrylic artificial teeth and laboratory composite.

**Results:** Clinical and radiological findings were satisfactory for Case 1 and Case 2. After 3 years of follow-up, functional, phonetic or aesthetic problems were not detected in the restorations. In case 3, which was designed by applying different production methods, recurrent laboratory composite fractures observed after 8 months.

**Conclusion:** Implant-supported hybrid prostheses made by pekkton substructure may be a reliable alternative treatment procedure in cases where metal-supported-porcelain or zirconiasupported-porcelain fixed restoration cannot provide the patient's aesthetic, phonetic, oral hygiene and oral comfort.

Pekkton- Hybrid prostheses

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Stefani Eken - Mehmet Akça - Gülsüm Sayın Özel

Istanbul Medipol University

Işıl Karaokutan

Pamukkale University

## Effect of Ceramics and Cements On The Color Stability of Hybrid Abutments

**Purpose:** The purpose of this in vitro study was to evaluate the color stability of resin cements for hybrid abutment crowns after accelerated aging using different ti-base surface treatments and ceramic materials.

**Material and methods:** Total of 80 Titanium disc shape specimens were prepared using milling machine (10mm diameter and 3 mm thickness). And for Ti specimens 4 different surface treatment was applied. 1- Control-non-treated, 2-50 m sandblasted with Al2O3 particules,3-110 m sandblasted with Al2O3 particules, 4- Cojet treated. Ceramic specimens (thickness, 2mm  $\pm$ 0.05 mm; diameter, 4.00  $\pm$ 0.10 mm) were prepared using lithium disilicate (low translucency [LT] n=80) ceramics and Zirconia reinforced lithium disilicate(ZLS) n=80. Self-Curing cement -SC(Multilink Hybrid Abutment Cement, Ivoclar Vivadent) and Dual curing cement -DC( Panavia V5 Cement, Kuraray) were used for cementation Color difference ( $\Delta E_{00}$ ) values were obtained by spectrophotometric quantification of L\* (lightness), a\* (green-red), and b\* (blueyellow) values before and after 5000 cycle thermal aging. The Kruskal-Wallis, Mann-Whitney U, Wilcoxon signed rank, and Bonferroni post hoc tests were used for statistical analysis.

**Results:** After specimens were subjected to accelerated aging, ZLS ceramic specimens luted with Multilink SC cement on the 50 m sandblasted surfaces exhibited the greatest color change ( $\Delta E_{00}$ =3.17), whereas ZLS ceramic specimens luted with Panavia V5 DC cement on the nontreated ti surfaces exhibited the least color change ( $\Delta E_{00}$ =0.52).  $\Delta E_{00}$  values for all specimens showed statistically significant difference (P<.001). Lithium disilicat ceramics had significantly higher  $\Delta E_{00}$  values than ZLS ceramics(P<.001).

**Conclusion:** Ceramic and resin-cement systems affected the color stability of hybrid abutment crowns. Relative to other ceramics, lithium disilicate ceramics exhibited greater color changes upon aging. Opaque color DC resin cement is recommended for lithium disilicate ceramics.

Hybrid abutments, Color stability, Cement, Surface treatment

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Taha Yaşar Manav

Kahramanmaraş Sutcu Imam University

Ayşe Karabaş

Private Dental Clinic

## Relation In Color of Three Segments of Vital Maxillary Incisors and Canines

**Purpose:** The aim of this study was to evaluate relations between color patterns in the cervical, middle, and incisal regions of the teeth in the maxillary incisors and canine.

**Material and Methods:** Twelve individuals aged between 18-25 participated in the study. Color measurements were performed using VITA Easyshade V (VITA Zahnfabrik, Germany) from the cervical, middle, and incisal regions of the right maxillary central, lateral, and canine teeth of participants. Only individuals with B2 color in the central middle segment were included in the study. CIELab L\*, a\*, b\* values were determined using a dental spectrophotometer.  $\Delta E$  values were calculated to determine the color difference, and L\*, a\*, b\* values were statistically analyzed. NCSS 2007 (Number Cruncher Statistical System, Kaysville, Utah, USA) software was used for statistical analysis. Descriptive statistical methods were used when evaluating the study data, and the distribution of the data was evaluated using the Shapiro-Wilk test. In addition, Spearman's correlation analysis was performed to detect correlations between different variables. Significance was evaluated at  $p < 0.01$  and  $p < 0.05$ .

**Results:** Statistically significant results were obtained between L\* (Table 1), a\* (Table 2) and b\* (Table 3) values of different teeth segments using Spearman's correlation analysis. In addition,  $\Delta E$  was calculated higher than 3.7 between all teeth segments (Table 4).

**Conclusions:** There is a clinically noticeable color difference between all segments of the anterior maxillary teeth. Furthermore, it may be possible to calculate the b\* value of the middle colors of the upper incisors using the b\* value of the color of the middle segment of the upper canine tooth.

Tooth color, Spectrophotometer, CIELab

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Buse Atak Ay - Şebnem Begüm Türker

## Dentist's Awareness of Covid-19 Disease and Their Approach To Prosthetic Treatments

**Purpose:** The aim of this study is to evaluate the awareness of dentists against Covid-19 (Coronavirus Disease 2019) and their approaches to prosthetic treatments.

**Material Method:** Specialist dentists, dentists and dental students participated in the study. The study in which the electronic survey system was used was carried out in October 2021, and the surveys in which all questions were answered were included in the study. SPSS V23 program and chi-square test were used in the analysis of the obtained data ( $p < 0.05$ ).

**Result:** 36.4% of the participants were male and 63.6% were female ( $n=163$ ). 83.2% of the participants did not have the covid-19 disease ( $n=134$ ). Only 3.1% of participants who have had the covid-19 disease think that they caught the disease from the work environment ( $n=5$ ). Although the survival time of the virus in the aerosol is 3 hours, 41,3% of the participants know it as 6 hours. Although the most effective method for disinfection of the working environment is ventilation and the use of hypochlorous acid, only 14.1% of the participants use this method, 34.4% of the participants use ventilation and disinfection with hypochlorite. 86.4% of the participants continue to treat their patients as usual, using their protective equipment. The most risky procedures in terms of covid-19 transmission were restorative procedures. Tooth preparation is the most risky among prosthetic procedures in terms of covid-19 transmission. Cementation procedures are the least risky in terms of covid-19 transmission. 69.3% of the participants think to continue the protection procedures they applied during the covid-19 period.

**Conclusion:** The groups showed a similar attitude and level of awareness in terms of the parameters evaluated in the study. However, in order to control the COVID-19 transmission and process, the knowledge and awareness of dentists need to be updated.

Covid-19, Protection, Transmission

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Bercestte Polat Akmansoy

Marmara University

## Radiographic Assessment of Alveolar Bone Resorption InMandibular Edentulous Patients Rehabilitated With DifferentTreatment Procedures: Pilot Study

**Purpose:** This study was performed to evaluate and compare the amount of alveolar bone resorption fromthree different reference points in edentulous mandible treated with conventional complete dentures orinterforaminal two-implant supported overdentures.

**Materials and Methods:** Panoramic radiographs (OPTG)with average 2,5 years in between of patients treated with 10 conventional complete dentures (CD) and 10interforaminal two-implant supported overdentures (OD) evaluated by MediaDent Data V6 imaging softwareprogramme (Roswell, Georgia, USA). 20 edentulous patients (12 women, 8 men), average age of 63, whomet our study criteria were included in our study. Vertical bone heights in both OPTGs were measuredaccording to the method of Xie et al. Thus, amount of alveolar bone resorption was calculated in anterior,premolar and molar regions.

**Results:** The mean alveolar bone resorption by region for CD and OD groupsrespectively was 2.19 and 2,20 in anterior, 3.69 and 2,23 in premolar, 2.51 and 1,61 in molar regions. Onlystatistically signifi cant difference was found in CD group between anterior and premolar regions. The meanalveolar bone resorption in woman and men respectively was 1.86 and 2,7 in anterior, 2.06 and 4,31 inpremolar, 1.89 and 2,31 in molar regions. There was no gender based statistically signifi cant difference inalveolar bone resorption.

**Conclusion:** There are limited number of studies evaluating alveolar bone resorptionwith Xie et al method. This retrospective study has many limitations such as OPTG standardization,elimination of artefacts, and the diffi culty of having two different OPTGs in the archive obtained duringroutine controls. For this reason, further researches with larger patient group have to be done.

Panoramic radiography, edentulous patients, overdenture, conventional complete denture, alveolar boneresorption.



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Beyza Betül Şencan - Esra Kul - Nezihat Güneş - Erkan Özmen

## Changing Nasal and Oral Flora With Time In The Students

**Purpose:** In this study, nasal colonization and throat culture samples were compared in Erzurum Atatürk University Dentistry 1st and 5th grade students to determine whether there was a flora change due to clinical experience. **Material Method:** In different groups, it was recorded that these microorganisms were seen in the number of people and the flora of the nose and throat were compared between the 1st and 5th grade students based on clinical experience. **Results:** Methicillin-resistant *Staphylococcus aureus* (MRSA), Methicillin-sensitive *Staphylococcus aureus* (MSSA), Methicillin-resistant coagulase-negative staphylococci (MRCNS), Methicillin-sensitive coagulase-negative staphylococci (MSCNS), *Klebsiella pneumoniae*, *Enterobacter* species were found in nasal colonization results. In the throat colonization results, group A beta hemolytic streptococci were observed in some students (AGBHS), but not in others. Proportionally, (3.8%) MRSA, (9.6%) MSSA, (32.6%) MRCNS, (65.3%) MSCNS and (5.7%) *Klebsiella pneumoniae* were observed in the nasal culture taken from the 1st graders. In nasal colonization taken from 5th grades (5.76%) MRSA, (13.4%) MSSA, (23%) MRCNS, (59.6%) MSCNS, (1.9%) *Enterobacter* species, (5.7%) *Stenotrophomonas Maltophilia* was seen. While AGBHS was found in the throat colonization taken from 1st graders (30.7%), AGBHS was found in 5th graders (36.5%). **Conclusion:** In this study, the nasal colonization and throat colonization were compared in Erzurum Atatürk University Dentistry 1st and 5th year students to determine whether there is a flora change due to clinical experience.

**Keyword:** dentistry students, *s.aureus*, streptococcus, *s. Maltophilia*, environmental contamination

**INTRODUCTION:** There is a lot of microbial load in dental clinics. There have been concerns recently that exposure to aerosols in dental clinics increases the risk of respiratory disease in dentists and patients. Aerosol is produced even in the most basic dental treatments. Various hand tools, such as high-speed water turbines, micromotors, ultrasonic instruments, and air-water syringes, are used in dental treatments, causing large amounts of particles and splashes, and patients' oral cavity may also contain microorganisms<sup>1</sup>. During dental procedures, according to some literature dentists are exposed to  $1.86 \times 10^5 / m^3$  and according to some literature  $4.3 \times 10^5$  bacteria /  $m^3$  exposed. As the size of the aerosol particles decreases, the amount of inhaled bacteria increases and creates a potential risk (<1 micron)<sup>2,3</sup>. Person-to-person contact may also cause dentists and healthcare professionals to acquire respiratory infections in dental clinics. (Talking, coughing, sneezing) This transmission is exacerbated by the aerosol generated during the treatment by ultrasonic instruments and other treatments. The dentist who has been exposed to this aerosol for a long time may increase the number of microorganisms<sup>2</sup>. In dental clinics, staphylococci and micrococcus species are predominant microorganisms isolated from bioaerosols<sup>4,5</sup>. Besides aerosol, there are many ways of contamination for microorganisms in dental clinics. Dentists stated that cross-contamination may occur during dental operation<sup>6,7</sup>. Microorganisms can potentially be transmitted from



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patients 'mouth and wounds to dentists' fingers and to dental surfaces. *S.aureus* can often spread from patient to patient through the temporally contaminated hands of dentists. Infected medical staff and visitors can also serve as reservoirs for transmission. A person infected with MRSA can cause indirect contact by touching objects with their infected skin. Drained lesions are also highly contagious<sup>8</sup>.

Standard precautions are taken to prevent contamination with microorganisms. Patients who come for dental treatment are considered potentially infected patients. The measures are also based on this assumption. Protective equipment (gloves, mask, visor) is used. Dental professional takes care of hand hygiene. The materials used are sterilized. Protective equipment and hand hygiene are intended to prevent the transmission of infectious agents (including mrsa)<sup>8</sup>.

In this study, nasal and throat colonization were taken from 52 people in the 1st grade and 52 people in the 5th grade in Atatürk University Faculty of Dentistry. In the nasal colonization results, it was observed that the rate of the presence of some pathogenic microorganisms in 5th grade students increased. These are microorganisms such as MRSA, MSSA, *S. maltophilia*. Additionally, throat colonization results showed an increased incidence of GABHS.

*Streptococcus pyogenes* belongs to serological group A and is a human-specific pathogen only. Group A streptococci has a serious burden on the health system and causes serious diseases (Tan et al, 2004)<sup>9</sup>. Group A beta-hemolytic streptococci (GABHS) are important human pathogens. Sore throat can cause skin and soft tissue infections, as well as serious postinfection diseases such as acute glomerulonephritis and acute rheumatic fever 10. In 2005, data on this were published and at least 517,000 deaths due to 616 million pharyngitis cases, 111 million pyoderma cases, and severe sequelae and invasive diseases were associated with *streptococcus pyogenes*. (Bisno ve ark., 2005<sup>11</sup>; Carapetis ve ark., 2005<sup>12</sup>; Ralph ve Carapetis, 2013<sup>13</sup>)

Entry routes for group A streptococcus after infection from person to person are the oral cavity, skin and wounds. In particular, preferred colonization sites are the oropharynx and mucosal membranes of intact skin (Cunningham, 2000<sup>14</sup>; Tan ve ark., 2014<sup>9</sup>)

In healthy individuals, GABHS often causes mild and self-healing purulent infections of the skin and mucosal membranes such as pharyngitis, impetigo, and pyoderma. In patients with a predisposition to conditions such as immunosuppression, diabetes and related diseases or specific HLA-DR (MHC class II cell surface receptor) subtypes, sometimes serious and life-threatening diseases occur. Necrotizing fasciitis and streptococcal toxic shock syndrome are associated with high morbidity and mortality symptoms. Antibiotic therapy is mandatory to prevent secondary autoimmune sequelae, such as rheumatic heart disease or glomerulonephritis, even for uncomplicated primary infections. (Cunningham, 2000)<sup>14</sup>.

*S. maltophilia* is not a very virulent pathogen, but has emerged as an important nosocomial pathogen associated with mortality rates ranging from 14 to 69% in patients with bacteremia<sup>15,16</sup>. Environmentally or clinically isolated *S. maltophilia* may exhibit multiple antibiotic resistance phenotype<sup>17</sup>.

The emergence of new multidrug-resistant organisms (MDROs) in non-clinical settings, the increase in community-acquired infections, and the spread of these pathogens in the clinical setting have created the need to monitor these organisms<sup>18</sup>. *Stenotrophomonas maltophilia* is frequently associated with respiratory infections in humans and is an environmental Gram- negative MDRO. It can cause serious infections in humans.

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*S. maltophilia* is an environmental MDRO and may originate in or outside the hospital or clinical setting<sup>18</sup>.

*S. maltophilia* has been detected on the surfaces of the materials and can be found on the used intravenous (IV) cannulas, prosthetic devices, dental unit. *S. maltophili* can be transmitted to sensitive individuals through direct contact<sup>19</sup>. MRSA has been a serious concern since its isolation<sup>20</sup>. MRSA is associated with multidrug resistance and has an important place among nosocomial pathogens<sup>21,22</sup>. Researchers have noted that some people have nasal MRSA colonization<sup>23</sup>. Theoretically, nasal MRSA colonization can be viewed as a risk factor for the development of MRSA infection and can act as a reservoir for transmission<sup>8</sup>. There is considerable evidence that MRSA is present in patients, on dental clinical surfaces, and in dental health professionals (DHCPs), including students<sup>24</sup>. However, there is limited documentation that MRSA infection is transmitted from dentists to patients during conventional dental treatment<sup>25,26</sup>. Nevertheless, the possibility of MRSA colonization should not be ruled out by dental health professionals. The genus *Enterobacter* was first described in 1960, and to date 22 species have been found in the genus *Enterobacter*. The genus *Enterobacter* has been observed to act with peritricous flagella, being about 2 mm long. It contains facultative anaerobic Gram-negative bacilli, which belong to the family Enterobacteriaceae<sup>27</sup>.

*Klebsiella pneumoniae* as a bacterium isolated from the lungs of patients dying of pneumonia, it was first described by Carl Friedlander in 1882<sup>28</sup>. *Klebsiella pneumoniae*, a Gram-negative pathogenic bacterium, is part of the Enterobacteriaceae family. It is wrapped with a polysaccharide capsule attached to the pneumoniae outer membrane and ferments lactose<sup>28</sup>.

**MATERIAL AND METHOD:** 52 students from Atatürk University Faculty of Dentistry 1st and 5th year students participated in this study. The procedures to be performed were explained to the students and their consent forms were obtained. Nasal swab samples were taken with cotton swabs soaked in sterile saline, by turning the 1/3 front of the nostril several times on both sides. Throat samples were taken with sterile swabs over the tonsils and from the posterior pharynx wall. All samples were incubated at 37 °C for 24-48 hours by sowing on 5% sheep blood agar and Eosin Methylene Blue (EMB) agar media by reduction method.

The presence of Group A Beta Hemolytic Streptococcus (AGBHS) was investigated by performing Pyrolydonly Beta Naphilamide (PYR) test in colonies with beta hemolysis on throat swabs. Gram staining was performed on the colonies with hemolysis in nasal swabs. Catalase and coagulase tests were performed on colonies that were seen as gram positive cocci under the microscope and were evaluated for *Staphylococcus aureus*. Methicillin resistance of the isolates identified as *Staphylococcus aureus* was examined by disk diffusion method on Mueller-Hinton agar (MHA) medium. Gram negative bacterial colonies growing on the EMB medium were typed by conventional methods.

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## RESULT:

Nasal flora	1st grade	5th grade
MRSA	2 student (3,8%)	3 student (5,76%)
MSSA	5 student (5,96%)	7 student (13,4%)
MRCNS	17 student (32,6%)	12 student (23%)
MSCNS	34 student (65,3%)	31 student (59,6%)
<i>S. pneumoniae</i>	3 student (5,75%)	-
<i>Enterobacter spp.</i>	-	1 student
<i>S. maltophilia</i>	-	3 student (5,7%)

Number and percentage of 1st and 5th class nasal culture results

MRSA: meticiline resistant S.aureus

MSSA: meticiline sensitive S.aureus

MRCNS: meticiline resistant coagulase negatif staphylococci

MSCNS: meticiline sensitive coagulase negatif staphylococci

Throat colonization	1st grade	5th grade
GABHS	16 student (30,7%)	19 student (36,5%)
S.maltophilia	-	3 student (5,76%)
NTF	36 student (69,2%)	29 student (55,7%)

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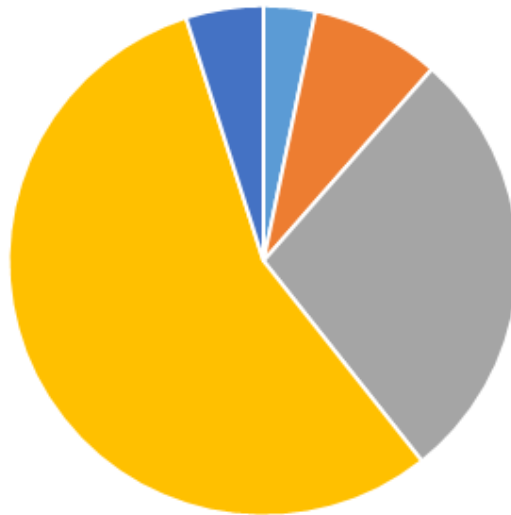
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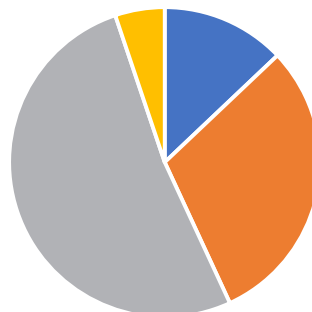
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Number and percentage of people as a result of 1st and 5th class throat colonization  
GABHS: Group A  $\beta$ -hemolytic streptococcus  
NTF: Normal throat flora

1st grade nasal colonization



5th grade nasal colonization



■ MRSA ■ MSSA ■ MRCNS ■ MSCNS

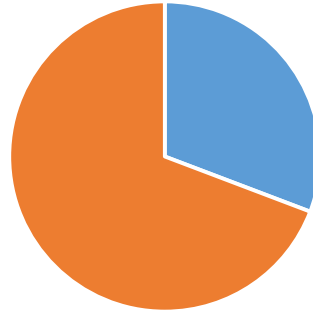
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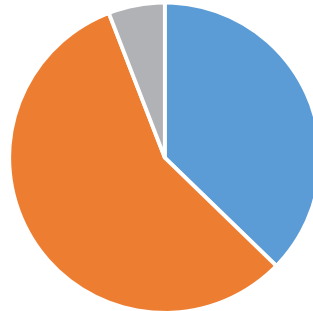
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## 1st grade throat colonization



■ GABHS ■ NTF

## 5th grade colonization



■ GABHS ■ NTF ■ S.maltophilia

The study was conducted on 52 students in the first grade and 52 students in the 5th grade. According to nasal colonization results obtained from 1st graders, 2 students (3.8%) had MRSA and 5 students (9.6%) had MSSA. In addition, 17 students (32.6%) had MRKNS and 34 students (65.3%) had MSKNS. *K. pneumoniae* was seen in 3 students. Nasal colonization results from the 5th grade showed MRSA in 3 (5.76%) students and MSSA in 7 (13.4%) students. MRCNS was observed in 12 (23%) students and MSCNS in 31 (59.6%) students. In addition, while *Enterobacter* species were found in 1 (1.9%) student, *S.maltophilia* was found in 3 (5.7%) student.

In throat colonization results taken from 1st graders, 16(30.7%) students were found to have GABHS. 36 (69.2%) students had normal throat flora.

In throat colonization results taken from 5th grades, GABHS was seen in 19 (36.5%) students, while *S. Maltophilia* was observed in 3 (5.76%) students. 29 (55.7%) students have normal throat flora.



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It was observed that the rate of presence of pathogenic microorganisms such as MRSA, MSSA, *S.maltophilia* in nasal colonization results increased in 5th grade students. In the throat colonization results, it was observed that the rate of normal throat flora decreased and the rate of GABHS increased in Grade 5. This suggests that as the clinical experience increases, the pathogenic microbial load in the throat and nasal flora increases.

**DISCUSSION:** *S.aureus* is a bacteria found in the normal flora of the throat and nasal and oral cavity<sup>8,29</sup>. In the general population, *S.aureus* has a nasal carriage rate of approximately 25% to 30%. This is the rate of carrier rate at any time<sup>23,30</sup>. However, the rate of colonized MRSA in these people has a very low percentage, less than 2%<sup>23,31,32</sup>. A person with *S.aureus* or MRSA nasal contamination does not necessarily mean they will have an infectious disease, but researchers have noted that these carriers are at risk of transmission<sup>8,29,33,34</sup>. According to some studies, researchers have indicated that contaminated environmental surfaces play minor role in MRSA transmission<sup>25,29,35,32,36</sup>. However, it is still necessary to consider all kinds of transmission routes in dental clinics. For this, attention should be paid to the cleanliness of the surfaces.

In the article on exposure to the environment in dental clinics and the prevalence of respiratory diseases in dentistry student populations<sup>37</sup>, the results did not find a relationship between the years of education of dental students and respiratory diseases. According to this study, it was concluded that students with clinical experience do not have an increased risk of respiratory tract disease in short-term exposure. However, in our study, with the school year, we observed that an increase in microorganisms that can cause respiratory diseases.

The results of the study conducted by Martinez-Ruiz et al.<sup>24</sup> at the National University of Mexico in 2004 showed that 20% of dental students with 5 to 6 years of clinical experience colonize with MRSA. In a study conducted by Roberts and colleagues<sup>29</sup> at the University of Washington with dental students, it was shown that 21% of students were carriers of MRSA. In this study, the rate of MRSA was found to be 3.8% in the first year students without clinical experience, while the MRSA rate was 5.76% in the 5th year students with 1.5 years of clinical experience. A difference of approximately 2% was found. In some study, the MRSA transfer rate was observed as 3% or less among dental professionals. This rate was found to be relatively higher than the MRSA transfer rate in the general population. In this study, this rate was found to be higher in health professionals than in dental health professionals<sup>38</sup>. In another study, the MRSA transfer rate was observed as 3% or less among dental professionals. This rate was found to be relatively higher than the MRSA transfer rate in the general population. In this study, this rate was found to be higher in health professionals than in dental health professionals<sup>35</sup>.



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*E. hormaechei* and *E. Gergoviae* and some other species of *Enterobacter* are also isolated from wounds and blood that dentists often encounter.

Transmission for Group A beta hemolytic streptococci (GABHS) occurs from person to person and through respiration, and the natural source is human. GABHS is the most common cause of streptococcal pharyngitis. Most cases occur in school-age children between the ages of 5-15<sup>39</sup>. In healthy children, GABHS carrier rates in the throat are considered between 15- 20%<sup>40,41</sup>. In adults, this rate is lower. A study from our country found that this figure was 9 %. Asymptomatic carriage of GABHS in literature related to its transformation into acute symptomatic disease no ratio has been found<sup>42</sup>.

These results are important. Because the risk of increasing the pathogenic microorganism load is not only in dentistry students. At the same time, other dental personnel and dental patients are at risk<sup>43</sup>.

But it should also be considered that this study has some limitations. The increase in bacterial colonization may also be caused by personal factors other than clinical experience.

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ID.48

Nihan Ceylan - Pınar Kursoğlu - Elifnaz Özen

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## Reestablishment of Esthetic Appearance By Using 'Botulinum Toxin A' On A Gummy Smile Case

**PURPOSE:** 'Botulinum toxin A' (Botox) was shown to be effective in several medical conditions both therapeutically and cosmetically. There was a rising trend in the use of botox to treat gummy smile recently. The purpose of this case report is to reestablish esthetic appearance with botox injections and laminate veneer applications on a gummy smile case, and also to evaluate the efficiency and longevity of botox.

**CASE REPORT:** A 33 years old female patient attended to the dental clinic reporting dissatisfaction with the appearance of her smile which exhibited gummy smile and unattractive teeth form. Her gummy smile was recorded due to hyperactive lip elevator muscles. Digital smile design (DSD) was used to see the effect of crown lengthening without botox injections. As a result, the appearance was not satisfying, so botox injection was applied at Yonsei point (BOTOX, Allergan Inc., Irvine, CA). Excessive gingival exposure was decreased 3 mm twenty days after injection. Minimal invasive preparations of the upper 9 teeth from premolar to premolar were done, teeth were restored with lithium disilicate laminate veneers (IPS e.max Press, Ivoclar Vivadent, Schaan, Lichtenstein).

**RESULTS:** It was seen that botox is a minimally invasive and effective method that satisfies the patient. DSD helps about pre-visualization of the appearance and treatment plan can be done properly according to patient.

**CONCLUSION:** There are several treatment options for gummy smile such as orthognathic surgery, orthodontic treatment, gingivoplasty or alveoloplasty and also botox. Botox is more widespread in the last years thanks to its properties of less invasive, faster, safer and more effective than surgical techniques. Before planning the treatment, botox should be evaluated instead of surgical techniques and the decision should be made according to the patients' situation. The information about the temporary effect of botox should be given to the patient.

botox, digital smile design, laminate veneers.



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ID.73

Yakup Kaptı - Nuran Yanıkoğlu - Zeynep Sümeyye Kaptı

Atatürk University

Gökhan Oturak

Sakarya University

## OPINIONS OF DENTISTRY STUDENTS ON DISTANCE EDUCATION IN THE PERIOD OF COVID-19

**INTRODUCTION:** In December 2019, COVID-19 (coronavirus disease 2019), caused by SARS-CoV-2, began to spread from Wuhan City, China, primarily affecting countries such as Japan, Thailand, and the Republic of Korea. 1 In March 2020, it was reported by the World Health Organization (WHO) that COVID-19 has become a “pandemic” for the whole world. According to WHO data, as of May 15, 2021, more than 161 million people worldwide have been diagnosed with COVID-19 and more than 3.3 million deaths have been reported. 1 While there is speculation and uncertainty around the true threat posed by the virus, the sheer number of infected and the wide and rapid spread of the virus have brought COVID-19 into the focus of global attention, prompting organizations to explore emergency preparedness plans and take action. 2 Undoubtedly, universities are among these institutions. As a result, there has been a general shift from traditional face-to-face education to online education across faculties. 3 There are many opinions about online education. Some of them are that access to online education may not be fair in terms of quality. 4 Some students do not have laptops or high-speed internet access at home. In addition, older internet users benefit less from online education due to reasons such as technophobia. 5 Despite this, some other views also state that the COVID-19 pandemic will have a positive impact leading to wider acceptance of online and technology-supported education. 3 Even before COVID-19, those who advocate a high growth volume of educational technology believe that online education is as effective as traditional education. 4 With the closure of educational institutions and the interruption of face-to-face education, the education of 1.6 billion students, which corresponds to approximately half of the student population from all education levels, has been interrupted. 6 The number of students affected by the interruption of education has reached approximately 25 million students in Turkey. 7 In our study, Atatürk University Faculty of Dentistry students were asked about the effect of distance education on learning, practice and exams during the pandemic period through a digital questionnaire.

**MATERIALS AND METHODS:** Permission was obtained from Atatürk University Non-Invasive Ethics Committee, (Date: 22.06.2021, decision no: 42). This study was carried out in accordance with international declarations, guidelines, etc. This research was carried out with a structured questionnaire applied on the internet between June and August 2021. This questionnaire form was created by the researchers by scanning the literature. Only students actively studying at Atatürk University Faculty of Dentistry were included in the study. Our research is a descriptive study and the sample consists of 463 students who access the questionnaire sent via the computer-assisted internet environment, volunteer to participate in the study, and continue their undergraduate education remotely on a web-based basis during the COVID-19

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pandemic period. University students who followed the courses with distance education and volunteered to participate in the study were included in the study. The questionnaire form prepared using the "Google Forms" application was sent to the individuals who volunteered to participate in the study by sharing the link. The questionnaire form used in the research consists of five parts and a total of 23 questions. In the first part, 3 questions on demographic information, and in the second part, students' views on the functioning of the distance education system in the COVID-19 period were questioned. In the third part of the questionnaire, questions were asked to compare the distance education with face-to-face education and which system they adopted the most. In the fourth chapter, how distance education will affect clinical learning is questioned. In the last part, it was asked to compare the face-to-face and online exams. Numeric Rating Scale (NRS), a subjective evaluation method, was used to answer 20 five-point Likert-type questions. The students were asked to mark the appropriate score on the scale between 1 and 5, which means "1: strongly disagree" and "5: strongly agree". The maximum score that can be obtained from the survey is 100 and the minimum score is 20. The 8th, 10th, 11th, 11th, 12th, 13th, 14th, 16th, 18th, 19th questions were evaluated using reverse scoring. According to the straight scoring system, 5 points means compatible with distance education and 1 point means incompatible with distance education, while in reverse scoring system, this is the opposite.

**Statistical Analysis:** For descriptive statistics, number (n) and percentage (%) in categorical data, mean, standard deviation, minimum value, median, and maximum value in numerical data were used. For analytical statistics, Mann Whitney U test was used for comparison of numerical data between two groups, and Kruskal Wallis test was used for comparison between three or more groups. Dunn's test was used for pairwise comparisons in comparisons that showed a significant difference after the Kruskal Wallis test. Shapiro-Wilk test was used to evaluate the suitability of numerical data to normal distribution, and nonparametric tests were preferred in hypothesis tests since numerical data were not suitable for normal distribution. Statistical significance level was accepted as  $p < 0.05$ . SPSS 20 program (SPSS v20.0; SPSS Inc., Chicago, IL., USA) was used to evaluate the obtained data.

**RESULTS:** The population of the research consists of all dentistry faculty students consisting of 846 people. No sample selection was made in the study, and it was aimed to reach all dentistry faculty students during the data collection period. A total of 463 (54.7%) students were reached. Of the total 463 participants, 59.8% (277) were female and 40.2% (186) were male. The average age of the participants was  $21.89 \pm 2.03$  years (Table 1). According to the education period of the students; period 1 used 26.6% (123) of this study, period 2 19.4% (90), period 3 22.5% (104), period 4 21% (97). ) and period 5 make up 10.5% (49). The section average scores of the survey were  $14.6 \pm 4.64$  for the section in which students' views on the functioning of the distance education system in the COVID-19 period were questioned,  $13.3 \pm 4.96$  for the section where there were questions comparing distance education with face-to-face education, and  $12.6 \pm 4.21$  for the section where distance education was asked about how it would affect their clinical learning and for the last section where the face-to-face and



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online application of the exams are compared, it is  $16.6 \pm 3.36$ . The average of the total survey score of all questions is  $57.2 \pm 12.3$ . While the total score from the survey is 92 at the highest, it is at least 30. Looking at the total survey score, the median scores of the 1st graders are 57, the 2nd grades 54, the 3rd grades 55, the 4th grades 57, and the 5th grades 58. There was no statistically significant difference between the 5 classes in terms of total scores obtained from the questionnaire ( $p=0.141$ ).

When we look at the department that includes the functioning of the distance education system of the faculty, statistically significant differences were found between the classes ( $p < 0.001$ ). This difference is due to the comparison between the 2nd and 4th grades ( $p=0.001$ ) and the comparison between the 1st and 4th grades ( $p < 0.001$ ). The median scores of the classes are 14 for the 1st grade, 13 for the 2nd grade, 15 for the 3rd grade, 16 for the 4th grade and 15 for the 5th grade.

In the section where distance education and face-to-face education were compared, statistically significant differences were found between classes ( $p=0.008$ ). This difference is due to the comparison between the 2nd and 4th grades ( $p=0.006$ ) and the comparison between the 3rd and 4th grades ( $p=0.042$ ). The median scores of the classes are 13 for the 1st grade, 11.5 for the 2nd grade, 11.5 for the 3rd grade, 15 for the 4th grade and 13 for the 5th grade. In the section where the effect of distance education on clinical life was examined, statistically significant differences were found between classes ( $p=0.003$ ). This difference is due to the comparison between the 1st and 4th grades ( $p=0.009$ ) and the comparison between the 1st and 3rd grades ( $p=0.010$ ). The median scores of the classes are 13 for the 1st grade, 12 for the 2nd grade, 12 for the 3rd grade, 11 for the 4th grade and 11 for the 5th grade. In the section that includes the comparison of distance and face-to-face exams, there is no statistically significant difference between classes. ( $p=0.292$ ). The median scores of the classes are 16 points for the 1st grade, 16.5 for the 2nd grade, 17 for the 3rd grade, 17 for the 4th grade, and 16 for the 5th grade.

When the total survey score is considered, the median score of men is 57.5 and the median score of women is 55, and there is a statistically significant difference in terms of the total survey score ( $p=0.005$ ).

When we look at the department of the faculty that includes the functioning of the distance education system, there is no statistically significant difference between the genders ( $p=0.148$ ). While the median score of men is 15, the median score of women is 14. In the section where distance education and face-to-face education are compared, there is a statistically significant difference between the genders ( $p=0.014$ ). While the median score of men is 13, the median score of women is 12.

There is a statistically significant difference between the genders in the section that includes the effect of distance education on clinical life ( $p=0.004$ ). While the median score of men is 13, the median score of women is 12.

There is a statistically significant difference between the genders in the section that includes the comparison of distance and face-to-face exams ( $p=0.042$ ). While the median score of men is 17, the median score of women is 16..

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**DISCUSSION:** Due to the COVID-19 pandemic, most faculties have suspended non-emergency dentistry practice for active patients, particularly clinical training by students. This is a unique challenge for the education of the dental profession, where high aerosols and droplets are produced in the working environment during routine procedures. 8 In this case, an online education application, which is planned to be as face-to-face as possible, is required to ensure continuity of education. Our aim in this survey study is to evaluate the attitude and adaptation of the students studying in our faculty to distance education. As a result of the study, there was no statistically significant difference when the adjustment of the classes to distance education was compared by looking at the total questionnaire score. ( $p=0.141$ ) On the other hand, statistically significant differences were found between men and women in the evaluation of compliance with distance education by comparing the total survey score according to gender. ( $p=0.005$ ) This can be interpreted as male students are more compatible with distance education.

Durgun H. et al. 9 , in their study among 810 nursing students, showed that the average score of the ‘Score Scale for Distance Education’ differed according to the classes, that the lowest average score was in the 1st grade and the highest average score was in the 3rd grade students. It was determined that there was a statistically significant difference between the mean score of the class. In our study, however, no statistical difference was found between the classes in the evaluation made by looking at the total questionnaire score. In addition, although there was no statistically significant difference when the mean score of the ‘Score Scale for Distance Education’ was evaluated according to gender in their study by Durgun H. et al. 9 , there were statistically significant differences when the evaluation was made between the genders over the total questionnaire score in our study. ( $p=0.005$ )

In the survey conducted by Kara K. et al. 10 on 5th grade dentistry students, no statistically significant difference was found when the answers given about the effect of the pandemic on professional life were evaluated in terms of gender. In our study, there is a statistically significant difference between the genders in the section that includes the effect of distance education on clinical life ( $p=0.004$ ).

Agius A.M. et al. 11 found a statistically significant difference between genders in their study of 88 dental students in Malta in terms of ‘anxiety about losing manual dexterity’ and concluded that female participants were more worried than male participants. Similarly, in our study, there was a statistically significant difference between the genders in the section that includes the effect of distance education on clinical life ( $p=0.004$ ). Similarly, in our study, women were more concerned about this issue.

**CONCLUSION:** The COVID-19 epidemic, which still continues its effects today, has caused a lot of material and moral damage. Education has also been greatly affected by this epidemic. Particularly, departments with clinical applications and practical training on patients were greatly affected by this situation. In our survey study, the opinions and concerns of Atatürk University Faculty of Dentistry students about distance education were evaluated and the improvements that should be made in the current system were taken into consideration.

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ID.76

İrem Emirmahmutoğlu - Mehmet Berk Kaffaf - İdil Aşer - Olcay Şakar

ISTANBUL UNIVERSITY

## Importance of Orthodontic Treatment In Prosthetic Rehabilitation of Class III Malocclusion

**Purpose:** Class-III malocclusions are classified in three category: functional (pseudo), dentoalveolar and skeletal. Class-III malocclusion may result from mandibular prognathism alone or maxillary hypoplasia and retrognathism, or combination of the two. Decreased occlusal vertical dimension in the frontal and profile extra-oral examination and cross bite relationship are observed during intra oral examination. Generally, in order to meet the aesthetic and functional needs of patients with Class-III malocclusion, prosthetic treatment is needed in addition to orthodontic treatment. Pseudo Class-III patients usually can move their lower jaw posteriorly with guidance. In this position, occlusal vertical dimension usually becomes normal and bilateral posterior open bite can be observed which means prosthodontic rehabilitation may be indicated. In cases where increased occlusal vertical dimension obtained in this position or the anterior teeth are excessively inclined, orthodontic treatment may be recommended before prosthetic treatment. For this purpose, a multidisciplinary approach should be preferred for the rehabilitation of Class-III patients. **Materials and Methods:** In this presentation, rehabilitation of pseudo and skeletal Class-III malocclusion cases with esthetic and functional complains were described. Orthodontic treatment was applied for the patients before prosthetic rehabilitation, and prosthodontic treatment is completed as minimally invasive as possible. In the first patient, posterior metal-ceramic restorations and anterior lithium disilicate laminate veneer restorations were applied after the mandibular anterior teeth were intruded with orthodontic treatment. In the second patient, posterior lithium disilicate veneerlay (overlay-veneer) restorations and anterior lithium disilicate laminate veneer restorations were applied after orthodontic treatment of maxillary teeth.

**Results:** The patients were followed up regularly up to 2 years and no complications were encountered. The temporomandibular joints and muscles did not show any dysfunction during the follow-up period.

**Conclusion:** Before the prosthetic rehabilitation of functional and skeletal Class-III patients, the orthodontic treatment approach increases the success of the treatment.

pseudo class III; skeletal class III; lithium disilicate; minimally invasive; partial coverage; occlusal vertical dimension



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ID.87

Nisa Emir - Zeliha Şanivar Abbasgholizadeh - Buket Akalın

Marmara University Faculty of Dentistry

## Esthetic Perception of Width/length Ratio In Maxillary Anterior Teeth Among Preclinical and Clinical Dental Students.

**Purpose:** Many studies have examined the esthetic preferences of professionals in the maxillary anterior region; however, only a few have taken into account the ratios that are more frequent within the population or other ratios suggested in the literature as ideal. The purpose of this study is to evaluate the differences when perceiving the esthetics of smiles between preclinical and clinical dental students, and linking them with the width/length of the maxillary anterior teeth.

**Materials and Methods:** Photographs of the full face of a male subject were modified with Photoshop CS regarding the length/width relationships of the 6 maxillary anterior teeth. The three modifications made were: (a) 80% length/width, (b) 85%, length/width, and (c) 85% length/width in central incisors, 80% length/width in lateral incisors and canines. Six photogtaph pairs were created with different ratios and presented to a sample of 300 preclinical (first and second year) and 300 clinical (fourth and fifth year) dental students. Students were requested to choose the most attractive smile between pairs according to their esthetic preferences.

**Results:** According to 300 dental students (40% male and 60% female) with ages ranging from 18 to 24 years old, facial symmetry is the most important parameter when they met a person. 80% length/width of maksillary central lateral incisors and canines was found the most attractive ratio in both preclinical and clinical students.

**Conclusions:** Different ratios have been described for the ideal size of the maxillary anterior teeth, but most are not based on studies on real proportions of natural anterior teeth. Beside other esthetic parameters of smile, individual teeth width/length ratio is found to be important in smile esthetics. Keywords: Width/length ratio, esthetic perception, smile esthetics

Width/length ratio, esthetic perception, smile esthetics



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ID.89

Mehmed Çanakçı - Şebnem Begüm Türker

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## Dentists' Knowledge About Artificial Intelligence and Attitude Towards Artificial Intelligence

**Purpose:** The aim of this study was to evaluate the knowledge about artificial intelligence of dentists and their attitude towards to artificial intelligence.

**Material Method:** Dentists, special dentists and academicians was participated to the study. A total of 31-question were asked to the participants. Electronic survey system was run and the surveys in which all questions were answered was included to the study. SPSS V23 program was used for the statistical analysis. Chi-square test was used to evaluate the data ( $p < 0.05$ ).

**Result:** 35.6% of the participants were male and 64.4% participants were female ( $n=123$ ). 87.8% of the participants had knowledge about the artificial intelligence and how it works ( $n=108$ ). Nearly all of the participants believed that the importance of artificial intelligence will increase even more in the future ( $n=122$ ). Increased use of artificial intelligence may create potential risk in the future according to 66.6% of the participants ( $n=82$ ). Most of the participants (97.6%) remarked that the use of artificial intelligence will make the dentist's work easier and faster ( $n=120$ ). %46,3 of the participants was revealed that the artificial intelligence could be used in prosthodontics, %25,2 orthodontics, %19,5 oral maxillofacial surgery respectively. 73,2% of the participants ( $n=90$ ) had knowledge about the artificial intelligence could be used in the prosthodontics areas. %75,6 of the participants ( $n=93$ ) could be use artificial intelligence for evaluating the fit and quality of the prosthetic restorations.

**Conclusion:** Most of the participants in the survey remarked that the use of artificial intelligence will increase in the future and it helps dentists to giving indications. Participants shared an optimistic views and thought that artificial intelligence will have a positive impact on dental future practice. Follow-up surveys and multinational studies should be conducted to further explore these issues.

Artificial intelligence, indications, prosthodontics

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ID.92

Büşra Uğurgelen - Zeliha Şarıvar Abbasgholizadeh - Buket Evren

Marmara University Faculty of Dentistry

## Evaluation of Preclinical and Clinical Students' Perspectives On The Effect of Lip Line and Dental Midline On Smile Aesthetics

**Objective:** Dentists should be able to integrate facial aesthetics by evaluating the basic features of the ideal smile, keeping in mind that aesthetics is a subjective concept. The aim of our study is to examine the perceptions of preclinical and clinical dentistry students on the effect of lip line and dental midline on smile aesthetics and to evaluate whether this perception changes according to clinical education degree and gender.

**Material and Methods:** In the present study, preclinical and clinical students of Marmara University Faculty of Dentistry participated in a 25-question survey using the electronic questionnaire system. In the questionnaire, the demographic characteristics of the participants, their knowledge about aesthetic analyzes and their approaches to photographs with altered lip line and dental midline aesthetic parameters are questioned. A frontal smile photograph of volunteer female used for this study. 13 modified photographs were created by replacing the lip line and dental midline components. Each photograph was ordered randomly. Obtained data was analyzed with SPSS program and Chi-Square test.

**Results:** The study included 431 dental students (132 men [30.6%], 299 women [69.4%]). Significantly more women than men focused on a person's teeth when communicating (41.5% vs. 32.6%,  $p < 0.005$ ). 6mm gingival display ranked as the worst smile feature (mean numeric rating scale score 4.71).

**Conclusion:** Dental students at different stages of their undergraduate dental education have different perceptions of smile aesthetics. The image of the ideal smile was one of the most aesthetically pleasing smiles. A smile with a high lip line was considered significantly less pleasing.

Smile esthetics, perception, dental midline, lip line

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ID.93

Selin Güzel - Gülsüm Ceylan

Istanbul Medipol University

Faruk Emir

Health Sciences University

## Physiological Impact of Prolonged Use of Surgical Masks On Dental Students

**Purpose:** The aim of this study is to evaluate the subjective complaints that may be experienced by dentistry preclinical students (1st Class, 2nd Class, 3rd Class) who had to wear masks during their preclinical training during the COVID-19 pandemic.

**Materials and Methods:** An online survey (1999–2021, SurveyMonkey) program was conducted to evaluate the subjective complaints of dental students due to the use of face masks during preclinical education. Participants scored subjective symptoms ranging from 0-100, including questions about headache, dizziness, nausea, visual impairment, shortness of breath, tachycardia, distraction, difficulty in communication, fatigue, breath odor, mask moisture, temperature, itching, acne, auricle discomfort and nose discomfort.

**Results:** A total of 309 (115 males and 194 females) volunteer dentistry students between the ages of 19-26 were participated in the survey. Temperature, difficulty in communication, auricle discomfort and mask moisture complaints were found to be higher in all participants compared to other subjective symptoms, respectively. Headache, shortness of breath, tachycardia, temperature, acne and nose discomfort complaints were found to be significantly higher in women than in men. Distraction and breath odor complaints were found to be higher in men than in women.

**Conclusion:** According to the results of this study, long-term use of face masks may cause an increase in subjective complaints.

dental education; surgical masks; online survey

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Selen Elif Uz - Buket Evren - Zeliha Şanıvar Abbasgholizadeh

Marmara University Faculty of Dentistry

## Preclinical and Clinical Students' Perceptions of Smile Line and Buccal Corridor On Smile Esthetics

**Objective:** Physical appearance plays an important role in human behavior and social interaction in most cultures and among different age groups. Since the center of communication on the face is the mouth area, the attractiveness of the face and smile are closely linked to each other. The aim of this study is to assess if students' perception of smile line and buccal corridor on smile esthetics are associated with their stage of studies (preclinical or clinical).

**Material and Methods:** A frontal smile photo of a model was taken who presented with a Class I incisor relationship, aligned teeth, healthy periodontal tissues and no anterior restorations or staining. For the purposes of the study, this smile was identified as "ideal". A set of 8 digital images were created; one image was the ideal smile and the remaining seven were modified using Adobe Photoshop to alter one feature of the smile in terms of buccal corridor and smile line. Flat, parallel and reverse smile lines were created and alterations made on buccal corridor width from 1 mm to 4mm. Dental students in year 1 and 2 (preclinical) and year 4 and 5 (clinical) were asked to complete the questionnaire according to their esthetic preferences.

**Results:** A total of 500 questionnaires were completed. The analysis showed the perception of dental students changes across preclinical and clinical grades for both smile line and buccal corridor on smile esthetics. Clinical students prone to rank the 'ideal smile' as more pleasing and identify it as the "best" in terms of smile esthetics from the pair of images.

**Conclusion:** The findings corroborate the results of previous studies regarding the effect of dental education on the smile esthetic perception of students. Keywords: Smile esthetics, Esthetic Perception, Buccal Corridor, Smile Line

Smile esthetics, Esthetic Perception, Buccal Corridor, Smile Line

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## ID.9

Özcan Akkal - Ümit Ertaş - Yunus Emre Aşçı - Funda Bayındır

Atatürk Üniversitesi

### Multidisciplinary Treatment Approach to the Patient with Skeletal Class 3 Malocclusion

**Background:** The aim of this clinical case is to present a complex oral rehabilitation procedure planned to meet functional and aesthetic expectations that includes orthognathic surgery and prosthetic rehabilitation.

**Methods:** In this case report, orthognathic surgery and prosthetic restoration applied to a 40-year-old female patient with skeletal class 3 malocclusion was discussed. In the clinical examination of the female patient who applied to our clinic with the need for implant restoration, it was observed that she had a skeletal class 3 profile and tooth number 16, 26 and 27 with 6 implants in the upper jaw (15, 14, 11, 22, 24, 25 to the dental areas no.) were also present in the mouth. In the lower jaw, teeth 35, 37 and 45 were missing. Due to the skeletal class 3 malocclusion of our patient, a double chin surgery was performed in the surgical clinic, and the maxilla was positioned 5 mm anteriorly and the manbula 2 mm posteriorly. Approximately 3 months later, a fixed bridge restoration was planned for the missing teeth in the patient's right lower and left lower jaw, and a fixed cemented bridge restoration was performed on the implant site, so that ideal aesthetics and function could be achieved.

**Results:** After the orthognathic surgery of the patient with skeletal Class 3 malocclusion, the prosthetic restorations made on the implant provided the patient with oral rehabilitation in terms of aesthetics, functionality and phonation. The patient left the clinic happily and gratefully, stating that he had not been able to smile for a long time, that he covered his mouth with his hand while laughing, but that he could now smile and talk comfortably. A control appointment was given 6 months later.

**Conclusion:** With a multidisciplinary treatment approach that includes orthodontics, surgery and prosthetic treatment people with missing teeth and skeletal class 3 malocclusion can be implanted to provide appropriate aesthetics and function.

**Key words:** Esthetics, Implant-supported prosthetic restoration, Orthognathic surgery, Skeletal class 3



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ID.119

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## Full Mouth Rehabilitation of Patients With Four Implant Supported Fixed Prosthesis Produced By Different Materials: Two Case Reports

**Aim:** One of the many treatment options that can be preferred in cases of total edentulism is four-implant supported fixed restorations which are successful treatment alternatives when the amount of residual bone does not allow implant placement in the optimum number and position. Various materials can be used in the production of four implant-supported fixed prostheses. The aim of this study is to give information about the rehabilitation of two edentulous patients with optimum interocclusal space with four implant supported fixed prostheses produced using different materials.

**Materials and Method:** A 56 year old male patient was referred to Marmara University Faculty of Dentistry Department of Prosthodontics. In the light of clinical and radiological examinations, extracting the teeth with periodontal bone loss and caries which were supporting patient's existing prostheses and rehabilitation with four implant-supported metal-ceramic fixed prostheses was planned. Implant surgery performed at Marmara University Faculty of Dentistry, Department of Surgery. After the implant (Anyridge®, MegaGen, Gyeongbuk, Güney Kore) surgery, temporary prostheses produced by PMMA were fixed in the mouth. After 3-month osseointegration period, conventional impressions were taken with the open tray impression technique. Produced infrastructures were evaluated and then the final restorations were fabricated, evaluated and fixed to the implants. A 62 year old female patient with total edentulism referred to Marmara University Faculty of Dentistry Department of Prosthodontics. As a result of clinical and radiological examinations, it was decided to rehabilitate with four implant-supported fixed prostheses. However, it was determined that the patient was allergic to some metals and it was decided to use zirconia as the infrastructure material. Osseointegration period determined as 3 months and implants (AnyOne®, MegaGen, Gyeongbuk, Güney Kore) were placed at Marmara University Faculty of Dentistry, Department of Surgery. Temporary prosthesis could not be used because the patient was also allergic to PMMA. After osseointegration period, conventional impressions were taken with the open tray impression technique. Produced zirconia infrastructures were evaluated and then the final restorations were fabricated, evaluated and fixed to the implants.

**Result:** After six months of follow up, any clinical or radiological complications were not found at implants and prosthetic restorations. Lost function and aesthetics due to total edentulism were successfully restored in both patients.

**Conclusion:** 4 implant-supported fixed prostheses can be produced with different materials considering the needs and limitations of the patients and are successful treatment options for total edentulous patients.

implant, zirconia, edentulism, fixed prostheses

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## ID.9

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### KNOWLEDGE AND ATTITUDE OF INDIVIDUALS TOWARDS DENTAL IMPLANTS

**Abstract:** The aim of this survey was to determine the knowledge and the attitude of individuals towards dental implants treatment and also to measure the variability of individuals' approach to implant treatment depending on parameters such as gender, age and educational status. The study was carried out by the e-survey method due to Covid-19. Relatives and the surroundings of University of Istanbul Faculty of Dentistry students were used as sample. The selection criteria of the participants in order to participate in the present study was as follows: age 18 and over, legal and mental competence; ability to understand the questions. The study sample comprised three hundred ninety persons, 71.8 % of female and 28.2 % male. Research data was analyzed with the IBM SPSS 26.0 program. Ninety-nine percent of volunteer participants stated that they have heard of dental implants and their main sources of information are through dentists, relatives, friends, and social media. In this study, cost was the main factor for refusing hypothetical implant treatment. Fifty nine percent of participants thought the treatment would be too expensive. This is followed by surgical treatment with 11,8% and long treatment with 11,3%.

**Key words:** Dental implant; implant dentistry, survey

**Introduction:** Dental implant is defined in The Glossary of Prosthodontic Terms 1 as a prosthetic device made of alloplastic material(s), implanted into the oral tissues beneath the mucosal and periosteal layer and on or within the bone to provide retention and support for a fixed or removable dental prosthesis. The concept of osseointegration was introduced by Dr. Brenemark in 1952 as a result of his studies on animals. The use of dental implants for the prosthetic treatment of edentulous or partially edentulous individuals has increased rapidly since the adoption of the concept of osseointegration and has become a frequently used treatment option today. For this reason, it is important to evaluate the awareness, knowledge and attitudes of individuals about implant treatment. In the literature the studies 2-4 have been observed that as the years progress, the rate of individuals to hear about dental implant treatment has increased and the frequency of dental implants to be preferred among the treatment options for lost teeth is increasing day by day. However, it has been observed that there are limiting factors such as the need for surgical treatment, high cost, and long treatment period. Awareness, knowledge, and attitude survey are the preferred tools to attain both quantitative and qualitative information 5. The aim of this study is to evaluate the knowledge and the attitude of individuals towards dental implants, which is a treatment option for replacing lost teeth.

**Material and Method:** The data required for testing the research model were collected with a web based survey. The research consisted of people who voluntarily participated in the questionnaire sent to the relatives and the surroundings of Istanbul University Faculty of Dentistry students due to the stay at home process of COVID-19 outbreak. The individuals participating in our study were informed about the study and its purpose. Within the scope of the study, questionnaire form prepared to evaluate the awareness, knowledge level and attitude of individuals to implant

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treatment. Research data's were analyzed with IBM SPSS 26, 0 program. Categorical variables are expressed as number of people and percentage. When comparing the three groups, if the one-way analysis of variance (ANOVA) did not show normal distribution, the Kruskal Wallis test was used. In comparisons of two groups, if the variables show normal distribution, Student's t test was evaluated, if they did not show normal distribution, Mann Whitney U test was used. P<0.05 was accepted as significance. Research data's were analyzed with IBM SPSS 26, 0 program. Descriptive statistics, two-variable and three- variable analyzes were used in the analysis of the data.

**Results:** The study sample comprised 390 persons, 110 (28 %) male, 280 (72 %) female, consisting of between the ages of 18-65. While 96.9% of the people who participated in the study felt that missing teeth should be replaced, 3.1% felt that it was not necessary. 99% of people stated that they have heard of implant treatment. 1% (4) stated that they had not heard of implant treatment before. When we questioned the source of this information, 29.7% stated that they heard it from their relatives and friends, 47.2% from the dentist, 11.8% from the internet, 10.3% from the television or radio. Regarding the cleaning and hygiene of implants, 40.3% of the participants stated that they thought that they should have a more careful cleaning and hygiene than natural teeth. 57.9% stated that it was sufficient to clean them in the same way as natural teeth. On the other hand, 1.8% stated that there is no harm in cleaning less than normal teeth.

Regarding the durability of the implants, 6.4% of the participants said that they would stay in the mouth for up to five years, 16.4% for up to ten years, and 13.1% for up to 20 years; 54.6% stated that it can remain in the mouth for life. If it is 9.5% certain, he replied, "I don't know". When the biggest advantage of implants was questioned, 92.9% of the participants stated that the biggest advantage of the implants being fixed, improving chewing and speech functions, while 6.9% stated that they looked better aesthetically. The biggest reason why the participants did not want to have an implant was the high cost, with a response rate of 59.2%. Surgical treatment was followed by 11.8% and long treatment response with 11.3%. 58.7% of the participants stated that the implant fees were not affordable. This answer is directly related to the high cost answer with a rate of 59.2% in the question in which the reasons for not wanting to have an implant were questioned. 54.6% of the participants stated that they were afraid of the surgical procedure of implant treatment. 64.1% of the participants stated that dental implant supported prostheses are better than prosthetic treatments on natural teeth. The ages of the individuals participating in our study were examined in 2 groups as 18-40 and 40-65 groups. When the questions were arranged according to these groups, it was determined that there were significant differences between some answers. In the question in which the treatment options to replace the lost tooth were questioned, 61.2% of the participants in the 18-40 age group chose the answer as all, while this rate was 49.5% in the 40-65 age group. We see that this approximately 12% difference is distributed among the implants option and fixed prosthesis (bridges) options (P=0.049). In the answers given to the question we asked where they heard about implant treatment, the answers given by the 18-40 age group are respectively; 45.2% are dentists, 35.1% are relatives and friends, 12.2% are internet, 5.3% are television or radio and 2.1%

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have not heard. In the 40-65 age group, 49% of them heard from dentists, 24.8% from relatives and friends, 14.9% on television or radio and 11.3% on the internet. Accordingly, while the 18-40 age group heard more about implant treatment from their relatives and friends than the 40-65 age group; It was observed that the 40-65 age group had a higher rate of hearing from television or radio than the other group. A significant difference was found between the two groups ( $P=0.007$ ). In the question questioning how the cleaning and hygiene of the implants should be compared to the natural teeth, the participants answered that the 18-40 age group should be cleaned more carefully than the natural teeth significantly more than the 40-65 age group. ( $P=0.004$ ). In the last questionnaire, in which the comparison of the effects of traditional prostheses and implant treatment was asked, it was observed that there was a significant difference between the answers of the two groups. Participants in the 40-65 age group preferred the answer better than fixed bridge prostheses. Participants in the 18-40 age group gave the answer that they are more similar than the other group ( $P=0.044$ ). As a result of the comparison of the answers given with their educational status, significant differences were observed in the question in which the cleaning and hygiene of the implants ( $P=0.016$ ), the evaluation of the implant fees ( $P=0.003$ ), and the comparison of the effects of implant treatment with conventional prostheses ( $P=0.005$ ) were questioned.

**Conclusion:** Within the limitation of this study, the following conclusion can be drawn. Although dentists are the main source of information, it is necessary to focus on spreading awareness through mass communication tools. Although individuals are generally willing to receive dental implant treatment, the high cost is the main barrier for individuals to receive treatment. Reducing dental implant costs or funding by insurance in the future could increase the prevalence of implant treatment.

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ID.109

Nagehan Baki

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## Comparative Biomechanical Analysis of All-on-4® and Trefoil™ Implant Treatment Protocols

**Objective:** The objective is to evaluate the stresses on bone, implant, implant components, and the prosthesis under an oblique force applied by immediate loading of All-on-4 system, the Trefoil concept, and 5-implant-supported treatment allowing hybrid prostheses in edentulous mandible, using finite element stress analysis.

**Material and Method:** A fully edentulous atrophic mandible model was formed digitally. For All-on-4 and 5-implant-supported models, 11.5-mm long implants having a diameter of 5.0-mm placed between mental foramina were used, with 30°-angle multi-unit abutments in the posterior region. In the Trefoil system, 11.5-mm long Trefoil implants having a diameter of 5.0-mm were used. For the Trefoil model, a prefabricated titanium bar was modeled and applied as the infrastructure, and an immediate acrylic hybrid prosthesis was applied to all models. Applying 100-N oblique force to a 1.5-mm area in the distal triangular region of the first molar tooth to mimic chewing forces, the stress values and distributions in the implant, the bone, implant components, and the prosthesis were compared using finite element stress analysis.

**Results:** The highest compressive and tensile stress values in the cortical and spongy bone were observed in the posterior implant in the All-on-4 model. The highest von Mises stress values were observed in the posterior implant in the All-on-4 model, and in abutment screws and prostheses in the Trefoil model.

**Conclusion:** The risk of bone, implant, and abutment complications is higher in the All-on-4 treatment protocol, and the risk of the prosthesis and abutment-screw complications is higher in the Trefoil treatment protocol.

**Key Words:** All-on-4, trefoil, immediate loading, finite element stress analysis.



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## ID.6

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### ESTHETIC AND FUNCTIONAL REHABILITATION OF CROWDED MAXILLARY ANTERIOR TEETH

**Purpose:** This case report describes prosthetic rehabilitation of a patient who is not satisfied with the esthetic appearance of maxillary anterior teeth because of malposition.

#### Materials and Methods

A 20-year-old female patient referred for the treatment of crowded maxillary anterior teeth and complains of old stained restorations. After the clinical and radiographic examination and diagnostic work-up, different treatment options were presented from which she selected fixed dental prosthesis with all-ceramic restorations. After periodontal treatment was completed, maxillary anterior teeth were prepared and then impression was taken using conventional method. All-ceramic zirconium oxide crowns were evaluated esthetically and functionally then cemented with adhesive resin cement. During the one-year follow-up, esthetic and functional problems were not observed.

**Results:** Fixed dental prosthesis is an important alternative treatment improving the esthetic appearance in patients who do not accept orthodontic treatment. Zirconia is a frequently preferred material to match the stump shade of the adjacent prepared teeth. In this case report, the esthetic complaints of the patient were resolved with zirconium restorations and the patient was satisfied.

**Conclusion:** Fixed partial denture are an important treatment alternative in aesthetically problematic cases with crowding and crown destruction.

Keywords: Esthetic, Zirconia, Adhesive resin cement.

Estetik, Zirkonya, Adeziv rezin siman

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ID.47

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## Rehabilitation With Tooth-Implant Supported Screw Retained Telescopic Prosthesis: Case Report

**Purpose:** Dental implants can be used to support fixed or removable dentures in patients with complete or partial edentulism. The success of prosthetic rehabilitation depends on the number of remaining teeth, their placement, crown size as well as periodontal health. Especially in the presence of non-periodontal healthy teeth, restorations should be removable for easy cleaning of teeth, implants and soft tissue associated with the prosthesis and for the continuity of their health. In the literature, it has been shown that dental and implant supported full-arch telescopic dentures are a reliable treatment option for teeth with periodontal disease. For this purpose, screwed or telescopic systems are often preferred.

**Materials and Methods:** A 75-year-old female patient without any systemic disease was admitted to our clinic with the complaint of partial edentulism. In the intraoral examination of the patient, it was seen that he had existing implants and teeth that were not periodontally healthy and had short crowns. Implants were placed in a strategic position in the anatomically appropriate areas of the maxilla and mandible. Teeth and telescopic copings were prepared on old implants to connect all abutments. A one-piece metal substructure was prepared that rests on the primary crowns and can be screwed into the implants. Thus, it is aimed to help stabilize teeth that may have an adverse periodontal prognosis. In case of tooth loss, the removable prosthesis can be continued to be used by the patient, so it has been considered as an economical treatment alternative.

**Results:** During the 2-year follow-up, no biological or mechanical complications were observed in the teeth and implants.

**Conclusion:** A combination of telescopic and screw prosthesis can be preferred in dental-implant supported prostheses with surgical and prosthetic restrictions.

dental implants; telescopic crown; tooth-implant-supported prostheses; partially edentulism.

ID.98

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## Mechanical Properties of 3y-Tzp Zirconia: Spark Plasma-Sintering Vs. Conventional Method

**Purpose:** The purpose of this in-vitro study was to evaluate and compare the mechanical properties of zirconium dioxide polycrystalline ceramics sintered by Spark Plasma Sintering and conventional method.

**Materials and Methods:** A total of 20 specimens were evaluated by two different sintering protocols. The control group (S0) specimens were milled from pre-sintered zirconia discs with 3Y-TZP structure by Cerec Systems(Dentsply Sirona, USA). S0 specimens were sintered by the traditional method (1450oC, 9 hours ; n=10). The experimental group (S3) were evaluated from zirconia powders with %3 yttrium-oxide content by Spark Plasma Sintering(FCT GmbH, HPD-50, Germany) method (final temperature 1300oC, 5 min. ; n=10). All specimens were fabricated with a diameter of 20 mm and thickness of  $2.0 \pm 0.2$  mm. For each group, the specimens were tested to compare their biaxial flexural strenght (ISO Standart 6872) using universal testing machine(Testometric, Lancashire, UK). The specimens were also submitted to Vickers hardness (on polished and as-received surfaces within the same specimen). The data were analyzed with 1-way ANOVA and/ or Kruskall Wallis tests( =0,05). And the necessary Bonferroni corrections were made for multiple comparisons.

**Results:** Biaxial flexural strength of S0 and S3 were min. 34,46- max. 71,02 MPa, min. 69,32-max 161,98 MPa, respectively, and were statistically different ( $P \leq 0.05$ ). The Vickers hardness number of control group(S0) was  $980 \pm 41$ , whereas hardness values for experimental group(S3) was  $1355 \pm 144$ , respectively, and were statistically different ( $P \leq 0.05$ ).

**Conclusion:** The Spark Plasma Sintering method can be performed in much shorter times than the traditional sintering method. We think that in our study, we will shed light on in-vitro and in-vivo studies on the comparison of methods and the development of methods and contribute to the literature.

Spark Plasma Sinter, Zirconia, Y-TZP, Biaxial Flexural Strenght, Microhardness

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ID.102

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## Evaluating of Color Changes of Different Thicknesses of Monolithic Lithium Disilicate Glass Ceramic Blocks Due To Different Firing Times For Glaze

**Aim:** The aim of this study is to evaluate the changes in the color, that may occur as a result of repeated restorations of monolithic lithium disilicate glass ceramic blocks as a result of repeated firings.

**Material and Method:** In our study, IPS e.max CAD blocks (Ivoclar Vivadent AG, Schaan, LICHTENSTEIN) were used as lithium disilicate glass ceramic material. The samples that obtained from IPS e.max CAD blocks were divided into 3 groups as 1 mm, 1.5 mm and 2 mm according to their thickness. There were 30 samples in each group (n). A total of 90 samples obtained from IPS e.max CAD blocks were used in the whole study.

**Results:** The color changes were evaluated after repeated firing of the samples 1, 2, 3 and 4 times. The results were evaluated statistically.

**Conclusion:** In our study, samples obtained from IPS e.max CAD blocks 1 mm and 2 mm samples showed the color difference after the 4th firing.

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ID.113

Pınar Çevik - Arzu Zeynep Yildirim - Emine Hulya Demir Sevinç - Aykut Gonder

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## The Effect of Different Surface Treatments On The Bond Strength Between Peek and Maxillofacial Silicone Elastomer

**Purpose:** The intraoral applications of PEEK(polyetheretherketone) are rare, and to the authors' best knowledge, no extraoral application has been reported. Moreover, the bonding mechanism is not known between silicones and PEEK. The aim of this study is to evaluate the effect of surface treatments on PEEK to be bonded to maxillofacial silicone elastomers.

**Materials and Methods:** The study has been supported by Gazi University Projects of Scientific Investigation (BAP) with 6284 Project ID. A total of 40 PEEK specimens were fabricated. Specimens were conditioned by one of the following methods and divided into 5 study groups (n=7) as follows: Group1 was served as the control group, and silicone primer was applied to the specimens. Group2, silica-coating with 30 µm Al<sub>2</sub>O<sub>3</sub> particles; Group3, argon plasma application for 1min; Group4, mechanical abrasion with sandpapers; Group5, 2W nano-laser application. Surface topographies of one specimen from each group were observed by scanning electron microscopy (SEM) after surface treatments. Surface roughness values were evaluated with a digital profilometer. A platinum-based maxillofacial silicone elastomer was poured onto the surface treated PEEK specimens. Results: Surface roughness median values were 0.74 Ra (0.23;1.08) for control; 0.74 Ra (0.69;0.92) for sandpaper; 0.90 Ra(0.58;4.0) for laser; 1.05 Ra (0.69;1.93) for sandblasting; 0.88 Ra (0.77;1.25) for plasma treatments respectively.

**Conclusion:** According to the surface treatments on PEEK specimens, surface roughness values of sandblasted specimens were higher than that of plasma or laser-treated specimens. Furthermore, sandblasted, plasma or laser-treated specimens had higher surface roughness values than that of groups control and mechanical abrasion.

maxillofacial silicones, PEEK, surface treatments, tensile strength



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ID.121

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## The Effect of Simulated Gastric Fluid On Surface Hardness of Provisional Prosthetic Materials

**Purpose:** The purpose of this study was to investigate the effect of simulated gastric fluid on the surface hardness of different provisional prosthetic materials.

**Materials and Methods:** A total of forty-eight specimens (Acrytemp, Protemp 4, Temdent Classic Dark, Bisco Temp S) were prepared using a PTFE mould. After polishing, the specimens were immersed simulated gastric fluid for 24 hours. Surface hardness was measured using a Vickers hardness tester. Surface hardness measurements was carried out before and after the specimens immersed in simulated gastric fluid. Data were analyzed using the statistical software and subjected to one-way ANOVA and a post hoc Tukey test were used for multiple comparisons ( $\alpha=0.05$ ).

**Results:** The results of revealed that the simulated gastric fluid effects the hardness of provisional prosthetic materials. There were statistically significant differences in values of hardness of prosthetic materials ( $P<.001$ ).

**Conclusions:** Based on the results of the study, the hardness of provisional prosthetic materials were affected by simulated gastric fluid. The patients with gastroesophageal reflux disease should be warned by the dentists about the strength of the provisional prosthetic materials

**Keywords:** Surface hardness, provisional prosthetic materials, gastric fluid

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## The Effect of Simulated Gastric Fluid On The Color Properties of Hybrid-Ceramic Cad-Cam Restorative Materials

**Purpose:** The purpose of this study was to investigate the effect of simulated gastric fluid on color properties of CAD-CAM hybrid ceramic restoration materials.

**Materials and Methods:** A total of ninety-six specimens in 1 mm thickness from seven different CAD-CAM hybrid ceramic restoration materials (Coltene Brilliant Crios, Yamakin İGOS KZR-CAD HR, Vita Enamic, Shofu HC ,GC Cerasmart 270, Ivoclar Tetric CAD, Voco Grandio) and CAD-CAM glass ceramic restoration material (IPS e.max CAD) were prepared using a low speed sectioning device (PRESI, Mecatome T180, France). After polishing, specimens were immersed in simulated gastric fluid for 24 hours. The quantitative color difference ( $\Delta E$ ) values between the test and control specimens were calculated before and after immersion to the mouthrinses. Data were analyzed using the statistical software and subjected to one-way ANOVA and a post hoc Tukey test were used for multiple comparisons ( $\alpha=0.05$ ).

**Results:** The results of colorimetric analysis revealed that the simulated gastric fluid effects the color stability of CAD-CAM hybrid ceramic restoration materials. There were statistically significant differences in values of color difference ( $\Delta E$ ) of restorative materials ( $P<.001$ ).

**Conclusions:** Based on the results of the study, the colors of CAD-CAM hybrid ceramic restoration materials were affected by simulated gastric juice. The patients with gastroesophageal reflux disease should be warned by the dentists about the discoloration of the restorations which was made of CAD-CAM hybrid ceramic materials.

Hybrid-Ceramics, CAD-CAM, Gastric Juice, Optic Properties

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## The Effect of Dietary Simulating Solvents On The Color Properties of 3d Printed Restorative Materials

**Purpose:** The purpose of this study was to investigate the effect of dietary simulating solvents on color properties of 3D printed restorative materials.

**Materials and Methods:** A total of one hundred ninety-two specimens in 1 mm thickness from three different 3D printed restorative materials (Saremco Crown Tec, Varseo Smile Crown Plus ve Duraprint Experimental Resin) and one CAD-CAM hybrid ceramic restorative material (Cerasmart 270) were prepared. Test specimens were randomly divided into four groups (n=12) in each color. In the control group, specimens were immersed distilled water; and in the test group specimens were immersed in ethanol, citric acid and heptane, respectively. The quantitative color difference ( $\Delta E$ ) values between the test and control specimens were calculated before and after immersion. Data were analyzed using the statistical software and subjected to ANOVA with two variables (restorative materials and type of dietary simulating solvents) and a post hoc Tukey test were used for multiple comparisons ( $\alpha=0.05$ ).

**Results:** The results of colorimetric analysis revealed that the dietary simulating solvents effects the color stability of 3D printed restorative materials. There were statistically significant differences in values of color difference ( $\Delta E$ ) of restorative materials ( $P<.001$ ). The results of two-way ANOVA showed that restorative materials ( $p<.05$ ) and type of dietary simulating solvents ( $p<.05$ ) were significantly affect the color stability ( $\Delta E$ ) values. Interaction terms were also significant ( $p<.05$ ).

**Conclusions:** Based on the results of the study, the colors of 3D printed restorative materials were affected by dietary simulating solvents. The patients should be warned by the dentists about the discoloration of the restorations which was made of 3D printed restorative materials

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ID.15

Abdurrahman Şahinbaş - Ladise Ceylin Has

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## Do Manufacturing Techniques and Materials Affect Internal Fit?

**Purpose:** This study aims to evaluate and compare the internal compliance of restorations produced with different materials and techniques.

**Materials and methods:** Tooth 36 was prepared by an experienced prosthodontist on the dentistry preparation training model (Kavo Basic study model, Kavo GMBH, Germany). 10 feldspathic ceramics (Cerec Blocs, Sirona, Germany), 10 monolithic zirconia (Ceramill ZICAM, Amann Girrbach, Germany), 10 Zirconia supported ceramics (Aidite, Superfect Zir, USA) using IMES 550 I device with digital workflow, 10 metal substructures obtained by laser sintering method and also 10 metal supported ceramic crowns were obtained by conventional method. The restorations were placed on the prepared tooth and the internal gap was determined using the replica technique with the addition type silicone impression material. Sections were taken from the obtained silicon layer and the amount of internal spacing was measured from 10 different points to be examined under a light microscope with 1X magnification. Statistical analysis of the obtained data was performed using SPSS (ver.21.0; SPSS, Inc., Chicago, IL, USA) package program.

**Results:** It was observed that there was a statistically significant difference between the measurements of 5 different groups of restorations produced with different materials and techniques from the determined points, only between the axioocclusal measurement points. ( $p < 0.05$ ).

**Conclusions:** The internal gap values of all samples produced with digital and conventional measurement methods were measured less than 200 micrometers and were measured at the clinically acceptable range value. The internal gap values of all samples were observed the highest in the occlusal region, while the lowest was observed in the axiokingival region. A statistically significant difference was observed only between the measured axioocclusal measurement points. The highest internal gap mean value was measured at the occlusal measurement point in the monolithic zirconia group. The lowest internal gap mean value was measured at the axiokingival measurement point in the zirconia supported ceramic group.

CAD/CAM, Laser Sinterization, Internal fit, Silicone replica technique, digital and traditional workflow, cement film thickness

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ID.15

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## Effects of Blumia Nervosa On Mechanical Properties of Different Cad-Cam Materials

**PURPOSE:** Observation of the changes in mechanical characteristics and surface topography of CAD-CAM (computer aided design-computer aided manufacturing) restorative materials under the well-established blumia nervosa (BN) and control conditions.

**MATERIALS AND METHODS:** Three different CAD-CAM materials chosen as A1 shade and high translucent (HT) [IPS e.max CAD (Ivoclar Vivadent, Schaan, Liechtenstein), Celtra Duo CAD (Dentsply Sirona, York, Pennsylvania), Ceramill Zolid HT+ PS (Amann Girrbach AG, Koblach, Austria)]. All samples (N=120) with 1.5 mm were polished with 3 step Optra Fine Intra Oral Polishing Kit (Ivoclar Vivadent, Schaan, Liechtenstein). Samples were distributed into 6 subgroups (n=18), 2 samples from each group were chosen for topography evaluations. The exposure time was calculated as 486.5 hours to simulate patients who have BN for five years. Blumic subgroups were stored in BN solution with 1.6 pH and control subgroups were stored in artificial saliva with 7 pH during the experiment period. Surface roughness change ( $\Delta Ra$ ) was measured by contact profilometer (Perthometer M1, Mahr GmbH, Ingolstadt, Germany), surface microhardness and fracture toughness change ( $\Delta VHN$ ,  $\Delta K_{Ic}$ ) were measured by Vickers hardness device (Micromet 5114D, Buehler, Lake Bluff, Illinois), and surface topography evaluations were made by scanning electron microscope (EVO 40, Carl Zeiss Microscopy, Oberkochen, Germany) and 3D optical profilometer (Nanomap-500LS, AEP Technology, Santa Clara, California, USA) before (T0) and after (T1) the solution exposures. Data were analyzed with repeated measures two-way ANOVA, one-way ANOVA and paired samples t tests ( $p < 0.05$ ).

**RESULTS:**  $\Delta Ra$  value of Ceramill Zolid HT+ PS samples exposed to blumic solution was significantly higher than those exposed to control solution ( $p=0.004$ ). Control solution significantly increased the VHN of IPS e.max CAD samples more than blumic solution ( $p=0.000$ ). Blumic solution significantly decreased the VHN of Celtra Duo CAD samples ( $p=0.000$ ) and  $K_{Ic}$  of IPS e.max CAD and Ceramill Zolid HT+ PS samples more than control solution ( $p=0.000$ ,  $p=0.000$ ).

**CONCLUSION:** All materials were affected more negatively by blumic solution compared to control solution according to mechanical properties, however all changes seemed to be in the clinically acceptable range. Ceramill Zolid HT+ PS was found as the most stable material choice according to mechanical properties in non-blumic patients. After all, Ceramill Zolid HT+ PS was found as the hardest and toughest material before and after both blumic and control solution exposures.

Blumia nervosa, Gastric acid, Artificial saliva, CAD-CAM materials



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ID.36

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## **In Vitro Analysis of The Marginal and Internal Fit of Single and Multi- Unit Metal Frameworks By Using Soft Metals and Conventional Method**

Computer aided design and computer aided manufacture (CAD/CAM) techniques have been using for producing ceramic restorations since 1980. At the same time, this procedure avoid the problems of plaster cast because of air bubbles and deformation of the impression material (contraction and expansion) which affect the adaptation of the prosthesis. Consideration of marginal and inner adaptation is an important measurement for the prosthesis' adaptation. Substructers are responsible for the success of marginal and inner adaptation in fixed dental prosthesis. The purpose of this study is comparing conventionally designed metal substructers' and computer aided design and computer aided manufacterly (CAD/CAM) designed soft metal substructers' marginal and inner adaptation and comparing the change in marginal and inner adaptation with the change in number of metal substructure unit. According to the results obtained from our research, as the number of members increases, changes occur in marginal and internal fit. As the number of members increases, the fit of restorations decreases. According to the results obtained in our study, all compared metal production techniques have clinically acceptable values regardless of the number of restoration members.

framework, internal fit, marginal fit ,metal, FDP

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ID.58

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## Bonding Performance of Saliva Contaminated Monolithic Zirconia After Different Surface Treatments

**Purpose:** This research study investigated the effect of different surface treatments after saliva contamination for bonding performance of monolithic zirconia ceramic. Effect of contamination and cleaning methods on bonding of self-adhesive resin cements to zirconia ceramic were examined.

**Materials and Methods:** The 105 square shaped zirconia specimens were used and full sintered following the manufacturer's instruction. All specimens were polished with silicon carbide paper. Specimens except from control groups were stored in artificial saliva for 1 minute at 37 °C. Specimens were divided into 7 groups (n=15) based on surface treatment: 1- control group (without saliva contamination), 2- applied alumina-blast (AB), 3- applied air water spray, 4- cleaned with Ivoclean, 5- cleaned with pumice, 6- cleaned with isopropyl alcohol, 7- applied alumina-blast then cleaned with Ivoclean. Clearfil Ceramic Primer was applied to the all conditioned surfaces for 40 s before cementation as a universal primer. All specimens were cemented with self-adhesive resin-based luting agent (Panavia SA Cement Plus Automix). Thermal cycle aging was applied at 5000 cycles after cementation. The shear bond strength was measured using a universal testing machine at a crosshead speed of 0,5 mm/min. The fractured surfaces were observed using a stereomicroscope and scanning electron microscope. And surface elemental changing were observed with Energy Dispersive X-ray Spectroscopy (EDS). The data were analysed by one-way ANOVA analysis.

**Results:** The averages of F Max (Mpa) values differ according to the groups ( $p < 0,001$ ). The bond strength of the groups is as follows: AB+ Ivoclean > AB > Ivoclean > pumice > air-water spray > control > alcohol

**Conclusion:** The use of cleaning agents can be easier and less time consuming than sandblasting restorations with complex surface geometry. Sandblasting and then applying Ivoclean may increase clinical success.

Saliva contamination, bond strength, monolithic zirconia

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ID.60

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## Comperative Evaluation of The Translucency of Different Cad/cam Materials

**Objective:** The purpose of this study was to evaluate the optical properties of novel cubic ultra high-translucent (UHT) zirconia with lithium disilicate (LDS) and zirconia-reinforced lithium silicate (ZLS) glass-ceramic for the manufacture of monolithic computer-aided design and computer-aided manufacturing (CAD/CAM) anterior crowns.

**Materials and Methods:** The ultrahigh-translucency UHT zirconia, hightranslucency grade ZLS and the low-translucency grade L-DIS were milled. Twenty-four monolithic crowns were made from 1 CAD file, corresponding to thickness 1.5 mm, and subdivided (n=8) into 3 groups: UHT zirconia, ZLS and LDS. All Groups were shaded using A1 color standard. Translucency of the crowns was measured by contrast ratio using a dental spectrophotometer applied to the labial surface of the crowns over black and white background. Data were analyzed using the 1-way ANOVA and the Tukey HSD test ( $\alpha=.05$ ).

**Results:** The mean contrast ratios of UHT zirconia, LDS, ZLS specimens were 0,39 (0,02), 0,42 (0,03) and 0,42 (0,02), respectively. UHT zirconia has significantly lower CR compared to LDS and ZLS, whereas there was no significant differences were noted between LDS and ZLS. In this study, novel translucent zirconia (GC Initial UHT) showed more translucency than lithium disilicate (IPS e.max) and zirconia-reinforced lithium silicate (Celtra Duo) ceramics.

**Conclusions:** To obtain esthetic restorations and provide shade matching with natural dentition especially for anterior teeth, monolithic materials should be carefully chosen. The optical properties of monolithic restorative materials were influenced by the type of the material used. Zirconia translucency was improved by eliminating the tetragonal phase, which is responsible for the toughening effect; thus, further studies are advocated to investigate the mechanical resistance of cubic zirconia.

**Keywords:** Esthetic dentistry, monolithic materials, translucent zirconia, CAD/CAM.

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ID.70

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## Effects of Surface Treatments On Bonding Between Temporary Cements and Polymers

**AIM:** The aim of this study is to evaluate the effects of different surface treatments on bond strength between different polymer infiltrated materials such as, PEEK and PEKK produced with CAD CAM and temporary cement materials.

**MATERIAL METHODS:** With the power analysis, the number of specimens was determined as 144 and PEEK and PEKK specimens were obtained in the form of disks with a size of 8 mm × 2 mm. Specimens were embedded in autopolymerizing acrylic resin. Specimens were divided into three groups; a) 98% sulfuric acid applied, b) sandblasted with 110 µm aluminum oxide particles and c) the control group. Each group was divided into three subgroups to apply three temporary cement materials; first group was cemented with calcium hydroxide cement (Dycal), second group was cemented with non-eugenol temporary cement (Temp-Bond NE), third group was cemented with zinc oxide-eugenol temporary cement (Temp-Bond). Finger pressure was applied until the cement hardened. Subsequently, all specimens were subjected to shear bond strength test at 0.5 mm/min head speed in universal test machine. The refraction values obtained in Newtons were recorded by converting them to MPa. Kruskal-Wallis, Pairwise Comparison and Mann-Whitney U tests were used for statistical analyzes.

**RESULTS:** The highest bonding values were found in PEEK and PEKK materials after sandblasting and cementation with Dycal. ( $p < 0,05$ ) Sandblasting has shown better bonding results in cementation. No significant difference in bonding was observed between PEEK and PEKK materials and the cements used.

**CONCLUSION:** In this study, changing the surface properties of PEEK and PEKK materials affects the bonding with temporary cements. Although the results are statistically significant, bonding values were lower than the bonding with resin cements.

**KEYWORDS:** Shear Bond Strength, PEEK, PEKK, Temporary Cements

**INTRODUCTION:** Due to increasing aesthetic expectations, materials that do not contain metals become popular. These materials have suitable mechanical and physical properties and have a similar appearance to natural tooth structure and have started to be preferred more frequently. In addition to ceramic materials, polymers are also used in the production of metal-free restorations. In addition to being economical, polymers are preferred due to their higher strength to weight ratio and lower density than metals. [1] High performance polymer family Polyaryletherketone (PAEK) is considered as an alternative to existing materials due to its cost, aesthetics and ease of use. [2] PEEK and PEKK polymers are the 2 most commonly used forms of the PAEK family in dentistry. [3, 4]

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PEEK and PEKK have a wide range of uses in dentistry, including dental implants, implant abutments, fixed dentures and infrastructure material in removable partial dentures. [5-10] Due to their inert and apolar nature, low surface energy and resistance to surface preparation processes to be applied with chemicals, bonding to other materials becomes difficult. In prosthetic restorations, various surface treatments are required to increase this bonding. [11-13] Surface modification is to increase the mechanical and biological properties of the material surface by changing the surface properties of the material, without affecting the general properties. During this process, the advantageous properties of the materials are preserved. [14] Sandblasting, which is accepted as the easiest surface modification method and is frequently used in many areas such as surface preparation of materials, preparation of metal and porcelain restorations before cementation and many more. It is an effective method for changing the surface morphology of materials such as metals and polymers. Generally, 50–250  $\mu\text{m}$  aluminum oxide ( $\text{Al}_2\text{O}_3$ ) powders are used under 4–6 atm pressure. As a result of sandblasting, retentive areas are created on the surface for mechanical retention. [15] Sulfuric acid application is another surface treatment methods and strengthens the bonding of PEEK and PEKK materials by creating changes on the surface with increasing the surface wettability of the material. [16] Cementation is the process that is performed to close the gap between the tooth or abutment and the restoration by creating a bonding and to ensure that the restoration stays in the mouth temporarily or for a long time and is considered as the last stage of fixed restorative treatment. [17] An ideal temporary cement is expected to be able to bond strongly to the material surface, stay in the mouth for as long as desired, prevent leakage of oral fluids, and be easy to prepare and use. Calcium hydroxide-containing cement, zinc oxide-eugenol and non-eugenol temporary cements are routinely used in dentistry clinics. Temporary cements containing eugenol are widely used in the temporary cementation of temporary and permanent crowns. [18] Therefore, the purpose of this in vitro study was to evaluate the effect of surface treatments applied to PEEK and PEKK polymers which can be used as temporary and permanent crown material and implant abutment, on shear bond strength with temporary cementation materials. The null hypothesis was that the surface treatments would influence the shear bond strength of temporary cements to PEEK or PEKK.

**MATERIAL AND METHODS:** Disc-shaped specimens with a diameter of 8 mm and a thickness of 2 mm, PEEK (CupraPEEK Whitepeaks Dental Solutions GmbH & Co. KG, Wesel, Germany) and PEKK (PEKKton Ivory Cendres+ Metaux, SA Switzerland) specimens were prepared in a special dental prosthesis laboratory.

As a result of the power analysis (power=80,  $\alpha=0.05$ ,  $f=0.40$ ), the total number of specimens was determined as 144, with 8 specimens in each group, with 18 subgroups in total. In order to eliminate the irregularities on the specimen surfaces and to obtain a flat surface, the specimens were sanded under water for 15 seconds with 600 grid water sandpaper and washed in a distilled water bath for 10 minutes and air-dried to make it suitable for surface treatments. Prepared specimens will be embedded in



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autopolymerizing acrylic resin (S.C; Imicryl, Konya, Turkey) in silicone molds prepared with 20 mm diameter and 25 mm height in accordance with the test device on which the experiment was performed. After the specimens obtained are divided into three groups, surface treatments were applied to the specimens as follows:

Group 1: 98% sulfuric acid was applied to the surface of the specimens.

Group 2: The surfaces of the specimens were sandblasted with 110 µm aluminum oxide particles (Korox; Bego, Bremen, Germany).

Group 3: The specimens were not subjected to any surface treatment and were taken as the control group.

After the surface treatments, the cementation phase was started with the temporary crown cement materials and the specimens were again divided into three subgroups:

Group 1 was cemented temporary crown cement containing calcium hydroxide (Dycal, Dentsply Intl, York, PA).

Group 2 was cemented with zinc oxide non-eugenol temporary cement (Temp-Bond NE, Kerr Manufacturing Co, Romulus, MI).

Group 3. Group was cemented with zinc oxide-eugenol temporary cement (Temp-Bond, Kerr Manufacturing Co, Romulus, MI).

Silicone molds (Elite Glass A Type Silicone, Zhermack, Badia Polesine, Italy) with an inner cavity diameter of 5 mm and a height of 3 mm were used to ensure standardization in the bonding of the cement to the specimens. All specimens were subjected to shear bond strength test at 0.5 mm/min head speed in a Universal test device (Instron Engineering Co, Canton, MA) after the above-mentioned procedures were applied. The fracture values obtained in Newtons were converted to MPa and recorded.

Statistical analysis of the data was carried out with the SPSS 25.0 (SPSS Inc., Chicago IL, USA) package program at a significance level of 0.05. Non-parametric test was performed because the study did not meet the parametric test criteria. Numerical variables are presented as median, minimum and maximum. Kruskal-Wallis analysis was used to determine the difference between cements according to material group and surface treatments, and Post-Hoc Pairwise Comparison was made to determine which cement caused the difference. Mann-Whitney U test was applied to compare the materials in cement applications following different surface treatments. Kruskal-Wallis analysis was used to determine the difference between the surface treatments in the material and cement groups, and Post-Hoc Pairwise Comparison was made to determine which surface treatment resulted from the difference.

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**RESULTS:** Shear bond strength (SBS) values between temporary cements to PEEK and PEKK polymers varied between 0.07-1.16 MPa. The lowest median value among SBS values is 0,29 MPa and between sulfuric acid etched PEEK surface and Temp-Bond NE. The highest median value among SBS values is 0,95 MPa and between sandblasted PEEK surface with 110 µm alumina particles and Dycal. (Figure 1-2)  
Among the SBS values with PEKK material, the lowest median value with 0.36 MPa is between the untreated surface and Dycal, while the highest median value with 0.93 MPa is between the sandblasted surface and Dycal. (Figure 1)

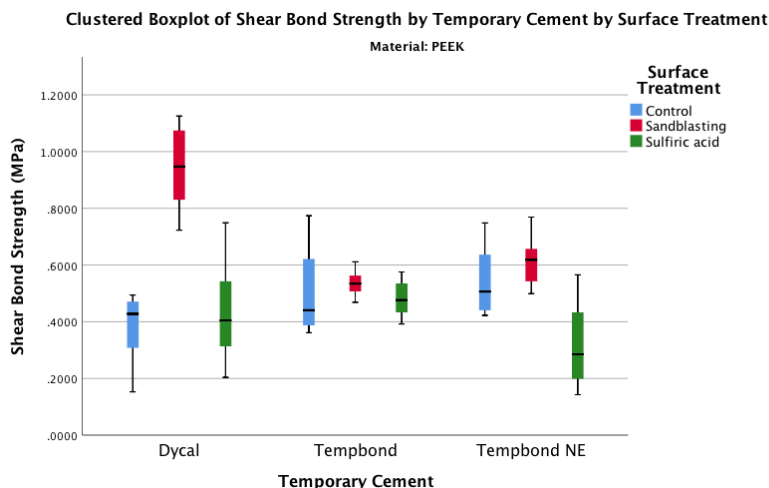


Figure 1. Graph of median, minimum, maximum SBS values between surface-treated PEKK materials and temporary cements

Among the SBS values with PEEK material, the lowest median value with 0.29 MPa is between the sulfuric acid etched surface and Temp-Bond NE, while the highest median value with 0.95 MPa is between the sandblasted surface and Dycal. (Figure 2)

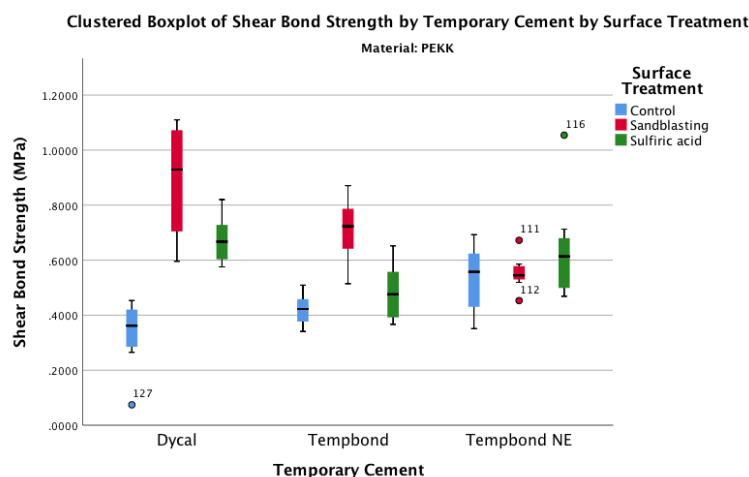


Figure 2. Graph of median, minimum, maximum SBS values between surface-treated PEEK materials and temporary cements

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Significant differences were found between cements in control ( $p=0.012$ ), sandblasting ( $p=0.002$ ) and sulfuric acid ( $p=0.014$ ) applications within the PEKK groups. Differences in the control and sandblasting groups were observed between dycal and non-eugenol Temp-Bond, and the difference in the sulfuric acid group was observed between Temp-Bond and dycal. There was a significant difference between the cements only in the sandblasting application within the PEEK groups ( $p<0,001$ ). It has been determined that the differences in the sandblasting application are caused by Dycal. For Temp-Bond, the difference between PEKK and PEEK was observed only in the sandblasting process ( $p=0,005$ ). For Temp-Bond NE, the difference between PEKK and PEEK was observed only in the sulfuric acid application ( $p=0,001$ ). For Dycal, the difference between PEKK and PEEK was observed only in the sulfuric acid application ( $p=0,005$ ). When PEKK groups are evaluated for Temp-Bond, the difference between the applications is only due to the sandblasting process ( $p=0.001$ ). When the PEKK groups were evaluated for Dycal, the difference between the applications was due to the control group ( $p<0,001$ ). For Temp-Bond NE, the difference within the PEEK groups was observed between the sulfuric acid and sandblasting treatments ( $p=0,002$ ). For Dycal, the difference within the PEEK groups ( $p=0.001$ ) was due to the sandblasting process ( $p=0,001$ ). (Table 1)

Material	Surface Treatment	Cement			p
		Temp-Bond	Temp-Bond NE D	dycal p	
PEEK	Control	0,44 (0,36 - 0,77)	0,51 (0,42 - 0,75)	0,43 (0,15 - 0,49)	0,012
	Sandblasting 0	,53 (0,47 - 0,61)	,62 (0,5 - 0,77)	,95 (0,72 - 1,13)	0,002
	Sulfuric acid	0,48 (0,39 - 0,58)	0,29 (0,14 - 0,57)	,4 (0,2 - 0,75)	0,014
p		0,197	0,021	0,002	
PEKK	Control	0,42 (0,34 - 0,51)	0,56 (0,35 - 0,69)	0,36 (0,07 - 0,45)	0,131
	Sandblasting 0	,72 (0,51 - 0,87)	0,54 (0,45 - 0,67)	,93 (0,6 - 1,11)	<0,001
	Sulfuric acid	0,48 (0,37 - 0,65)	0,61 (0,47 - 1,16)	,67 (0,58 - 0,82)	0,067
p		0,010	,1970	,002	

Table 1. Table of median, minimum, maximum SBS and p values between surface treated PEEK and PEKK materials and temporary cements

**DISCUSSION:** PEEK and PEKK are considered an advanced biomaterials used in implant overdenture restorations as medical and dental implants, as a plastic temporary abutment for implants in the fabrication of temporary crowns. An adequate adhesion to PEEK and PEKK could be established when a hydrophobic dental bonding agent in combination with a composite resin was used. [19] In the literature there is no study examining bonding between PEEK and PEKK polymers and temporary cements. In this

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study, the answer to the question of whether temporary cement materials are used in the short-term cementation of PEEK and PEKK materials, will an acceptable level of bonding be achieved. The research hypothesis that the surface treatments would affect the shear bond strength of temporary cements to PEEK and PEKK was accepted.

In the literature, self-adhesive resin cement was applied to surface treated PEEK material and SBS values were compared. [20-23] Labriaga et al. [24] and Sakihara et al. [25] evaluated the SBS by applying surface treatments to PEKK specimens. In this study, these two high-performance polymers coexist and are compared with each other. To the knowledge of the authors this is the first evaluation of the bonding performance to PEEK regarding to dental applications. Hence, the present results cannot be compared to other available studies.

Gama et al. [26] have a systematic review called adhesion to high-performance polymers applied in dentistry; They conducted a meta-analysis to analyze the significant differences in shear and tensile strength and as a result, they concluded that the shear bond strength values were higher in the group that applied adhesive from surface treatments compared to the group that was not applied (4.86 MPa). The mean SBS values in other studies in the literature are between 5.0 MPa and 19.8 MP. [22, 27-31] Lepe et al. [32] evaluated the shear bond strength between four temporary cements to polymethyl methacrylate and bis-acrylic composite. The bonding values found in their study are between 0,4 -1,3 MPa and are similar to our results. The SBS values we found in our study were within normal values for temporary cement bonding, however they were lower than SBS values of adhesive bonding.

Etching with 90% to 98% sulfuric acid has been reported to increase both tensile and shear bond strength in bonding between resin cements and PEEK. [22, 23, 25, 33, 34] A significant increase in SBS values reported after sandblasting compared to non-treated PEEK surface. [23, 29, 35, 36] In our study, etching did not cause a significant difference, a significant difference was obtained in sandblasting. In our opinion, this bonding was enhanced by mechanical retention. To increase this mechanical retention, it may be beneficial to increase the size of sandblasting particles.

**CONCLUSION:** Based on the findings of this in vitro study, the following conclusions were drawn:

1. Changing the surface properties of PEEK and PEKK materials affects the bonding with temporary cements.
2. Sandblasting with 110- $\mu$ m aluminum oxide demonstrated the highest SBS values among the pretreatments applied to PEEK and PEKK.
3. The highest bonding values were found in PEEK and PEKK materials after sandblasting and cementation with Dycal.



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## Wear Evaluation of Cad-Cam Dental Ceramic Materials By Chewing Simulation

**Purpose:** To evaluate the wear of computer-aided design/computer-aided manufacturing (CAD-CAM) dental ceramic materials opposed by enamel as a function of increased chewing forces.

**Material and Methods:** The enamel cusps of healthy human third molar teeth (n=40) opposed by materials from each CAD-CAM dental ceramic group (n=10), including Vita Enamic® (ENA), a polymer-infiltrated ceramic network (PICN); GC Cerasmart® (CERA), a resin nano-ceramic; Celtra® Duo (DUO), a zirconia-reinforced lithium silicate (ZLS) ceramic; and IPS e.max ZirCAD (ZIR), a polycrystalline zirconia, were exposed to chewing simulation (1,200,000 cycles; 120 N load; 1 Hz frequency; 0.7 mm lateral and 2 mm vertical motion). The wear of both enamel cusps and materials was quantified using a 3D laser scanner, and the wear mechanisms were evaluated by scanning electron microscopy (SEM). The results were analysed using Welch ANOVA and Kruskal Wallis test ( $\alpha = .05$ ).

**Results:** ZIR showed lower volume loss ( $.02 \pm .01 \text{ mm}^3$ ) than ENA, CERA and DUO ( $P = .001$ ,  $P = .018$  and  $P = .005$ , respectively). The wear of cusp/DUO [ $.59 \text{ mm}^3$  (.50-1.63  $\text{mm}^3$ )] was higher than cusp/CERA [ $.17 \text{ mm}^3$  (.04-.41  $\text{mm}^3$ )] ( $P = .007$ ). ZIR showed completely different wear mechanism in SEM.

**Conclusions:** Composite structured materials such as PICN and ZLS ceramic exhibit more abrasive effect on opposing enamel due to their loss against wear, compared to uniform structured zirconia. The resin nano-ceramic causes the lowest enamel wear thanks to its flexible nano-ceramic microstructure. While zirconia appears to be an enamel-friendly material in wear volume loss, it can cause to microstructural defects of enamel.

Restoration wear, Dental Wear, Dental Enamel, Chewing

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## 1 YEAR CLINICAL EVALUATION OF TITANIUM BASE ZIRCONIA FPD'S

**AIM:** The effort to achieve more naturalness for implant-supported restorations directs clinicians and manufacturers to use a greater extent esthetic materials by limiting the use of metal. With the ti-bases developed for this purpose, the volume of titanium was reduced and the volume of the aesthetic material was increased, thus it is aimed to prevent metal reflection.

**METHODS:** 24 patients with veneered zirconia- supported screwed fixed partial dentures (FDP's) crowns, extraorally cemented on 48 ti-bases were included in this study. At the end of the observation period (mean 15.86 months), the clinical status of the restorations were scored with the Modified USPHS criterias. Periimplant and symmetrical teeth periodontal situations were evaluated with Pocket Depth (PD), Bleeding on Probing (BoP), Gingival Index (GI) and Plaque Index (PI) measurements. Descriptive statistics were applied. In the evaluation of USPHS scores, percentile comparisons in excel were used. Mann-witney U test was used to compare between the periodontal scores of ti-base restorations and teeth. significance level was accepted as  $p < 0.05$ .

**RESULTS:** According to the examinations, 2 restorations in anatomical form and 1 restoration in veneer fracture received Bravo scores. Screw loosening was noted in 1 patients. Periodontally, teeth had showed significantly lower PD ( $p = ,000$ ), BOP ( $p = ,000$ ) and GI ( $p = ,000$ ) scores than ti-base restorations, but no significantly difference was found PI scores ( $p = 1,00$ ).

**CONCLUSION:** Within the limitations of this preliminary results, the following conclusions may be drawn:

1. Ti-base monolithic zirconia restorations achieved a 1-year survival rate of 100%.
2. periodontally; although restorations showed higher scores, they were within clinically acceptable limits.
3. Good designed randomized clinical trials should be conducted.

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## Stress Distribution of All-Ceramic Implant-Supported Conometric Abutment Single Crown Restorations: A Three-Dimensional Finite Element Analysis

**Purpose:** The aim of this study is to evaluate the stress distributions of monolithic translucent zirconia ceramic (TZI) and lithium disilicate glass ceramic (LDS) restorative materials in the implant components and surrounding bone tissues by three-dimensional finite element analysis in conometric single crown restorations on the implant with a conical connection system under functional and micro loads.

**Material and Method:** In restorations made of two different all-ceramic materials with Acuris conometric abutment and conometric cap (Conometric abutment EV and Conometric Final Cap, Dentsply Implants, Sweden) applied on an implant with a conical connection system (AstraTech, Dentsply Implants, Sweden) placed in the maxillary right second premolar region. Considering vertical and oblique loads, the analysis of the stress amounts and distributions in the implant components, in the cortical and cancellous bone tissue surrounding the implant, and in the crowns was performed using the three-dimensional finite element stress analysis method.

**Result:** Vertical and oblique load comparison value results for the conical surface of the acuris abutment for TZI vertical force 435.64 Mpa, oblique force 383.26Mpa and for LDS vertical force: 458.99Mpa, oblique force: 341.01 Mpa. In the comparison between the surfaces of the Acuris cap, lower stresses were recognized in the vertical loading for TZI inner surface: 383.82, for LDS inner surface: 487,98. The comparison of stress values on the implant-bone interaction in vertical force for TZI 16,331 Mpa, oblique force for LDS: 20,422 Mpa.

**Conclusion:** The highest maximum and minimum principal stress values between the implantbone interface were determined in the TZI restoration.

**Keywords:** conometric, implant, finite element analysis

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Selçuk University Faculty of Dentistry, Department of Prosthodontics

## Effect of Different Impression Techniques On Accuracy In Multiple Implants

**Purpose:** The aim of this study was to evaluate the accuracy of multiple implant impressions by determining the effect of different implant impression techniques and splinting materials. **Material and methods:** Four implants were placed to the planned positions in the mandible master model parallelly. Sixty five impressions were made with polyvinyl siloxane impression material, using the indirect impression technique (ITT group), the direct impression technique (DIT group), the splinted direct impression technique with flowable composite (FCS-DIT group), the splinted direct impression technique with cold-cure acrylic resin (CARS-DIT), or the splinted direct impression technique with pattern resin (PRS-DIT group); n = 13 per group. In splinted techniques, the splints were sectioned after 24 hours and reattached. The master model and all sixty five duplicate models were scanned with a 3D scanner. Linear and angular displacements between the master and duplicate models are recorded. Data were statistically analyzed with two-way multivariate analysis of variance test and Multiple comparisons were made using Bonferroni correction.

**Results:** The average angular deviation value obtained with the indirect technique was higher than that of the other methods. There were no significant differences between the other methods in terms of angular deviation. The average linear displacement value obtained with the indirect method was higher than that obtained using the direct method. There were no significant differences between the other methods in terms of linear displacement.

**Conclusions:** None of the impression technique or any splint material could provide the exact transfer of the parallel implants to the master model. The indirect impression technique resulted in the worst accuracy. The non-splinted and splinted direct impression techniques showed the best accuracy.

dental implant, implant impression technique, direct impression, splinting materials impression accuracy



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## ID.28

Mustafa Ufuk Sancılı - Yeşim Ölçer Us - Emir Yüzbaşıoğlu

Bahçeşehir University, School of Dental Medicine, İstanbul, Turkey

### The effect of simulated gastric fluid on color stability of provisional prosthetic materials

**Purpose:** The purpose of this study was to investigate the effect of simulated gastric fluid on the color stability of different provisional prosthetic materials

**Materials and Methods:** A total of forty-eight specimens (Acrytemp, Protemp 4, Temdent Classic Dark, Bisco Temp S) were prepared using a PTFE mould. After polishing, the specimens were immersed simulated gastric fluid for 24 hours. Color values (CIE L, a and b) was measured using a spectrophotometer. Color measurements was carried out before and after the specimens immersed in simulated gastric fluid. Data were analyzed using the statistical software and subjected to Kruskal Wallis and Dunn test were used for multiple comparisons ( $\alpha=0.05$ ).

**Results:** The results of study revealed that the simulated gastric fluid effects the color stability of provisional prosthetic materials. There were statistically significant differences in values of color stability of provisional prosthetic materials ( $P<.001$ ).

**Conclusions:** Based on the results of the study, the colors of provisional prosthetic materials were affected by simulated gastric fluid. The effect of simulated gastric fluid on color stability of PPM's depends on the duration of exposure time, and the composition of the material. Gastroesophageal reflux disease should be aware of the color change potential.

**Keywords:** Color stability, provisional prosthetic materials, gastric fluid, tooth erosion

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ID.75

Zeliha Taştan - Şebnem Begüm Türker

## Evaluation of Dentists' Perspective On The Use of Digital Impressions During Construction of Complete Dentures

**Purpose:** The aim of the complete dentures was to restore the function, phonation and aesthetics of the patients who missed all of their teeth. Different conventional impression techniques could be used to construct the complete dentures. Nowadays, digital techniques are also used as an alternative to conventional systems in complete dentures. The aim of this study was to evaluate the perspectives of dentists on the use of digital impressions during construction of complete dentures.

**Material Method:** A questionnaire was prepared for specialist dentists, dentists and dental students. Ethical approval was received. An electronic questionnaire will consist of 25 questions. The SPSS V23 program was used for the statistical analysis. The conformity of the data to the normal distribution was checked with the Kolmogorov-Smirnov test. Chi-square test was used for data analysis.

**Result:** 47.5% of the participants were dental students, 40.4% were dentists, and 12.1% were specialist dentists. 53.5% of the participants had information about digital approaches in dentistry and 92.9% of them were not informed about the developments in digital impression systems used for complete dentures. 68.7% of the participants preferred digital systems in the impression stage of prosthetic treatments, but 99% of them had not used digital systems in the impression stage of the complete dentures before. 84.8% of the participants want to improve themselves about using digital impression in complete dentures.

**Conclusion:** In the limitations of this study, dentists who participate to this study did not have sufficient knowledge and observation about the use of digital impressions in complete dentures, but they thought that digital impressions could be preferred in various indications during the impression stage of complete dentures and will become widespread in the future.

complete dentures, digital impression

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ID.67

Taner Türkay

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## Implant-Supported Overdenture Rehabilitated With Dynamic Protocol: Case Report

Complete dentures are often used in the prosthetic treatment of edentulous patients. However, it has disadvantages such as lack of retention and stability, continued alveolar bone resorption, inadequate chewing function, speech difficulties and lack of self-confidence in social situations. With the developing technology, the changing design and clinical applicability of dental implants have changed the routine prosthetic protocols of clinicians. Total dentures, which have been the only treatment option for edentulous patients for years, have been replaced by implant-supported prosthetic applications in most of the cases. The long-term clinical success of implant-supported prosthetic applications depends on many criteria. In terms of prosthetics, the secret of this success is closely related to occlusion, according to many authorities. In this case report, individual characterization of red and white aesthetics and dynamic reconstruction protocol with the acquisition of dynamic data of the joint will be explained step by step. The red and white aesthetics created shortened the adaptation period of the patient to the prosthesis, and the orientation plane designed with the guidance of the condylar path slope made it possible to obtain bilaterally balanced occlusion. The obtained dynamic equilibrium prolonged the deformation processes of the locator plastics. The purpose of this case report is to contribute to the literature.

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Kaan Yılmaz - Gökçen Ateş - Canan Bural - Onur Geçkili

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Süleyman Çağatay Dayan

İstanbul Üniversitesi-Cerrahpaşa

## How Many Times Can A Multipeg™ Be Autoclaved?

How Many Times Can a MultiPeg™ be Autoclaved? The MultiPegs™ are made of titanium so that they can be sterilized and used multiple times. The manufacturer of MultiPegs™ claims that it could be autoclaved up to 20 times and reusable. The aim of this in vitro study was to evaluate the effects of 50 times autoclaving on RFA measurements of MultiPegs™. 12 implants were placed in a self-curing acrylic blocks. A total of 36 MultiPegs™ were used and grouped as group 1-control group, group 2-ultrasonic bath and autoclave, and group 3-chemical disinfection and autoclave. MultiPegs™ in each group underwent 50 consecutive autoclave and remounting processes. Between the autoclave processes the MultiPegs™ were mounted on implants with the recommended torque of 4–6 Ncm and ISQ measurements were performed and recorded. The ICC was used to assess the consistency of RFA measurements after 50 times autoclaving. For all groups the ICC values were above 0.7 and therefore the consistency of RFA measurements were considered as excellent. The reuses of Penguin MultiPegs™ after consecutive autoclave sterilization have no significant effects on the RFA measurements.

Multipeg, Dental İmplants, RFA

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ID.77

Kübra Şirin - Belit Davarcı - Rifat Gözneli

## Evaluation of Patient Satisfaction In Implant-Supported Fixed Partial Denture Applications

**Purpose:** The aim of this study was to investigate the socio-demographic characteristics, satisfaction status of current prosthesis, hygiene habits and information about treatment options and frequency of visits to dentists of patients who had implant-supported prosthodontic treatment at Marmara University, Dentistry Faculty.

**Materials and Methods:** In this study, a questionnaire consisting of 12 questions was administered to 50 patients who had undergone implant-supported prosthodontic treatment at Marmara University Faculty of Dentistry. In this questionnaire, the satisfaction of the patients was evaluated. The analysis of the obtained data was done with SPSS 23 program. Kolmogorov-Smirnov parametric test was used to evaluate if the variables were normally distributed. Chi-Square test was used to analyze the data. The results were considered statistically significant for  $p < 0.05$ .

**Results:** The 98% of the patients participating in study increased their quality of life after treatment. The status of experienced problems after the treatment ( $p=0.412$ ) and the status of solving the problems experienced ( $p=0.311$ ) do not differ according to use of prosthesis. While 52% of patients who visit the dentist according to needs, are aware of alternative treatment methods, all of the patients who visit the dentist 3 times a year are satisfied with the aesthetics of their teeth.

**Conclusion:** This study, in which the participants were generally satisfied with the treatment was concluded that implant treatments increased quality of life, men's quality of life increased at a higher rate than women. By increase in the number of implants, chewing comfort and the rate of comfortable cleaning decreased. Patients who visit the dentist once a year are less aware of alternative treatment methods. Patients, who visit once a year report that they experience less gingival bleeding during dental cleaning, while patients who visit three times a year are more satisfied with implant treatment.

Dental implants, fixed partial dentures, patient satisfaction, questionnaire, prosthesis



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Aslı Sıncı - Özlem Kara - Doğan Dolanmaz - Özgün Yusuf Özyılmaz

Bezmialem Vakıf Üniversitesi

## Rehabilitation of Partial and Total Edentulism With Toronto Bridge Prostheses; 3 Case Reports

While treatment planning of partially or completely edentulous patients, selecting a particular prosthesis design requires consideration of factors such as the amount of crown height, the relationship between the maxillary and mandibular crests, the number and location of implants and patient demand. In cases where it is desired to support soft tissue and lip as well as hard tissue, Toronto systems can provide aesthetic and functional advantages. Toronto Systems are hybrid prostheses with cement-retained crowns on screwed framework, which are generally used in cases where the crown height is high. The aim of this article is to describe the rehabilitation with Toronto bridge prostheses of 3 different cases that could not be rehabilitated with conventional fixed prostheses due to aesthetic and biomechanical limitations.

**Material Method:** Case 1: 38-year-old female patient with maxillary central and lateral teeth loss and Class 3 jaw relationship was restored with Toronto Bridge Prosthesis after 2 implants were placed in the maxillary areas 12-22 by implant surgery. The reason why the Toronto bridge prosthesis was preferred in this case was to increase the soft tissue support in the upper jaw and to reach a more aesthetic solution.

Case2: 49 year old female patient with total edentulous mandible and posterior maxillary teeth loss was treated with 4 implants and hybrid all-on-four Toronto bridge prosthesis in the lower jaw due to the excessive bone loss and 5 implant and cementretained prostheses in the posterior regions of the upper jaw. Due to the vertical dimension loss, the crown heights of the upper anterior teeth were increased with fiber posts and fixed bridge prosthesis was made.

Case3: Iliac graft was applied to a 52-year-old female patient with excessive bone resorption in her upper jaw. Following the healing process; 4 implants and all-on-four Toronto Bridge Prosthesis in mandibula, 6 implants and all-on-six Toronto Bridge Prosthesis in maxilla were planned and restored since the angulation and distance between the total edentulous lower and upper jaws is more than the ideal vertical dimension and the crown height will exceed the ideal ratio when cement-retained prostheses are made.

**Results:** After the treatments, the patients have healthy and happy smiles. They are called twice a year to get information about their prostheses.

**Conclusion:** Toronto Bridge Prostheses can be considered as a hybrid prosthesis treatment option in cases where cement-retained or screw-retained fixed prostheses are not expected to meet aesthetics and function.

hibrit protez, toronto, all-on-four

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ID.83

Yelda Soğancıoğlu - Ceren Küçük - Şükrü Can Akmansoy

Marmara University

## Investigation of Hospital Information and Management System For The Evaluation of Data On Implant Supported Prosthetic Treatment Applications

**Purpose:** Implant treatment is an up-to-date treatment method that provides prosthetic treatment by imitating the natural tooth root by placing biocompatible materials in the maxilla or mandible in areas where there is tooth deficiency, and provides the patient to restore the lost function, aesthetic and phonetic problems. The aim of this study is to evaluate the indications for prosthetic treatment, the localization of the restorations in the jaws, the minimum, maximum and mean age values and the gender-related changes of the patients who applied to the Marmara University Faculty of Dentistry, Department of Prosthetic Dentistry and received implant supported prosthetic treatment. Material Method: Our study is a retrospective analysis study. The material of our study consists of patients who applied to the faculty between September 2015 and September 2021 and whose prosthetic rehabilitation was completed. The patients were evaluated in terms of the type, localization, minimum, maximum and mean age values of the relevant indication, gender, and the districts to which they applied. The relevant data of the patients were obtained as a result of examining the patient-movement data in the hospital information management system.

**Result:** In the retrospective scan made through the hospital information-management system, 1448 patients who received prosthetic treatment on implant and full denture indication and whose prosthetic treatment were completed were identified. When the gender distribution of these patients was examined, it was observed that 56% were female patients and 44% were male patients. The lowest age group is between the ages of 18-25 and constitutes 3.87% of all patients. The highest age group is between 82-90 years of age, constituting 0.62% of all patients.

**Conclusion:** For the last 30 years, implant treatment and its complementary functional unit, implant supported restorations, have shown high long-term success.

complete dentures, implant-supported dentures, retrospective study

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## **Stress Distributions Created By Short and Regular Implants Placed In The Anterior Maxilla At Different Angles, Part 1: A Finite Element Analysis**

**Purpose:** The purpose of this study was to examine and compare the peak von Mises stress distributions in the crown, implant and abutment by using finite element analysis (FEA). Besides, a comparison of the implantabutment connection types in the short implant with the FEA method was established.

**Material and Methods:** A short implant (4x5 mm) with taper-lock connection and a regular implant (4x9 mm) with screw connection was used in maxillary central incisor tooth area. Three different titanium abutments with 0°, 15° and 25° angles were used for abutments. In addition, in order to determine whether the stress change in short implants is due to the length or the implant-abutment connection, a screw was designed for short implant and it was also evaluated in same three angle. A total of three groups and nine models were generated. 114.6 N load was applied to the cingulum area of the crown at an angle of 135 ° to the long axis of the crowns. A torque load of 25 Ncm was applied to the regular implant screw. The same torque load was applied to the short implant screw to compare the implant-abutment connection. Von Mises stress distributions of implants, abutments and crowns was evaluated bu using FEA.

**Results:** Increased angle in implants increased von Mises stress values of implant, abutment and crown. Screw connection was found higher at all angles in short implants. Close values were found at different angles in taper-lock short implant crowns.

**Conclusion:** The length and the angle in the bone of implant with the type of implant-abutment connection results in the accumulated stress values.

finite element analysis, short implant, anterior maxilla

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ID.85

Simay Kocaaga

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## Implant Stability Measurement of Delayed and Immediately Temporary Loaded Implants: 2 Case Reports

**Purpose:** The aim of this study is to measure the implant stability of temporary loaded Megagen implants placed in anterior maxilla by the resonance frequency method.

**Material and method:** Case 1: A 20-year-old male patient applied to Marmara University Faculty of Dentistry, Department of Prosthodontics with the complaint of 21 missing teeth. After intraoral and radiographic evaluation a bone level implant (Megagen AnyOne, Seoul, South Korea) was placed for missing teeth. The implant was loaded with conventional loading protocol. ISQ values were measured before and after placement of provisional restoration.

Case 2: A 26-year-old female patient applied to Marmara University Faculty of Dentistry, Department of Prosthodontics with the complaint of 21 missing teeth. After intraoral and radiographic evaluation a bone level implant (Megagen AnyRidge, Seoul, South Korea) was placed and loaded with immediately loading protocol. ISQ values were measured after placement of provisional restoration.

**Result:** In case 1 the ISQ values were measured as 78 before and after placement of provisional restoration. In case 2 the ISQ values were measured as 75 immediately after implant placement. The ISQ value was measured as 80 in the first month measurement following the screwing of provisional restoration.

**Conclusion:** Immediate loading with provisional restorations are successful treatment options in terms of esthetic and implant stability.

**Keywords:** Dental implant stability, resonance frequency analysis, immediate loading

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ID.86

Berk Esin - Rifat Gözneli - Zeynep Gazali Berk

Marmara University, Faculty of Dentistry, Department of Prosthodontics

## Evaluation of Dental Implant Knowledge of Partially Edentulous Patients

**Purpose:** The aim of this study was to examine the knowledge level of partially edentulous patients about dental implants and to measure their awareness about the stages of the treatment.

**Material and method:** In the present study, a 10-question questionnaire was administered to 50 patients who applied to Marmara University Faculty of Dentistry with the complaint of missing teeth. In this questionnaire, the level of knowledge of the patients about dental implants and the ways of obtaining information were evaluated. The analysis of the obtained data was done with SPSS 23 program. Chi-Square test was used to analyze the data.

**Results:** The 52% of the patients participating in study knew the concept of dental implants. It has been understood that the awareness of the term dental implant has increased with the increase in education level, the most important source of information about dental implants is dentists and as the frequency of visits to the dentist increases, the dominance of the term implant knowledge also increases. 76% of the patients who wanted to have their missing tooth treated preferred an implant. On the other hand, 62.5% of those who did not, claimed that the implant treatment is expensive and did not want to have the treatment. Desiring implant treatment differs according to hearing the concept of dental implant ( $p = 0.037$ ).

**Conclusion:** In this study, it was observed that the level of dental implant knowledge in patients with partial tooth deficiency was insufficient. It has been understood that the level of knowledge increases with the increase in the level of education. It has been concluded that the primary source of information about dental implants is dentists and the level of knowledge increases with the increase in the frequency of dental visits.

**Key words:** Dental implant, public awareness, questionnaire

dental implant, public awareness, questionnaire



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ID.97

İclal Sena Bayram - Hatice Bengin Bayram - Haluk Barış Kara

Istanbul Medipol University

## Establishing A Proper Emergence Profile For Posteriorly Placed Implants : Case Report

**Abstract Purpose:** With the advances in implant dentistry, it is possible to restore normal function, comfort, esthetics, speech and health to a patient by removing a disease process from a tooth or replacing teeth with a prosthesis. Although surgical performance and osseointegration is still one of the key factors for a successful implant restoration, patients may be dissatisfied with the final restoration due to a poor esthetic outcome. The emergence profile also serves to preserve soft tissue by preventing potential areas for food accumulation areas. The purpose of this case report is to explain why it is important to establish an emergence profile for posteriorly placed implants and how to achieve it.

**Material Methods:** In this case report, a 54-year-old woman had to 4.1 x 10 mm implants (BEGO Implant Systems GmbH & Co) placed symmetrically on mandibular first molars and one 4.1 x 10 mm implant (BEGO Implant Systems GmbH & Co) placed on the maxillary right first molars. After osseointegration was completed, the patient came to out clinic for an implant-supported fixed prosthesis. Temporaries for three restorations were fabricated using the Natural Emergence Profiler. Restorations were checked every week for one month. Three weeks later, the final restorations were fabricated with customised abutments using Ti-Base. While cement retained fixed crowns were chosen for the mandible, screw-retained crowns were used for the maxilla.

**Results:** Clinical findings were satisfactory for the case. After 3 months of follow-up, functional, biological and aesthetic problems were not detected in the restorations.

**Conclusion:** The success rate of the implant treatment should not be measured only by the survival of the implant. Remodelling of the soft tissue is an important key factor for the long-term success of the treatment and for patient satisfaction.

emergence profile, implant supported fixed restoration, soft tissue remodeling

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ID.100

İpek Çıklaçifci - İclal Sena Bayram - Haluk Barış Kara

Istanbul Medipol University

## Proper Forming of Soft Tissue Emergency Profile With Peek Abutment For Canine Teeth: A Case Report

**Abstract Purpose:** İmplant supported prosthesis is an evolution in dentistry that resulted tremendous progress in esthetic outcomes. However still there is a challenge on emerge profile. Standart gingival formers dont give customize emerge of tooth and resulted in unsufficient interproximal soft tissue and unsufficient esthetic. The purpose of this case is explain why it is important to form proper emergence profile and how to make gingival forming with provisional restoration.

**Material methods:** 26-year-old male patient who lost his two canines administred our clinic. Patient extracted his canines due to periodontal disease. After periodontal treatment two 3x3 diameter implant (Straumann Implant systems) planned. after osseointegration soft tissue forming decided for esthetic reasons. Gingival forming done with provisional restoration which is fabricated with peek abutment, flowable composite and silicon form index. Patient followed every week and forming abutment adjusted gradually. After forming is complete customize impression post made by Hinds teqnique and impression is taken. For permanent abutment customize zirconium abutment with ti-base made and finished with crown made from zirconium.

**Results:** Clinical results both esthetic and function was satisfactory. On controls of 1 month and 3 month follow-up sessions, restorations were aesthetically, biologically and funtionally stable.

**Conclusion:** Proper emergence profile design is essential to enable appropriate esthetic outcomes and maintain peri implant health.

emergency profile, implant supported fixed prosthesis, peek abutment, soft tissue remodelling, soft tissue forming

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Istanbul Medipol University

## Establishing An Emergence Profile In Anterior Region Implant Supported Restoration: Case Report

**Purpose:** Emergence profile design is important for stable peri-implant tissues and aesthetically pleasing results in dental implant restorations which are influenced by factors, such as, implant position and surrounding soft tissues. The proper design of the emergence profile for the restoration is important to achieve esthetic result and maintain the health periimplant tissues. The case report focuses on creating aesthetic emergency profile which is difficult to create anterior region, step by step with provisional restorations.

**Material Methods:** Our 32-year-old male patient, who lost his anterior central teeth as a result of trauma, came to our clinic for implantation. 4.1 x 10mm implants (BEGO Implant Systems GmbH & Go) had placed. Three months later after osseointegration was completed, we examined the patient for the first time in our prosthodontics department with gingivaformers. Since the mesiodistal distance was too wide, the decision was made to gradually expand, and first-stage temporary restorations with peek temporary abutments were applied to our patient. The final temporary restoration was obtained by expanding the temporary restoration with composite every two weeks. 4 weeks later the impression taken by transferring it to the impression post with the final temporary with Hinds method. Customized zirconium abutment design with ti base in digital. Final zirconium restoration was cemented to the abutment.

**Results:** In this case, despite the patient's wide mesiodistal distance, an aesthetic emergency profile was created and the tissues around the implant were supported.

**Conclusions:** Capturing the natural emergence profile in the anterior aesthetic region allows for more aesthetic and biologically stable restorations.

emergence profile, implant supported fixed prosthesis, peek abutment, anterior implants, soft tissue remodeling, hinds method

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## ACCURACY OF THE DIGITAL IMPRESSIONS FOR IMPLANTS APPLIED TO EDENTULOUS PATIENTS; A LITERATURE REVIEW

**Purpose:** Through the implant treatment applied in case of total edentulism, especially when fixed restorations are applied, patients regain their abilities such as chewing and speaking, which are of great importance in terms of quality of life. The accuracy of the impressionstaken in these cases is critical. There are studies in the literature that the impressions taken by the digital system are not yet sufficient in these cases. The aim of this review is to examine the change and the last point of the studies on the impressions taken with the digital system of these special cases.

**Materials and Methods:** Literature search was carried out in PubMed and Google Scholar databases. The search was limited to articles published in Turkish and English. Medical Subject Headings (MeSH) terms were: dental implant, digital impressions, complete edentulism, accuracy. Results: As a result of the literature review, the main parameters affecting accuracy were determined as interimplant distance, angled placement of implants, scan body scanning protocol, clinical factors, scanner model and software, and practitioner's experience. There are only 5 in vivo studies evaluated. In the other 15 in vitro studies, most of the impressions taken with the intraoral scanner were observed to provide acceptable accuracy below a threshold of 150 µm when compared to conventional impressions.

**Conclusion:** Full arch digital implant impressions taken using intraoral scanners were not found sufficient for clinical practice. While accuracy varied greatly with interimplant distance, scan body type, intraoral scanner type, and operator experience, no influence of implant angulation, implant attachments, and implant depth were found. The effects of scanning strategy and modification technique need to be investigated further. In addition, more accurate results can be achieved with the proliferation of clinical studies and their contribution to the literature.

**Keywords:** digital impressions, total edentulism, accuracy, dental implant

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ID.114

Kıymet Çalık - Doğan Dolanmaz - Özgün Yusuf Özyılmaz

Bezmialem Vakıf Üniversitesi

## Prosthetic Rehabilitation of Edentulous Patients By Using The "Toronto Hybrid Prosthesis": 3 Case Reports

**Objective:** We describe the treatment of completely edentulous patients with severe resorbed upper and lower jaws using by cemented crowns on screw-retained Toronto hybrid prostheses. Conventional screw-retained hybrid prostheses on implants restore moderately to severely resorbed alveolar crests. However, disadvantages such as deterioration of passive seating as a result of distortions in the metal infrastructure after firing the porcelain, and porcelain fractures as the cooling rate will vary in different thicknesses of the framework. In addition, non-arch positioning of implants due to severe crest resorption may cause screw holes to emerge from the labial or buccal surface, which adversely affects aesthetics. The Toronto hybrid approach eliminates all these disadvantages.

**Materials-methods:** Three case reports are reported of implantsupported Toronto prosthesis restored after surgical placement of implants with undesirable placements and angles due to insufficient bone.

Case-1: Sinus plasty and autogenous iliac graft were applied to both quadrants of the extremely resorbed maxilla of a 67-year-old male patient. One year after the surgical operation, 4 implants were placed in the lower jaw and 6 implants in the upper jaw. 4 months later, the lowerupper Toronto hybrid prosthesis was completed in class 1 relationship.

Case -2: All teeth and old implants with periodontal problems in the mouth of a 57-year-old male patient were removed and 6 implants were placed for each jaw. After 5 months, the treatment with the Toronto hybrid prosthesis was completed.

Case-3: 8 months after the application of an iliac graft to the severely resorbed maxilla of a 40-year-old female patient, 4 implants were placed in the lower jaw and 6 implants were placed in the upper jaw. 4 months later the treatment was completed with the Toronto hybrid prosthesis.

**Result:** The technique used in the production of prostheses in these patients has largely overcome the problems encountered due to the placement angles of the implants.

**Conclusion:** The use of cemented crowns on the screw-retained framework eliminated the step of re-entering the framework into the furnace and eliminated the complications that may occur due to this. Moreover, the other advantage of the system is that occurred any complication such as porcelain fracture, cemented crowns can be easily removed partially when repair is required.

Toronto, Hibrit protez, Screw-retained framework



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VE İMPLANTOLOJİ DERNEĞİ

ID.108

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## The Effect of One-Abutment At One-Time Protocol On Peri-Implant Soft Tissue Health and Marginal Bone Loss Around Dental Implants; A Systematic Review

**Purpose:** Aim of the study is to compare one abutment one time protocol which uses an immediate hybrid abutment and the traditional technique which uses a titanium stock abutment to find out which provides more stable peri-implant soft and hard tissue around implants.

**Material and Method:** An electronic search of the literature was performed between December 2015 and September 2021 to identify all articles related to our research questions. The search was conducted using PubMed. Multiple keywords, including one abutment one time, immediate, anterior, marginal bone loss, reconnection, disconnection abutment were used. This was followed by a manual search, and references were used to identify relevant articles. Another additional electronic searches were performed using different keywords including zirconia milled abutments, ceramic milled abutments, hybrid abutments, provisional abutment, custom abutments.

**Results:** As well as the design of implant, the number of re-disconnection showed an influence on the marginal bone loss. On platform switch implants a greater number of disconnection may generate more peri-implant bone resorption. One or two times disconnection didn't have a significant influence but more than two times of disconnection induced marginal bone loss. On non-platform switch implants single disconnection of abutments may cause the similar amount of marginal bone loss to that produced by 4 times of disconnection. For longer observation periods the loss was generally higher. Re-disconnection number also is reported to be an important factor for especially PS abutments. There are limited studies available for comparing use of hybrid abutments for one abutment one time technique and titanium stock abutments for traditional workflow.

**Conclusion:** The marginal bone loss reported in one abutment one-time technique is statistically significantly reduced in platform switch implants which may not have a clinical impact. Avoiding recurrent disturbance of mucosal seal leads to more stable soft tissues around the implants which may provide a reduced marginal bone resorption.

One abutment one time, platform switch, marginal bone loss, repeated abutment change, definitive customized abutment

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İkbal Leblebicioğlu Kurtulus -

Erciyes Üniversitesi Diş Hekimliği Fakültesi

Derviş Karaboğa - Bahriye Akay - Alper Baştürk

Erciyes Üniversitesi Mühendislik Fakültesi

Özden Melis Durmaz Yılmaz

Protetik Diş Tedavisi ABD

Kerem Kılıç

Erciyes Üniversitesi

Özkan Ufuk Nalbantoğlu - Serkan Yılmaz

## Developing A Deep Learning Network For Recognition of Dental Implant Systems

Since implants began to be used in clinical practice, more than 50 years have passed, various complications have been reported with implants. To manage such complications, it is necessary to have various informationsuch as the manufacturer of the implant, its system (tissue level, bone level, placement in cortical or cancellous bone), diameter, and abutment type. If there is no record of which implant was used, it is a very important factor to accurately define the current implant brand and system only from the patient's radiography, in order to manage complications or remove the implant. Unfortunately, there are very few studies on methods and techniques that provide a clear definition of dental implant systems. In the study, it was planned to develop a system in which domestic brands as well as international brands are included in the system and will recognize the implant brand and system from the patients panoramic radiograph in case of any complications. 12000 implant images with brand, system and diameter information were included in the project. 80% of the images were included in the learning part and 20% were included in the testing part randomly, so that they were balanced across all brands. At the prototype stage, 6 implant systems from 6 different manufacturers were manually marked by the experts with the labeling interface on all panoramic radiographs. The ready data set will be separated as training and test sets and the training set will be trained with CNN architectures. Whereas dentistry was entirely dependent on imported implants in the first years of implant treatments in Turkey, from day to day increasing number of domestic implant production companies are participating in the market. With the increase of both Turkish and foreign implant brands, a need for a successful system that will enable the recognition of the implant system has arisen. Unlike existing systems, the planned algorithm is aimed to recognize the brand of implant systems, as well as their diameters and systems. Thus, a network that correctly classifies the brand, system and diameter of the implant can automatically define the implant system and provide objective information directly to the physician about which components need to be prepared for repair and maintenance when mechanical complications occur. This project is supported by TÜBİTAK with the project number 121E068.

Dental implant, yapay zeka, derin öğrenme, sınıflama

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ID.122

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## Clinical Performance of Zirconia-Ceramic Posterior Fixed Partial Dentures After 10 Years: A Retrospective Study

**Purpose:** The aim of this study is to evaluate the 10-years of clinical performance of zirconia-ceramic posterior fixed partial dentures.

**Materials and Methods:** Eighteen patients were included to this study. The study is conducted with patients treated with zirconia-ceramic posterior fixed partial dentures. A total of 18 patients are enrolled to this study. Twenty-seven zirconia-ceramic posterior fixed partial dentures were evaluated. Thirteen of restorations were 3-units and 14 of them were 4-units. Initial data were recorded immediately after cementation. Complications up to 10 years were recorded. At the 10-years recall, all restorations were re-evaluated. Clinical parameters were evaluated according to modified version of the California Dental Association (CDA) criteria. Patient satisfaction was evaluated using a 10-point visual analog scale (VAS). The analyzes of the study were made using the IBM SPSS V22 program.

**Results:** The median age of the people included in the study was 51 years/year (min=35, max=75). The median pontic length of the restorations participating in the study was 14.2 mm (min=6.2 mm, max=22.6mm). The presence of fracture and chipping were not found statistically significant according to body length. In the CDA evaluation, a statistically significant difference was found between the initial evaluation and at 10-years evaluation in terms of the marginal integrity, anatomical form scores, color surface, and surface roughness. A significant difference was found between the initial evaluation and at 10-years evaluation in terms of patient general satisfaction and chewing efficiency.

**Conclusion:** It was concluded that long-term chipping or fracture in zirconia-ceramic restorations are common clinical complications, but fractures and chipping in zirconia restorations with short and long spans are not affected by pontic length.

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### EVALUATING OF MECHANICAL CHARACTERISTICS OF DIFFERENT THICKNESSES OF LITHIUM DISILICATE GLASS CREAMIC BLOCKS DUE TO REPEATED FIRING FOR GLAZE

**Aim:** The aim of this study is to evaluate the changes in the surface roughness and the changes in the microhardness that may occur as a result of repeated restorations of monolithic lithium disilicate glass ceramic blocks as a result of repeated firings.

**Material and Method:** In our study, IPS e.max CAD blocks (Ivoclar Vivadent AG, Schaan, LICHTENSTEIN) were used as lithium disilicate glass ceramic material. The samples that obtained from IPS e.max CAD blocks were divided into 3 groups as 1 mm, 1.5 mm and 2 mm according to their thickness. There were 144 samples were used for total mechanical analysis.

**Results:** The mechanical properties changes were evaluated after baking the samples 1, 2, 3 and 4 times. The results were evaluated statistically. Sample surfaces were examined by SEM analysis. The effect of repeated firing on surface roughness was evaluated with reference to Ra value in AFM analysis results. XRD analysis was performed to evaluate the change of the restoration thickness and the number of firing at the atomic level. Vickers microhardness analysis was used to evaluate the effect of repeated firing on hardness. In order to measure microhardness, 300 gr load was applied to the sample for 15 seconds.

**Conclusion:** In SEM and AFM analysis, it was seen that the main change after the 3rd firing process and the surface of the porcelain changed very much after the 4th firing. As a result of XRD analysis, it was found that the 4th firing causes phase transformation. It was seen that this result was supported by SEM and AFM analyzes.

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## POSTER PRESENTATION

ID.55

Sevda Miray Soydaş Smail - Mine Helvacıoğlu Özkardeş - Seda Özmen  
Pınar Yılmaz Atalı- Erkut Kahramanoğlu  
Marmara University Faculty of Dentistry

### A Multidisciplinary Approach For An Aesthetic Rehabilitation of Maxillary Anterior Region

**Purpose:** Loss of a single tooth may cause functional and esthetic deficits which can be treated by tooth-supported restoration or single-tooth implant options. In the present study the treatment of the patient with missing upper central incisors was presented according to the esthetic requirements with dental implant.

**Materials and Methods:** The patient who applied to Marmara University Faculty of Dentistry has suffered from missing number 11. The large gap that occurred in the previous field of extraction area required us to a multidisciplinary approach. Edentulous area is planned to be rehabilitate by implant supported restoration and anterior composite restorations. After osseointegration period, prosthetic applications were planned through esthetic parameters. Intraoral scanning was completed with cerec omnicam device. Hybrid abutment and crown which is designed with cerec software have been produced by IPS e.max CAD MT block. First, the ceramic abutment is extraorally luted to a ti-base and then the crown is luted to abutment. The final hybrid abutment and crown structure is screwed into place of the implant in the oral cavity. After ceramic crown placement, the esthetic rehabilitation of the other anterior teeth is completed by direct composite veneers at the same session.

**Results:** Hybrid abutment and crown combines the esthetic and mechanical strength advantages for anterior single implant restorations. This structure includes the advantages of cemented and screwed crowns. At recalls, the restorations were evaluated for esthetic properties, surface texture/finishing/staining, color stability/translucency and anatomic form according to FDI criteria and scored as 1.

**Conclusion:** The patient satisfaction was high at 6th month evaluation. In this case there was no complications after the augmentation process and implant placement. As a result, a multidisciplinary approach in esthetic zone shows successful clinical and radiographic results.

**Keywords:** hybrid abutment-crown, ti-base, digital workflow, direct composite veneers



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ID.81

Hasret Demirci - Ceren Küçük - Rifat Gözneli

Marmara University, Faculty of Dentistry, Department of Prosthodontics

## A Ten-Year Prosthetic Story of A Hemimaxillectomy Patient

**Purpose:** Patients who have maxillofacial defects caused by removal of benign/malign pathologies of mid-face have a negative impact on life quality due to lack of esthetics, phonation and deglutition. Obturator prostheses retained with different retention elements are the most effective way of rehabilitating such cases. This clinical report describes 2 different obturator prosthesis treatment of a hemimaxillectomy patient in 10-years period.

**Case Report:** A 47-year-old female patient reported with a chief complaint of missing teeth in upper jaw. Primary concerns were; poor aesthetics, phonation, deglutition problems and regurgitation of food in nasal cavity. Patient was diagnosed with carcinoma at maxilla for which a hemimaxillectomy was performed followed by postsurgical radiation therapy in 2011. Intraoral examination showed palatal defect on the left side involving hard palate, alveolar ridge and dentition to midline. On non-defect side, some teeth were existing. The patient was rehabilitated with a precision-attachment-retained removable partial obturator prosthesis (RPOP). Ten years later, patient referred to clinic because of pain at remaining teeth that were retaining the old obturator prosthesis. In clinical examination, it was observed that remaining abutment teeth had mobility and caries. Teeth with mobility were extracted and tooth #17 was left as a supporting abutment under denture for retention and stabilization of new denture. The patient was retreated with conus crown supported overdenture obturator prosthesis.

**Results:** The patient had no complaints about aesthetic, function and phonation after prosthetic rehabilitation after 6-months follow-up period, as in first rehabilitation with precision-attachment-retained RPOP in 10-years clinical usage.

**Conclusion:** Such a defect causes a lot of psychological trauma to the patients due to impaired esthetics and functions. Hence, the prosthodontists try to restore the lost form and function of the oral and perioral structures that will enable the patients to gain patients' comfort and confidence.

**Keywords:** Hemimaxillectomy, obturator prosthesis, overdenture, precision attachment, retention. hemimaxillectomy, obturator prosthesis, overdenture, precision attachment, retention

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ID.116

Kader Tatar

Yüzüncüyıl Üniversitesi

Ribaz Kakai - Neslihan Çökük

## Achieving An Aesthetic Smile By Taking Advantage of Digital Technology: A Case Report

**Purpose:** This clinical case describes the prosthetic rehabilitation with digital smile design of a patient who lost self-confidence as a result of an unsuccessful orthodontic treatment.

**Material-method:** A patient with complications such as the defects, devitalization, discoloration in the upper anterior teeth after orthodontic treatment was referred to us. As a result, the patient hesitated to smile. In this case the esthetic restorative plan involved internal bleaching, fiber post and core fabrication followed by ceramic crowns and laminates designed with the CEREC Smile Design Technique was anatomically shaped by using patient's photo.

**Results:** The resultant appearance was highly satisfactory for the patient. The digital smile technique has shown many positive aspects that make easier prosthetic workflow and produce highly aesthetic restorations in a single visit.

**Conclusion:** Using comprehensive approach to treatment planning of esthetic cases and selection criteria for restorations designed with digital smile design technique can help to achieve an ideal smile.

smile design, CAD/CAM, ceramics

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## ID.53

Berk Yüzbaşıoğlu - Bedirhan Dökülmez - Elifnur Güzelce

Sağlık Bilimleri Üniversitesi Hamidiye Diş Hekimliği Fakültesi

### Rehabilitation of anterior discolored restorations with polychromatic feldspathic Cad/Cam Ceramics: CaseReport

**Purpose:** All-ceramic materials are recommended as the first choice in anterior region treatments because they are aesthetically successful. Today, dentists and dental technicians need materials with superior aesthetics, high durability and easy application. Feldspathic polychromatic CAD/CAM blocks have tooth-like structural properties, containing different color layers. Due to these features, they can imitate the natural tooth. In this case report, the replacement of discolored restorations of a patient with old composite restorations in maxillary anterior teeth with polychromatic feldspathic CAD/CAM ceramic laminates is described.

**Material-Method:** A 33-year-old female patient applied to our clinic complaining of discoloration in her anterior teeth. The patient had old composite laminates in her anterior teeth. To ensure a harmonious color match with the old restorations, the restorations on teeth 12-13 were restored with polychromatic CAD/CAM ceramic blocks (VITABLOCS® Feldspathic Vita Zahnfabrik, Bad Sackingen, Germany) using the chair side method, considering the limited time and aesthetic expectation of the patient. After checking the occlusion, aesthetics, marginal fit and proximal contours, laminate veneers were cemented with transparent adhesive cement.

**Conclusion and Results:** As a result of one-year clinical follow-up, no mechanical or aesthetic complications were found in the patient's restorations. Feldspathic polychromatic (VITABLOCS® Feldspathic Vita Zahnfabrik, Bad Sackingen, Germany) restorations are preferred in patients with high aesthetic expectations. This case report demonstrates an alternative type of restoration for discolored maxillary anterior teeth.

Laminate veneer. CAD/CAM, Feldspatik, Anterior estetik, Renklenmev

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## ID.26

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### Cementation Protocol In Laminate Veneer Restorations

**Purpose:** The aim of this study is to explain in detail the adhesion rules, cementation protocol and clinical, practical work of the porcelain laminate veneer (PLV) we produced from lithium disilicate (LDS) (E-max, Ivoclar Vivadent Schaan, Liechtenstein) material to our patient who came to our clinic with aesthetic complaints.

**Case Report:** A 32-year-old female patient came to Istanbul Aydın University Faculty of Dentistry, Department of Prosthodontics, because she was dissatisfied with her old composite restorations in the anterior maxilla due to aesthetic and functional complications (coloration, marginal maladaptation, microleakage, sensitivity). As a result of clinical examination, old, discolored, and long-term composite filling restoration failures were detected in teeth 11-21 of the patient. A PLV was planned for teeth 11-21 by making a vertical preparation of maximum 0.5 mm, slightly rounded, beveled outer edge (minimally invasive preparation technique). As a porcelain material, LDS, a synthetic and acidifiable silicate ceramic reinforced with the addition of LDS crystal, was used as a glass ceramic infrastructure porcelain. In terms of marginal and internal adaptation, the press forming method was chosen. For aesthetics, feldspathic ceramics (Ivoclar Vivadent Schaan, Liechtenstein) were used with the layering technique. Impressions were taken by sandwich technique using double retraction thread (#00) and a-type silicone (elastomeric impression material, polyvinyl siloxane, Kulzer, Japan, Mitsui Chemicals Group). Restorations are cemented with the rules of adhesive cementation according to the type of material and preferred adhesive cement (G-CEM, GC, Tokyo, Japan), adhesion properties and type of tooth surface. Finishing and polishing done.

**Conclusion:** All these features, they require high technical precision during application. Namely; it is necessary to comply with the recommended adhesion procedures, cementation guidelines for each. If the physician does not have a command of the technique of the selected composite resin cement, this is an important and major disadvantage.

**Key words :** Adhesive cementation protocols, laminate veneer

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ID.44

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## Comparison of Flexural Strength of Cobalt-Chromium Dental Alloy Fabricated and Soldered By Different Techniques

**Aim:** Non-noble metal alloys are the most commonly used metal alloys in removable and fixed prosthetic restorations. Cobalt-chromium (Co-Cr) alloys are often preferred due to cheapness, availability, and sufficient strength. The aim of this study is to determine the flexural strengths of Co-Cr infrastructures produced by different methods after gas or laser soldering.

**Materials-methods:** Co-Cr metal infrastructures were fabricated with conventional casting technique, laser sintering, and computer-aided design and computer-aided manufacturing (CAD/CAM) methods. Twenty-four samples (2x4x25cm) were produced for each group. Eight of the samples from each group consisted of control samples (non-soldered), eight of them were soldered by gas soldering, and eight of them were laser soldered. Flexural strength of all samples was measured.

**Results:** Flexural strengths in non-soldered samples were measured, and the higher results were found in the laser sintering, CAD/CAM and conventional casting groups, respectively. The highest flexural strength in casted samples was obtained in the laser soldered samples. The highest flexural strength of the samples produced by laser sintering and CAD/CAM were obtained in non-soldered samples. Gas soldering procedure reduced flexural strength in all samples, and the maximum reduction was found in the samples produced by laser sintering. Laser soldering increased the flexural strength in casted samples while decreasing the strength of laser sintered and CAD/CAM samples. Conclusions: The physical properties of the metal alloys after the soldering process may vary depending on the production method of the metal to be soldered. Particularly, the non-soldered samples have higher flexural strength than the soldered samples, especially since laser sintering provides a more intensive metal infrastructure production. Flexural strengths of all samples soldered, except for samples produced by conventional casting and laser-soldered were found to be lower than those without soldered. Gas soldering decreased flexural strength of the Co-Cr alloys more than laser soldering.

CAD/CAM, Casting, Laser sintering, Soldering



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ID.50

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## Comparison of Vickers Hardness Values of Co-Cr Restorations Manufactured With Different Techniques

### COMPARISON OF VICKERS HARDNESS VALUES OF CO-CR RESTORATIONS

MANUFACTURED WITH DIFFERENT TECHNIQUES **AIM** Nowadays, Co-Cr alloys are widely used dental alloys in fixed and removable prosthetic restorations. Restorations are prepared using these alloys in 3 different methods. These methods are;

- 1-Laser sintering method with Cad-Cam technology
- 2-Method of milling metal blocks with Cad-Cam technology
- 3- The traditional casting method.

The aim of our study is to determine the hardness values of Co-Cr restorations prepared using these three methods together with the hardness values of standard Co-Cr ingots and to compare these values with each other. The results were statistically analyzed using the Oneway ANOVA test and the post hoc Tamhane's T2 test.

### MATERIALS AND METHODS

In this study; For each group, 15 samples with a diameter of 6.5 mm and a height of 4 mm, a total of 60 samples were prepared. The experimental groups are as follows:

Group 1: Co-Cr samples / CAD CAM/Metal Sintering Method  
Group 2: Co-Cr samples /CAD-CAM/ Millings of Metal Blocks

Group 3: Co-Cr samples/ Traditional Casting Method

Group 4: Co-Cr samples/Standart Co-Cr Ingots Before Casting

Vickers hardness measurements were carried out by applying a 100 gr load for 10 seconds.

**RESULTS:** There was a statistically significant difference between the groups in terms of the mean Vickers hardness values ( $p:0.000$ ;  $p<0.05$ ). Post hoc Tamhane's T2 test was performed to determine which group the significance originated from. According to the mean hardness value of Group 1 was significantly higher than Group 2, Group 3 and Group 4 ( $p_{1-2}:0.000$ ;  $p_{1-3}:0.000$ ;  $p_{1-4}:0.031$ ;  $p<0.05$ ). The mean hardness value of Group 4 was significantly higher than Group 2 and Group 3 ( $p_{4-2}:0.000$ ;  $p_{4-3}:0.000$ ;  $p<0.05$ ). The mean hardness of Group 2 was significantly higher than Group 3 ( $p_{2-3}:0.000$ ;  $p<0.05$ ).

**CONCLUSION:** According to the findings of this study; Co-Cr samples prepared by sintering method have the highest hardness value. This is followed by samples prepared from standard Co-Cr ingots before casting. When traditional casting is made using these ingots, it is seen that they cannot maintain their hardness values before casting and they have the lowest hardness values.

Vickers hardness Dental alloys

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ID.10

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## Determination of Therapeutic Position For An Effective Mandibular Advancement In Sleep Apnea

**Purpose:** Obstructive sleep apnea (OSA) is a common life-threatening disease among adults. Mild to moderate cases of OSA can be successfully treated using oral appliances. The mandibular advancement device (MAD) is the most commonly used appliance. The aim of this case report is to describe and manufacture a new and specific closing key, the ideal target position for determining the therapeutic effect of a MAD used for the treatment of a patient with moderate OSA.

**Case report:** A 55-year-old female patient complaints of snoring and sleep apnea. The patient who was diagnosed with moderate OSA (Apnea/Hypopnea Index, AHI = 25) had previously been given continuous positive air pressure (CPAP) therapy. However, our patient could not use the device because she was CPAP intolerant. In the intraoral examination and the result of the polysomnography test (PSG) of the patient, it was seen that the patient with CPAP intolerance was suitable for MAD treatment. Airway measurements were made with lateral cephalometric x-rays from the patient (mandibular plane-hyoid perpendicular 'MP-H: 25' and posterior airway distance 'PAS: 3'). It was scored according to the Epworth sleepiness scale (ESS: 17). A newly designed airway metric guide (jig) was used to record the bite in the optimum mandibular position, which targets the recommended amount of protrusion and the degree of anterior vertical opening (7mm/4mm) for effective treatment of the middle apnea group. Clinical examination was performed with PSG (AHI = 5), cephalometric x-ray (MP-H:1, PAS:6 and ESS:6) 3 months after the delivery of the splint in terms of therapeutic effect and patient compliance.

**Conclusion:** Jig is helpful to clinicians in determining the effective treatment position of the oral appliance. The purpose of jig design and features is accuracy in determining the therapeutic position. Determining the optimum protrusion and vertical position of the mandible using this system is very important in the management of sleep disorders to maintain the airway patency stably throughout the night.

Obstructive sleep apnea, mandibular advancement device

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ID.22

Cansu Ayser Demir

Recep Tayyip Erdoğan Üniversitesi

## Dezenfektan Solüsyonların Akrilik Rezinlerinin Renk Değişimine Etkisi

**Purpose:** Complete and removable partial dentures have been used in the treatment of edentulous patients for many years. The solutions used to disinfect prosthesis can disrupt the surface structure of acrylics. The aim of this study is to improve the color stability of acrylic base materials treated with different denture disinfection solutions. It is examined and compared under in vitro conditions.

**Materials and Methods:** 30 heat polymerizing acrylic resins and 30 autopolymerizing acrylic resins were prepared in 65mm x 10mm x 3mm dimensions in accordance with ISO 1567 standard. The samples were polished using the routine method. The initial L\*, a\*, b\* values of the samples were calibrated before each measurement and measured with a spectrophotometer on a gray background. During the measurements, the fiber optic end of the device was placed perpendicular to the samples and the values obtained were averaged by making three measurements for each sample. The samples were kept in disinfectant solutions (sodium hypochlorite diluted 1: 5, water containing Corega tablets and water with chlorhexidine gluconate) for 15 minutes, 30 minutes, 45 minutes, 60 minutes, 2 hours, 4 hours, 8 hours, 16 hours, 24 hours, 48 hours and 72 hours. After they were rinsed with water and dried, the color of the samples were measured, and then  $\Delta E^*$  values calculated again.

**Results:** Data were evaluated statistically using two-way analysis of variance (ANOVA) and Tukey HSD test. It was determined statistically that the immersing solutions ( $p < 0.001$ ), immerse time ( $p < 0.001$ ) and acrylic resin type ( $p < 0.05$ ) were significant.

**Conclusions:** Color stability of the acrylic base is extremely important for patients to use their prosthesis with the same satisfaction for a long time.

**Key Words:** Disinfectant solutions, acrylic resin, color stability

**INTRODUCTION:** Acrylic resins are polymers obtained from acrylic acid and its derivatives. There are common usage areas in dentistry such as full dentures, removable partial dentures, tooth or implant supported overdentures, surgical guides.<sup>1</sup> In dentistry, polymethylmethacrylate (PMMA), which is the methyl ester of methacrylic acid obtained by the polymerization of methylmethacrylate, is generally preferred.<sup>2</sup> It is also very important to meet the patient's aesthetic expectations. Color is one of the important elements of aesthetics.<sup>3</sup> It is important to evaluate the color changes that can occur during the usage as well as the beginning color of the prosthesis. <sup>4</sup> Although the color change is noticeable with the eye, it may be misleading when evaluating. Visual assessments are not used in studies as they give subjective results. Color measuring devices eliminate the difficulties of the color of the color. Lens measurements can be made, measurements are repeatable and reliable results are obtained.<sup>5</sup> In the spectrophotometer, red, green and blue colors are analyzed using three color filters with the same features as eye receptors. Lens results are obtained using color coordinate systems in measurements.<sup>6</sup> Mechanical cleaning methods are more difficult especially for the older patients to remove the plaques accumulated in the prosthesis and the microbiological activity is less than chemical methods.

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For this reason, chemical cleaning methods are often recommended to patients. Leaving the prosthesis in solution is the most common chemical cleaning method.

Alkaline peroxides are available in powder or tablet form. When it dissolves in water, the perborate in the content of it sets off peroxide solution with reacting. Oxygen is released and this oxygen mechanically removes the deposits and removes them from the prosthesis.<sup>7</sup> Solutions used during the disinfection of dentures may have different effects on acrylic resins.<sup>8</sup> In this study, the effect of different disinfectants on the color of acrylic resins was investigated. The H0 hypothesis of the study is that the cleaning solutions used will change the color of the acrylic resins, and the H1 hypothesis is that this change will increase with the duration.

**MATERIAL and METHOD:** In this study, 30 heat-cured and 30 autopolymerizing acrylic resins (Table 1) samples were prepared in accordance with ISO standards with dimensions of 65mm × 10mm × 3mm. These specimens were sanded and polished with silicon carbide sandpaper as routinely used.

Table 1. Acrylic resin materials used in the study

Acrylic Resins	Brand	Manufacturer
Heat-polymerized	Imicryl IQ- 15	Imicryl, Konya -Türkiye
Autopolymerized	Imicryl SC	Imicryl, Konya -Türkiye

Prepared samples were placed in a closed box to eliminate the risk of possible contamination that could affect the measurements. The first color measurements of the numbered samples were made with a spectrophotometer device (VITA Easyshade Advance; VITA Zahnfabrik, Bad Säckingen, Germany) (Figure 1). The device was calibrated before measuring each sample in accordance with the manufacturer's instructions. Color measurements were made on a neutral gray background, from the center of each sample and repeated three times. CIE L\*a\*b\* values obtained after the measurements were recorded.



Figure 1. Device used for color measurement of samples



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The color measurements of the samples, which were kept in different disinfectant solutions (Table 2) for 15 minutes, 30 minutes, 45 minutes, 60 minutes, 2 hours, 4 hours, 8 hours, 16 hours, 24 hours, 48 hours and 72 hours (Table 2), were rinsed with water and, was made again after drying.

Table 2. Disinfectant solutions used in the study

Solutions	Brand	Manufacturer
Sodium Hypochlorite diluted  1:5	BRTR	BRTR
Denture Cleaner Tablet	Corega	GSK
Water with 2% Chlorhexidine  Gluconate	Saver	Saver

CIEDE2000 color difference ( $\Delta E_{00}$ ) formula ( $\Delta E_{00} = [(\Delta L^*/K_L)^2 + (\Delta a^*/K_A)^2 + (\Delta b^*/K_B)^2 + R_T(\Delta C^*/K_C + \Delta H^*/K_H)]^2$ ) was used to evaluate the color changes in the samples.

In this study, the parametric factors of the CIEDE2000 (KL: KC: KH:) color formula were set to 1. In addition, the other color parameters  $\Delta C'$ ,  $\Delta H'$  and  $\Delta L_2'$  were calculated.

Statistical analyzes were performed using the IBM SPSS (Statistics Version 26.0) package program. In order to determine the statistical methods to be used, whether the data are suitable for normal distribution or not was examined by Kolmogorov Smirnov and Shapiro Wilk tests, which are the most frequently used methods in the literature. Factorial analysis of variance (ANOVA) was used to evaluate the data, as it was determined that all the data were in accordance with the normal distribution as a result of the tests performed. Differences between groups were evaluated with Tukey's multiple comparison and t-test. All statistical analyzes were performed at 95% confidence interval ( $\alpha=0.05$ ).

**RESULTS:** As a result of the analysis of variance; It was determined that the solution and the holding time on the color change ( $\Delta E_{00}$ ) were very significant ( $p<0.001$ ), and the acrylic resin type was significant ( $p<0.05$ ).

Table 3. Variance analysis table of  $\Delta E$  values

\* indicates significant difference



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Table 3. Variance analysis table of  $\Delta E$  values  
\* indicates significant difference

Factors	Sum of squares	df	Mean of squares	F	p-value
Time	4.16	10	0.42	16.83	<.001*
Arylic	0.36	1	0.36	5.37	0.025*
Solution	3.64	2	1.82	27.19	<.001*
Time * Akrilik	1.18	10	0.12	4.76	<.001*
Zaman * Solution	7.64	20	0.38	15.47	<.001*
Acrylic * Solution	0.11	2	0.05	0.79	0.46
Time * Acrylic * Solution	1.43	20	0.07	2.89	<.001*

The mean and standard deviation results of  $\Delta E$  values are shown in Table 4.

Duration	ACRYLIC RESINS											
	Heat polymerized						Autopolymerized					
	Corega		Chlorhexidine Gluconate		Sodium Hypochlorite		Corega		Chlorhexidine Gluconate		Sodium Hypochlorite	
	Average	Standard Deviation	Average	Standard Deviation	Average	Standard Deviation	Average	Standard Deviation	Average	Standard Deviation	Average	Standard Deviation
First- 15min	0.2 <sup>AB,a</sup>	±0.11	0.4 <sup>A,a</sup>	±0.23	0.45 <sup>A,b</sup>	±0.14	0.27 <sup>A,ab</sup>	±0.13	0.27 <sup>A,ab</sup>	±0.15	0.15 <sup>A,a</sup>	±0.08
15 min-30min	0.29 <sup>AB,a</sup>	±0.26	0.25 <sup>A,a</sup>	±0.14	0.25 <sup>A,a</sup>	±0.16	0.15 <sup>A,a</sup>	±0.12	0.19 <sup>A,a</sup>	±0.13	0.21 <sup>A,a</sup>	±0.13
30 min-45min	0.2 <sup>AB,a</sup>	±0.17	0.27 <sup>A,a</sup>	±0.16	0.31 <sup>A,a</sup>	±0.13	0.14 <sup>A,a</sup>	±0.13	0.22 <sup>A,a</sup>	±0.2	0.15 <sup>A,a</sup>	±0.1
45 min-60min	0.36 <sup>B,b</sup>	±0.11	0.15 <sup>A,ab</sup>	±0.08	0.23 <sup>A,ab</sup>	±0.24	0.14 <sup>A,a</sup>	±0.09	0.2 <sup>A,ab</sup>	±0.18	0.19 <sup>A,ab</sup>	±0.16
60 min- 2 hours	0.23 <sup>AB,a</sup>	±0.11	0.25 <sup>A,a</sup>	±0.21	1.04 <sup>B,c</sup>	±0.22	0.14 <sup>A,a</sup>	±0.09	0.2 <sup>A,a</sup>	±0.15	0.64 <sup>B,b</sup>	±0.15
2 hours- 4 hours	0.24 <sup>AB,a</sup>	±0.11	0.32 <sup>A,a</sup>	±0.16	1.09 <sup>B,c</sup>	±0.25	0.19 <sup>A,a</sup>	±0.12	0.16 <sup>A,a</sup>	±0.14	0.71 <sup>B,b</sup>	±0.13
4 hours- 8 hours	0.17 <sup>A,a</sup>	±0.08	0.23 <sup>A,a</sup>	±0.15	0.3 <sup>A,a</sup>	±0.15	0.28 <sup>A,a</sup>	±0.17	0.24 <sup>A,a</sup>	±0.16	0.36 <sup>A,a</sup>	±0.2
8 hours- 16 hours	0.13 <sup>A,a</sup>	±0.06	0.28 <sup>A,ab</sup>	±0.15	0.27 <sup>A,ab</sup>	±0.18	0.13 <sup>A,a</sup>	±0.09	0.2 <sup>A,ab</sup>	±0.13	0.36 <sup>A,b</sup>	±0.24
16 hours- 24 hours	0.13 <sup>AB,a</sup>	±0.07	0.2 <sup>A,a</sup>	±0.09	0.24 <sup>A,a</sup>	±0.22	0.23 <sup>A,a</sup>	±0.14	0.17 <sup>A,a</sup>	±0.09	0.23 <sup>A,a</sup>	±0.22
24 hours- 46 hours	0.13 <sup>AB,a</sup>	±0.07	0.2 <sup>A,a</sup>	±0.09	0.24 <sup>A,a</sup>	±0.22	0.23 <sup>A,a</sup>	±0.14	0.17 <sup>A,a</sup>	±0.09	0.23 <sup>A,a</sup>	±0.22
46 hours- 72 hours	0.29 <sup>AB,a</sup>	±0.11	0.2 <sup>A,a</sup>	±0.13	0.26 <sup>A,a</sup>	±0.11	0.17 <sup>A,a</sup>	±0.08	0.33 <sup>A,a</sup>	±0.17	0.42 <sup>A,a</sup>	±0.6

As a result of the multiple comparison (Tukey) test;

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- Significantly higher  $\Delta E$  values ( $p < 0.05$ ) were detected at 60th minute and 4th hour in autopolymerizing acrylic resin specimens treated with sodium hypochlorite.
- In the first measurements, heat-cured acrylic resin specimens with sodium hypochlorite had significantly higher  $\Delta E$  values than the autopolymerizing acrylic resin specimens with sodium hypochlorite applied and corega and chlorhexidine gluconate-treated heat-polymerized acrylic resin specimens ( $p < 0.05$ ), while no significant difference was found between the other groups ( $p > 0.05$ ). There was no significant difference in acrylic resin and solution type at 15th and 30th minutes and also at 4th, 16th, 24th and 48th hours ( $p > 0.05$ ). Heat-cured acrylic resin samples applied to corega at the 45th minute showed a significantly higher  $\Delta E$  value than the autopolymerizing acrylic resin samples applied to corega ( $p < 0.05$ ), while there was no significant difference between the other groups ( $p > 0.05$ ). Higher  $\Delta E$  values were detected in heat-polymerized acrylic resin samples applied with sodium hypochlorite at 60 minutes and at 2 hours compared to all other groups ( $p < 0.05$ ), while autopolymerizing acrylic samples treated with sodium hypochlorite had higher  $\Delta E$  values than all other groups ( $p < 0.05$ ). Autopolymerizing acrylic resin samples applied with sodium hypochlorite at the 8th hour showed higher  $\Delta E$  value than corega applied autopolymerizing acrylic resin samples ( $p < 0.05$ ), while there was no significant difference between the other groups ( $p > 0.05$ ).

Multi-exposure test results of disinfectant solutions used are shown in Table 5.

Table 5. Multiple comparison test results of  $\Delta E$  values of disinfectant solutions

Solution	Solution	Mean difference	SE	df	t	p-tukey
Corega	Chlorhexidine gluconate	-0.03	0.03	49	-1.05	0.549
Corega	Sodium hypochlorite	-0.18	0.03	49	-6.82	<.001*
Chlorhexidine gluconate	Sodium hypochlorite	-0.15	0.03	49	-5.88	<.001*

While no significant difference was observed between the color change of the samples kept in corega and the samples kept in chlorhexidine gluconate ( $p > 0.05$ ), significantly higher  $\Delta E$  values were determined in the samples kept in sodium hypochlorite than both in corega and chlorhexidine gluconate ( $p < 0.05$ ).

As a result of the t test used to compare the  $\Delta E$  values of acrylic resins; It was determined that the samples prepared from heat polymerized acrylic resin showed lower  $\Delta E$  values ( $p < 0.05$ ) than the samples prepared from autopolymerized acrylic resin.

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**DISCUSSION:** Among the most important causes of color change in acrylic resins are the errors that occur during the preparation and polymerization of acrylic paste. While preparing the acrylic paste, attention should be paid to the liquid and powder ratio, and the pressure, temperature and time necessary for polymerization should be appropriate. In the setting of paying attention to thistightening, porosity occurs in the acrylic mass. This porosity causes color change by holding the dyestuffs in the mouth. In addition, insufficient polishing of acrylic resins causes faster color change.<sup>9</sup>

Cleaning preparations in effervescent tablet form usually contain sodium bicarbonate or sodium perborate. With their dissolution in water, the sodium perborate in their structure decomposes to form an alkaline peroxide solution. This peroxide solution releases oxygen and mechanically removes debris from the denture surface. It has been reported that this effect may cause color change by causing deterioration in the polymer structure of acrylic resins.<sup>11</sup> One of the disinfectant solutions used in this study is the Corega denture cleaner tablet, which is widely used in our country to examine this effect.

Sato et al.<sup>12</sup> investigated the 30-day color change effect of Corega tablet solution on the heat-cured Lucitone brand acrylic resin material, and they could not find a significant difference compared to the control group.

Arruda et al.<sup>13</sup> they looked at the color change effect of 0.5% sodium hypochlorite and Corega tablet solutions on a heat-cured acrylic resin (Lucitone) over five years. They found that the color change in the samples kept in Corega tablet solution showed a statistically significant difference from the color change in the control group, which was kept in distilled water and 0.5% sodium hypochlorite solution.

Durkan et al.<sup>14</sup> In their study, they kept two heat-cured acrylic resins (Paladent and Rodex) in Corega and Protefix solutions for 15 minutes a day, 20 days, and examined the color difference in acrylic resin samples after 20 days. They determined that the samples prepared from Rodex brand acrylic resin and kept in Protefix solution showed statistically significantly different color changes from the samples in the control group kept in water. They could not find a significant difference in the color change of the samples kept in Corega tablet solution compared to the samples in the control group.

Another solution used as a denture disinfectant in this study is sodium hypochlorite. Chlorine compounds oxidize cellular factors and kill fungi and bacteria. Hypochlorites are the oldest and most widely used chlorine compound as a chemical disinfectant. Hypochlorites are easy to use, cheap and fast acting.<sup>15</sup>

Dikbas et al.<sup>10</sup> In their study, they did not detect any color change at the end of 8 hours in the prosthesis kept in the effervescent tablet for 15 minutes. 1% sodium hypochlorite solution can eliminate microorganisms in 10 minutes. However, it has been stated that 1-2.5% solutions of sodium hypochlorite should not be used for more than 2-3 minutes, since it has a bleaching effect on the denture base material.

Sousa Porta et al.<sup>16</sup> In their study with acrylic resin polymerized by heat, the prostheses used by the patients for two years were kept in 0.5% sodium hypochlorite solution for 3 minutes every day. They repeated this process for 90 days. The color change in the prosthesis was examined after 90 days. Although color change occurred in all prostheses, they saw that the difference was not statistically significant.

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Acrylic resin samples were used in 5.25% sodium hypochlorite by Rudd et al.<sup>17</sup> 15 h, by Mcneme et al. 18 72 hours. However, they did not observe any significant color change after waiting. In this study, the control group was not used, since the color of acrylic resins before being placed in disinfectant solutions was compared with the color change depending on the time. While no significant difference was observed between the color change of the samples kept in corega and the samples kept in chlorhexidine gluconate, significantly higher  $\Delta E$  values were determined in the samples kept in sodium hypochlorite than in the samples kept in both corega and chlorhexidine gluconate. Therefore, we think that sodium hypochlorite should not be recommended to patients for disinfection. Since autopolymerizing acrylic resins are more porous, they showed more color change in all disinfectant solutions. Celebi et al.<sup>19</sup> In their study, they observed that solutions such as distilled water, tea, coffee, and cola cause color change over time in heat-polymerized acrylic resins used in the manufacture of removable dentures. It was observed that the most color change in the early period was in the acrylic resin samples kept in the coffee solution. It was determined that the color changes in tea and cola solutions were close to each other. Aysan et al.<sup>20</sup> They stated that the color change in the polyamide-based base material (Deflex) after contact with the liquids taken with the diet is more than the PMMA-based base material. They found that the color change increased as the residence time increased in the solutions. They determined that the most color change in pedestal materials occurred after treatment with tea. Porwal et al.<sup>21</sup> In their study, they kept 3 different acrylic base materials (conventional thermosetting acrylic resin, high strength resin and polyamide base resin) in sodium perborate and sodium hypochlorite solutions for 180 days. All tested base materials showed significant color change. The color change in the polyamide base resin was found to be significantly higher compared to other acrylic resin materials. Polyamide base resin showed more color change in sodium perborate solution compared to sodium hypochlorite solution. The limitations of this study may be that the study was conducted under in vitro conditions, the inability to fully reflect the oral conditions, and the fact that the prostheses are not exposed to saliva and more staining foods and beverages.

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Fatma Evin

## Digital Aesthetic Rehabilitation of Missing Teeth On Anterior Region: Case Report

**Purpose:** All ceramic implant-supported crowns are common treatment options to mimic the translucent properties of natural teeth for the rehabilitation of missing teeth. Advances in computer aided design/computer aided manufacturing (CAD/CAM), made it possible to extend the application of all-ceramic materials. In this case, rehabilitation of missing maxillary central and lateral teeth with implant-supported all ceramic crown restorations fabricated by CAD/CAM system is reported.

**Case-report:** A 19-year-old male patient referred to Marmara University, Faculty of Dentistry, Department of Prosthodontics with a complaint of non-aesthetic appearance in the anterior region. In intra oral and radiographic examination, loss of maxillary central and lateral teeth were observed. Treatment alternatives were explained to the patient. After orthodontic treatment were completed, two implants (AnyOne, MegaGen Implant, South Korea) were applied to the anterior maxilla. After osseointegration, the scan-bodies were placed on Ti-bases (ZrGEN (C-type) MegaGen, South Korea) and digital impression were made. Implant-supported hybrid abutment with lithium disilicate glass ceramic (IPS e-max, Ivoclar Vivadent, Liechtenstein) were fabricated by CAD/CAM system and then cemented on Ti-bases permanently. Afterwards all ceramic crowns were fabricated by CAD/CAM system and delivered to the patient in the same appointment.

**Results:** The patient had no complaints about aesthetic, function and phonation after prosthetic rehabilitation after 6-months follow up period.

**Conclusion:** Fabrication of all ceramic implant-supported restorations by digital technology is more comfortable and predictable option compared the conventional methods.

digital, hybrid abutment crown, implant-supported all ceramic restorations.

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Müberra Güney - Zeynep Yeşil Duymuş - Şeyma Yıldız

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## EXAMINATION OF THE PROSTHETIC TREATMENT NEEDS OF PATIENTS IN THE EASTERN BLACK SEA REGION

**ABSTRACT:** Prosthesis literally means the artificial replacement of any defect or organ or tissue that cannot fulfill its function in the body. The treatment method according to the quantity, location and condition of the surrounding tissues: It can be done with fixed restorations, partial dentures and full dentures. With the development of implantology, prostheses can be made by taking support from implants.

In this study, it was aimed to retrospectively examine the prosthetic treatment needs according to age and gender of patients who applied to the Department of Prosthetic Dentistry, Faculty of Dentistry, at Recep Tayyip Erdogan University. 100 individuals over the age of 18 were included in the study and the Informed Voluntary Consent Form (IVCF) and Volunteer Follow-up Form (VFF) were prepared for the study. The obtained results were calculated as a percentage according to gender and age.

When the data obtained were evaluated, it was determined that the prosthesis type with the highest rate among the groups formed and all planned prosthesis types was fixed prosthesis. In addition, it was determined that the rate of using prostheses in women was higher than in men. Keywords: Eastern Black Sea Region, need for prosthetic treatment, fixed prosthesis, removable prosthesis

**INTRODUCTION:** The main purpose of restorations is to replace missing teeth. In addition, restorations can be applied when it is necessary to restore teeth with severely damaged clinical crowns or to make aesthetic changes in color, form or contour. According to the Dictionary of Prosthetic Terms (2005), restoration is a broad term used for any material or prosthesis that restores or replaces lost tooth structure, teeth or oral tissues. Prosthetic restorations are divided into 'fixed dentures' and 'removable dentures'. In addition, removable dentures are classified as 'removable partial dentures' and 'complete dentures' depending on the presence and/or absence of teeth. In general, with the development of natural teeth, tooth roots and implantology, implants act as abutments or retainers for restorations.<sup>1</sup>

Epidemiology is the science that reveals the health status of societies, the distribution of their diseases, the causes of these distributions and problems and the methods of protection from them. Therefore, epidemiology has an important place in the planning of health services.<sup>2,3</sup> The scarcity of epidemiological studies that reveal the general profile of the society in our country makes it difficult to plan the health services to be provided. A large number of tooth loss makes prosthetic treatment mandatory for individuals. Knowing which age, gender and education individuals need which prosthetic treatment is of great importance in terms of planning health services and dentistry education.<sup>4</sup>

This study was conducted to investigate the relationship between the appropriate prosthesis type and age and gender distributions in patients requiring prosthetic treatment.

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**MATERIALS AND METHODS:** As a research group; Between September and November 2020, a total of 100 patients, 45 men and 55 women over the age of 18, who applied to the Department of Prosthetic Dentistry of the Faculty of Dentistry of Recep Tayyip Erdogan University with the need for prosthetic treatment, and whose oral preparations were completed with periapical-panoramic films, participated. The patients included in the study were divided into three different age groups as <45 years old, 46-65 years old and >65 years old groups.

Informed Consent Form (ICF) and Volunteer Follow-up Form (VFF) were prepared for the study. (Figure 1-2) Patients who applied to the clinic for treatment were given both written and verbal information about the study by giving ICF. After the approval of the patients, the examination process was performed and the results were transferred to the VFF.

Planned prosthetic treatments are classified as fixed prosthesis, removable partial denture, full denture, fixed prosthesis on implant, removable prosthesis on implant. The results obtained were calculated as a percentage by gender and age.

Figure 1: Informed Consent Form (ICF)

	RECEP TAYYIP ERDOĞAN ÜNİVERSİTESİ DIŞ HEKİMLİĞİ FAKÜLTESİ  BİLGİLENDİRİLMİŞ GÖNÜLLÜ OLUR FORMU	Doküman No: Yayın Tarihi: Revizyon No: Revizyon Tarihi:
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	RECEP TAYYIP ERDOĞAN ÜNİVERSİTESİ DIŞ HEKİMLİĞİ FAKÜLTESİ  BİLGİLENDİRİLMİŞ GÖNÜLLÜ OLUR FORMU	Doküman No: Yayın Tarihi: Revizyon No: Revizyon Tarihi:
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#### **Bilgilendirme Bölümü:**

Sayın gönüllü,

Bu çalışma, iki farklı bölgedeki hastaların yaşa ve cinsiyete göre protetik tedavi ihtiyaçlarının belirlenmesine yöneliktir.

Protez anlam olarak vücuttaki herhangi bir eksikliğin veya işlevini tam olarak yerine getiremeyen organ veya dokunun yapay olarak yerine konulması demektir. Diş Hekimliğinde Protetik Diş Tedavisi, eksik veya kaybedilmiş dişlerin yerine yapay olarak yenilerinin getirilmesi anlamına gelmektedir. Diş eksikliğinin sayısı, konumu ve çevre dokuların durumuna göre tedavi şekli: sabit restorasyonlar, bölümlü protezler ve tam protezler ile yapılabilmektedir. İmplantolojinin gelişmesiyle beraber implantlardan da destek alınarak protezler yapılabilmektedir. Yapılan tüm restorasyonlarda amaç, hastaya kaybettiği veya eksikliğini duyduğu fonksiyon, fonasyon ve estetiği yerine getirmektir.

#### **Yöntem:**

Bu çalışma da, (Rize) Recep Tayyip Erdoğan Üniversitesi Diş Hekimliği Fakültesi Protetik Diş Tedavisi bölümüne protetik tedavi amacıyla başvuran hastaların tedavi ihtiyaçlarının belirlenmesi planlanmaktadır. Başvuran hastaların öncelikli olarak muayenesi yapıp muayene sonuçları kaydedilecektir. Hastalara girişimsel işlemler, ilaçlı tedaviler vs. uygulanmayacaktır. Başvuran hastaların sadece muayenesi yapıp elde edilen kayıtların tedavi ihtiyacı açısından istatistiksel değerlendirilmesi yapılacaktır. Elde edilen veriler yayınlanacaktır.

Yayınlanması sırasında sizinle ilgili herhangi bir bilgi üçüncü kişilerle paylaşılmayacaktır. Bu çalışmaya katılmakta tamamen özgürsünüz. İstedığınız zaman, bir cezaya veya yaptırma maruz kalmaksızın ve hiçbir hakkınızı kaybetmeksizin, araştırmaya katılmayı reddedebilir veya araştırmadan çekilebilirsiniz.

#### **Gönüllü Oluru Bölümü:**

"Bilgilendirilmiş Gönüllü Olur Formundaki tüm açıklamaları okudum. Bana, konusu ve amacı belirtilen araştırma ile ilgili yazılı ve sözlü açıklama, aşağıda adı belirtilen kişi tarafından yapıldı. Araştırmaya gönüllü olarak katıldığımı, istediğim zaman gerekçeli veya gerekçesiz olarak araştırmadan ayrılabileceğimi ve kendi isteğime bakılmaksızın araştırmacı tarafından araştırma dışı bırakılabileceğimi biliyorum.

Söz konusu araştırmaya, hiçbir baskı ve zorlama olmaksızın kendi rızamla katılmayı kabul ediyorum".

Gönüllünün Adı-Soyadı :

İmzası :

Tarih :

Açıklamaları Yapan Kişinin Adı-Soyadı :

İmzası :

Tarih :

Gerekliyse Olur İşlemine Tanık Olan Kişinin Adı-Soyadı :

İmzası :

Tarih :

Gerekliyse Yasal Temsilcinin Adı-Soyadı :

İmzası :

Tarih :



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Figure 2: Volunteer Follow-up Form (VFF)

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	RECEP TAYYIP ERDOĞAN ÜNİVERSİTESİ DİŞ HEKİMLİĞİ FAKÜLTESİ GÖNÜLLÜ TAKİP FORMU	Doküman No: Yayın Tarihi: Revizyon No: Revizyon Tarihi:

**OLGU:**

**YAŞ:**

**CİNSİYET:**

**Yapılacak işlemler/ İhtiyaç duyulan protez tipi;**

8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8
8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8

(! Eksik dişler ilgili grafik üzerinde işaretlenmeli)

**RESULTS:** The distribution of the need for prosthesis according to age groups is given in Table 1, and the distribution by gender is given in Table 2.

When the distribution of the need for prosthesis according to age groups is examined; fixed prosthesis of the prosthesis type with the highest rate among all age groups and all planned prosthesis types; It was determined that the prosthesis type with the lowest rate was the prosthesis on the implant. As age progresses, the ratio of fixed prosthesis and fixed prosthesis on implant decreases; It was determined that the rate of removable partial dentures, full dentures and removable dentures on implants increased. When the distribution of the need for prosthesis according to gender is examined; It was determined that the prosthesis type with the highest rate among the groups was fixed prosthesis, but the rate of fixed prosthesis was similar in female and male patients.

It was found that removable partial dentures and removable prosthesis on implant were more common in female patients than in male patients; In male patients, it was determined that full denture and fixed prosthesis on implant were more common than female patients.

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**Table 1:** Distribution of prosthesis need by age groups

Prosthesis Type	Patient Number	Fixed Prosthesis		Removable Partial Prosthesis		Complete Dentures		İmplant Supported Fixed Prosthesis		İmplant Supported Removable Prosthesis		Total
		Sayı	%	Sayı	%	Sayı	%	Sayı	%	Sayı	%	
		Age										
<45	22	20	<b>74.07</b>	1	<b>3.7</b>	1	<b>3.7</b>	5	<b>18.51</b>	-	-	27
46-65	54	36	<b>39.56</b>	21	<b>23.07</b>	20	<b>21.97</b>	7	<b>7.69</b>	7	<b>7.69</b>	91
>65	24	14	<b>30.43</b>	11	<b>23.91</b>	13	<b>28.26</b>	1	<b>2.17</b>	7	<b>15.21</b>	46
Total	100	70	<b>42.68</b>	33	<b>20.12</b>	34	<b>20.73</b>	13	<b>7.92</b>	14	<b>8.53</b>	164

**Table 2:** Distribution of prosthesis need by gender

Age	Patient Number	Fixed Prosthesis		Removable Partial Prosthesis		Complete Dentures		İmplant Supported Fixed Prosthesis		İmplant Supported Removable Prosthesis		Total
		Sayı	%	Sayı	%	Sayı	%	Sayı	%	Sayı	%	
		Gender										
Female	55	42	<b>42.85</b>	24	<b>24.48</b>	17	<b>17.34</b>	6	<b>6.12</b>	9	<b>9.18</b>	98
Male	45	28	<b>42.42</b>	9	<b>13.63</b>	17	<b>25.75</b>	7	<b>10.60</b>	5	<b>7.57</b>	66

**DISCUSSION:** When the researches are examined, it is observed that the data, especially tooth loss in our country, do not follow a parallel course in developed countries, and dental diseases are still one of the most common public health problems.<sup>5-8</sup>

In the studies, it was determined that there was no standardization in data collection, and that all variables and regional changes were not adequately examined. In our country, the inadequacy and almost no implementation of preventive medicine protocols make prosthetic treatment obligatory in every age group. Determining the level of needs will enable the right planning of the health services to be provided, and the determination of how progress has been made by comparing it with future studies.

Özperk and Yazıcıoğlu<sup>9</sup> stated that it is obligatory to determine the health institutions and health personnel needed in the society and the number of existing patients, and that epidemiological studies are important in the planning of health services. In addition, they emphasized the importance of age groups, gender, education and region of residence in oral health epidemiology. In their study, Arpak et al.<sup>10</sup> found that 47.90% complete dentures, 13.02% removable partial dentures, 19.20% fixed prostheses in 453 individuals over 65 years of age. In our study, similar to this study, the rate of complete dentures in individuals over the age of 65 is higher than that of removable partial dentures. However, the fixed prosthesis rate has the highest level with 30.43%.



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This difference may be due to the design of the study and the different number of patients included in the study. In addition, it should be considered that the results of this study were obtained from the planning of individuals who need prosthetic treatment.

According to the study of Saydam et al.<sup>11</sup>, the need for complete dentures was found to be significantly different and higher in individuals over 45 years of age compared to lower age groups. Bulucu et al.<sup>12</sup> in their study, stated that more fixed prostheses are needed in young individuals and more removable prostheses are needed in older individuals, and that the individual transitions from fixed prosthesis to removable prosthesis as age progresses.

According to with these results, it can be said that there are differences in the need for prosthetic treatment and the type of prosthesis used after a certain age. These differences can be observed even between regions. For example, in the study of Ceylan et al.<sup>13</sup>, it was stated that the need for removable prosthesis in individuals aged 40 and over is higher in Erzurum region compared to Samsun.

Surgical procedures with implant treatment equipment may be contraindicated with systemic problems.<sup>14</sup> In addition, some patients may not want this treatment because they are afraid of implant surgery. In implant applications, the treatment period is longer. The waiting period for osseointegration varies between 2-4 months depending on the case. The patient may have to go through this process without using any prosthesis. In addition to these, insufficient amount of bone and high cost may not allow the application of implant treatment.<sup>15</sup>

These disadvantages can be attributed to the low rate of implant-supported prostheses obtained in our study compared to conventional prostheses.

According to the 2019 results of the address-based population registration system; 50.2% of the population in our country is male and 49.8% is female.<sup>16</sup>

The rate of women in our study group is 55%. This may be related to the earlier eruption of teeth in women, longer exposure to caries, socioeconomic factors, and higher incidence of tooth loss due to reasons such as osteoporosis, and the higher rate of hospital admissions for female patients.<sup>17-19</sup> In this direction, it can be expected that the use of prostheses in women will be higher.

As a general observation, in our study, it was determined that the rate of using prostheses in women was higher than in men. In addition, it has been determined that the rate of complete edentulism in males is higher than in females. However, there are studies in the literature stating that gender is not effective on edentulousness and prosthesis type.<sup>20,21</sup>

**CONCLUSION:** It has been determined that the rate of fixed prosthesis is higher in the planning of the patients who applied to the Department of Prosthodontics, Faculty of Dentistry, Recep Tayyip Erdogan University for treatment purposes. It has been determined that this situation is caused by the necessity of using the existing teeth as abutment and making fixed prosthesis in addition to the removable prosthesis in most of the patients who are planned to have removable partial dentures. In addition, it has been observed that the need for removable prosthesis increases with age. We believe that making these evaluations with larger patient groups with different variables can produce more detailed results.

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Ayşe Lengerli - Nuray Çapa

YEDİTEPE ÜNİVERSİTESİ - İSTANBUL

## Evaluation of Different Designed Dental Models Printed With Stereolithography Printer

**Purpose:** Aim of this study was to compare the trueness of different designed dental models, printed with stereolithography (SLA) dental printer. **Methods:** A maxillary fantom model was scanned using a 3D-scanner to create the Standard Tessellation Language (STL) file as a reference scan. The reference STL file was exported to Meshmixer program to design two different types of models: a hollow model design with open base and a hollow model design with closed base. Both models have 2-mm external shell thickness and a bar. Each type of design was printed to produce 10 models with SLA-printer. They were scanned with the same 3D-scanner to create STL files. All STL files were superimposed with the reference STL file via surface matching software (Geomagic Control X). To measure the differences between the reference models and printed models, some distances were created: intercanine-buccal-cusp distance (B1), interfirst-premolar-buccal-cusp distance (B2) and palatinal-cusp distance (P1), intersecond-premolar-buccal-cusp distance (B3) and palatinal-cusp distance (P2), interfirst-molar-mesiobuccal-cusp distance (B4) and distopalatinal-cusp distance (P3), intersecond-molar-mesiobuccal-cusp distance (B5) and distopalatinal-cusp distance (P4). Statistical analyses were conducted by one-way ANOVA, Mann-Whitney U test, Kruskal-Wallis test ( $p < 0,05$ ).

**Results:** There was a statistically significant difference between B3, P1, P2 and P4 when comparing open and closed base models ( $p < 0,05$ ). In closed base models, B3 and P4 distances are greater than open base models. P1 and P2 distances are less in open base models. In open base models, B1 distance is greater than B3 and B5 distances and there is no statistical significance in palatinal cusp distances. In closed base models P4 distance is greater than P2 and P3 distances and there is no statistical significance in buccal cusp distances.

**Conclusion:** Trueness of SLA printed models are affected by the base part: open or closed. Open base models have greater trueness at posterior region in buccal and palatinal areas. Closed base models have greater trueness at anterior region in palatinal areas.

3D printer, model design, SLA printer

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Reem Nsalif

RECEP TAYYİP ERDOĞAN ÜNİVERSİTESİ - RİZE

## **Evaluation of Fracture Resistance For Auto Polymerizing Acrylic Resin Reinforced With Different Reinforcement Materials; An InVitro Study**

The maximum goal of any denture repair is to restore the main strength of the denture and to avoid further fracture. This study investigated the ability of self-curing acrylic resin to be strength and defl ection of repaired acrylic resin joints reinforced with various reinforcement materials to resist fracture

Denture base material, Flexural strength, Glass fibers

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Serra Oğuz Ahmet

Medipol University, School of Dentistry

## Fabrication of An All-On-Four Prosthesis By Full Digital Workflow

**Purpose:** The aim of this clinical report is to describe the use of the intraoral digital impression system as a reliable technique to record the entire procedure of an all-on-four prosthesis fabrication.

**Material and Method:** A 48 year-old applied to our department with aesthetic and function related problems of his teeth. Due to radiographic and intra-oral examinations, extraction of all the teeth was decided and all-on-four prosthesis was indicated for both upper and lower jaws. Four implants were inserted in each jaw according to the all-on-four surgery protocol. Three months after the surgery, intra-oral digital impressions were made followed by digital recording of centric relation and vertical dimension of occlusion by using wax rims and PMMA based bars retained to multiunit abutments. According to the digitally taken intra-oral records, esthetic trials were completed with PMMA based teeth. Finally, the upper and lower all-on-four prosthesis was fabricated with toronto design pekton framework and zirconia crowns.

**Results:** All-on-four full mouth rehabilitation of the patient was completed meeting the patient's aesthetic expectations and functional needs by the application of full digital workflow procedures. **Conclusion:** During 9 months follow up period, the patient was recalled quarterly. Significant improvement in the esthetics, phonetics and masticatory function have increased patient's self-confidence. There were no complications associated with the all-on-four prosthesis and the patient satisfaction was extremely high.

all on four, digital impression, dental implant



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Bahriye Bahar Tüfekçi

Recep Tayyip Erdoğan Üniversitesi

## The effect of aging times on the bond strength between metal substructures prepared with different techniques and porcelain

**Aim:** This study was carried out to examine the effect of aging times on the bond strength between metal substructures prepared with different techniques and porcelain.

**Materials and Methods:** In the study; Superstructure porcelain was applied to a total of 80 Cr-Co metal substructures prepared with casting, milling, DMLS (Direct Metal Laser Sintering) and SLM (Selective Laser Melting) techniques. After the control group samples were separated, the other samples were subjected to aging at different times (1000, 3000, 5000) and their bond strength was evaluated. After the control group samples were separated, other samples were subjected to aging process at different times (1000, 3000, 5000). The data obtained were compared using two-way analysis of variance and Tukey multiple comparison test.

**Results:** Metal substructure production techniques and aging times were statistically significant ( $p < 0.01$ ).

**Discussion:** The data obtained in this study showed that the casting method in the preparation of metal and metal-based restorations is still one of the most valid production methods due to the predictable results.

**Key Words:** Metal substructure preparation techniques, aging times, porcelain, bond strength

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Senay Melis Korkmaz - Ceren Küçük - Hasret Demirci - Buket Evren

Marmara University Faculty of Dentistry, Department of Prosthodontics, Istanbul, Turkey

## Full Mouth Rehabilitation By Implant Supported Fixed Prosthesis: A Case Report

**Purpose:** Full mouth rehabilitation is one of the most sophisticated kinds of dental implant-supported prosthetics. Total rehabilitation requires correct case selection, astute surgical procedure and careful prosthetic planning for a successful outcome. The aim of this case is to demonstrate a modern approach in planning and realisation of full mouth screw retained dental implant prosthetics.

**Materials & Method:** A 70 years old edentulous male patient was referred to Marmara University Faculty of Dentistry Department of Prosthodontics. The patient showed no systemic pathology and was not a smoker. He was unhappy with function of his prosthesis and did not want a removable prosthesis. After careful evaluation, it was decided to insert six implants (AnyOne, Megagen, South Korea) in the maxillary and six implants in the mandibular arch. The osseointegration period of the patient who underwent implant operations in Marmara University Faculty of Dentistry Department of Surgery was determined as 3 months. After the implant surgery and osseointegration period, impressions were made from multi unit abutment platform with appropriate transfers for open tray with polyvinyl siloxane impression material and sent to the laboratory. The usage of multi unit abutment system allows the clinician an accurate and passive fitting of screw retained full arch construction the final prosthesis. The prosthesis was then screwed and the screws were covered by composite.

**Results:** After 6 months of follow-up, the patient had no concerns about aesthetics, function, or phonation post prosthetic rehabilitation.

**Conclusion:** Screw retaining prostheses have some advantages against cement retained constructions like an absence of cement in peri implant tissues and a maintenance service possibility (construction monitoring and its unscrewing, professional hygiene procedures, etc.). Intraoperative installation of multi unit abutments allows makes it possible to avoid multiple screwing/unscrewing, preserving the stability of peri implant tissues.

**Key Words:** Full mouth rehabilitation, implant supported prosthesis, multi unit abutment  
Full mouth rehabilitation, implant supported prosthesis, multi unit abutment

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Funda Bayındır - Gelengül Urvasızoglu

ATATURK UNIVERSITY

## Infl uence of Chewing Tobacco Habits In Early Dental Implant Failure: A Case Report

**Introduction:** Dental implants are generally considered as effective and predictable restorations for thereplacement of missing teeth. However, although highly successful consequences and the long-term survivalof dental implant treatments are well documented in many studies, implant failures still occur for differentreasons. A variety of conditions, including implant design (length, shape or surface texture), patient-relatedmedical risk factors (systemic diseases, radiotherapy, drugs use, smoking), and surgery-related factors(surgeon's experience or surgical design) have been considered to infl uence the outcome for implantrestoration.

**Case:** The purpose of this case report is to present that tobacco chewing habits a risk factor forearly implant failure. An 80-year-old male patient was fi tted with 14 dental implants in regions13,14,16,23,24,26,27,32,34,35,36,42,43,45 for full mouth rehabilitation in lower and upper jaw with two stepsurgery. One month later after implant surgery the patient had complains with infection and pain. After oraland radiographic examination, it was detected that three implants failure in regions 16, 43 and 45. All riskfactors evaluated carefully and it was founded that the patient has habits chewing tobacco especially relatedregion.

**Conclusions:** Recognition and be aware of risk factors can reduce the failure rate and increase thepredictability of dental implant treatment.  
dental implant failure, smoking, tobacco chewing

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ID.52

Ayşe Meşe - Fatih Çetin

Dicle University, Dental Faculty-Diyarbakir

## Investigation of The Effects of Multiple Firing and Thermal Aging Processes On The Mechanical Property of Zirconia Core Materials

**Purpose:** It is thought that the most detrimental effect on the long-term mechanical behavior of zirconiaceramics in the oral cavity is temperature and humidity factors. This decay facilitates in a humid atmosphere;The slow conversion of the metastable tetragonal phase to the monoclinic phase. To investigate the effect of number of firing and aging on the mechanical property of zirconium substructured restorations in-vitro.

**Materials and Methods:** Zirconia infrastructure (Vita Incream and Ceramill ZI glass) ceramics belonging to two different systems were used. 50 zirconia discs with a diameter of 12.0 mm and a height of  $1.2 \pm 0.2$  mm were prepared from zirconium infrastructure blocks stabilized with yttrium in accordance with the ISO 6872 standard, and each group was divided into five subgroups according to the number of firing and thermal aging ( $n=10$ ). Fracture test were applied to the samples, which were aged for 10000 cycles in the aging device. The obtained data were statistically evaluated with one-way analysis of variance Kruskal-Wallis tests.

**Results:** As a result of the statistical analysis, there was no statistically significant difference in the biaxial flexural strength values of the Vita In-Ceram YZ and Ceramill ZI ceramic materials in the thermal aging process applied as a result of firing processes repeated 1, 3 and 5 times.

zirconia infrastructure; thermal aging, firing processes; mechanical property

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ID.74

Merve Aydoğın

HATAY MUSTAFA KEMAL ÜNİVERSİTESİ

## Prosthetic Rehabilitation of Patient With Mandibular Defect: A Case Report

The prosthetic treatment of the defect formed after marginal resection of the left half of the mandible is presented in this report.

**Case Report:** A 51 year old female patient applied to Hatay Mustafa Kemal University, Faculty of Dentistry, Department of Prosthetic Dentistry for aesthetic and functional difficulties 3 years after the operation in the mandibular posterior region. As a result of intraoral and radiographic examination, in addition to the absence of teeth 31,32,33,34,35,36,37,46, loss of alveolar bone and gingival tissues were detected in the marginal rejection area. Removable prosthesis was planned due to reasons such as easier oral hygiene, cheapness and no indication of fixed prosthesis. After the fixed restorations of the patient were made, in order to rehabilitate the defected area, firstly, lower and upper jaw impressions were obtained with hydrocolloid impression material and hard plaster model was obtained. Framework design was made for the lower jaw. Vertical size and closure were determined by making a wax wall. Acrylic teeth were set up and try in was done clinically. Afterwards, the gear was rehearsed and the finished prosthesis was delivered to the patient after the necessary corrections. The patient was given information about the use of the prosthesis, care and cleaning of the defect area.

**Conclusion:** Deviation of the mandible towards the affected side as a result of defects in the lower jaw causes serious deficiencies in functions such as chewing, swallowing, speech and aesthetics, and also negatively affects the patient in psychosocial terms. In the prosthesis made for the rehabilitation of these defects, in addition to the general prosthesis rules, patient-specific applications and planning are usually required. removable prostheses; It has advantages such as ease of providing oral hygiene, providing soft tissue support in the presence of alveolar ridge and bone defect, low cost, short treatment period and easy follow-up. In our study, as a result of prosthetic rehabilitation of the patient with mandibular defect, chewing, speech, aesthetic and functional problems were improved and the patient's quality of life was increased.

**Keywords:** rejection, defect, rehabilitation, removable prosthesis  
rejeksiyon, defekt, rehabilitasyon, hareketli protez



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Püren Barut - Elifnaz Özen - Pınar Kursoğlu

Yeditepe University

## Masseter Muscle Spasm With Facial Asymmetry Treated By Stabilization Splint

**Purpose:** Facial asymmetry may be caused by soft or hard tissue asymmetries. Chewing muscle spasms and/or hypertrophies may be responsible for facial asymmetry and also spasm of elevator muscles of lower jaw may change the mandibular position. The purpose of this case report is to reach the orthopedically stable position of the lower jaw by treating temporomandibular disorders (TMD) that may cause facial asymmetry with a stabilization splint and to reestablish the occlusion according to this stable position.

**Case Report:** A 33-year-old female patient attended to clinic with the complaint of increasing asymmetry on her face over time and unpleasant laminate veneers. In extra-oral examination it was observed that the chin tip was deviated to the right and there was swelling in the right masseter area. In the gnathological examination performed according to diagnostic criteria for temporomandibular disorders (DC/TMD), it was determined that the patient had swelling, stiffness and tenderness especially in the right masseter muscle and the pain score was 5 on palpation. Pain score of left masseter muscle was also found as 4. Disc displacement with reduction was diagnosed on right temporomandibular joint. Bruxism findings were found in the intra-oral examination such as facets in canines, abfractions and white fibrous line that appears on the inside of the cheek. In addition, laminate veneers on anterior teeth and laminate veneers covering the occlusal surface on posterior teeth were threatening the gingival health due to poor adaptation and they were aesthetically unacceptable. It was thought that the asymmetry on the face could be caused by the bone as well as the masseter muscle, and an additional panoramic radiography was requested from the patient. When the panoramic radiography was examined, the right mandibular ramus was shorter than the left mandibular ramus, but it was considered that masseter muscle spasm was also aggravated the asymmetry of the face. It was aimed to eliminate muscle spasm with stabilization splint treatment before renewing of the laminates and thus to reach orthopedically stable mandibular position as a priority. After this position was achieved, it was decided to re-evaluate the occlusion and re-establish the occlusion according to the obtained orthopedically stable position of the lower jaw with anterior and posterior occlusal covering laminates. Stabilization splint treatment for muscle spasm was applied for 4 months with monthly control sessions. It was observed that edema and spasm in the muscle eliminated and thus facial asymmetry decreased. On palpation, the pain score of the masseter muscles decreased to 1 on both sides. It was observed that the chin tip approached the midline in the resting vertical dimension. When the occlusion was checked after the splint treatment, it was seen that there was posterior disclusion on the right side but all the painful symptoms were eliminated so that the lower jaw reached orthopedically stable position. Occlusal stability was also achieved by reorganizing the occlusion according to this stable mandibular position. Since bruxism continued, a new protective stabilization splint was considered to protect the upper laminate veneers so that the treated TMD would not recur.

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**Conclusion:** If TMD is diagnosed according to the gnathological examination, it is appropriate to treat the TMD and re-organize the occlusion according to the new orthopedically stable position of the lower jaw before the restorations are carried out. Thus, it is possible to reach an aesthetic and functional balance.

**Keywords:** masseter spasm, stabilization splint, facial asymmetry

masseter spasm, stabilization splint, facial asymmetry

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ID.63

Sarp Sarıkaya - Elifnaz Özen - Pınar Kursoğlu - Nihan Ceylan

Yeditepe University

## Masseter Tenomyositis Mimicking Sialolithiasis

**Purpose:** Sialolithiasis is a condition where a calcified mass or sialolith forms within salivary glands and resulting with swelling and pain while the overlying skin may be warm. Several etiologic factors play role on this condition such as calcium metabolism, dehydration and orofacial infections. Another condition to point out is tenomyositis, known as inflammation of muscles and tendons. Different from sialolithiasis, tenomyositis has an inflammatory origin. Tenomyositis symptoms are swelling and tenderness, as well. The objective is to present cases with masseter tenomyositis symptoms that mimicks sialolithiasis due to similar signs which were treated with anti-inflammatory drugs accompanied by stabilization splints.

**Case Reports:** Two patients referred to our clinic by ear-nose-throat specialist with swelling in their masseter region. Swellings were more prominent especially on mornings and were relieved at the end of the day. Panoramic radiographs and ultrason images were observed, it was seen that there were no sialolith which may be responsible for swelling.

After the gnathologic examination, swelling and pain were seen on masseter muscles together with bruxism. Acute swelling was thought to be caused by masseter tenomyositis which is inflammation of muscles and tendons. Anti-inflammatory agents were prescribed for acute situation, and stabilization splint was applied for preventing the recurrence of this situation.

**Results:** Anti-inflammatory agents were effective and helpful for the initial intervention. However this situation can be repeated after only drug administration due to persistence of the parafunctional habits and patients were informed about it. Instead of further drug prescription, stabilization splint was found more promising to relieve the muscles' inflammation by protecting masseter muscles from the unwanted effects of bruxism and improving the circulation of masseter muscles.

**Conclusion:** Splints are beneficial to reduce the tension of the masseter muscle bands and tendons and also to contribute to inflammatory response reduction while boosting the recovery of this region. In order to alleviate the masseter tenomyositis, swelling and pain, stabilization splints may be better long-term options in addition to anti-inflammatory drugs.

Keywords: Masseter tenomyositis, sialolithiasis, stabilization splint

Masseter tenomyositis, sialolithiasis, stabilization splint

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## ID.57

Mustafa Çopun - Erkut Kahramanoğlu - Mine Helvacioğlu Özkardeş  
Mert Özkan - Faysal Uğurlu

Marmara University Faculty of Dentistry

### Treatment of a patient with hipodontia: a case report

**Purpose:** Developmentally missing one or more teeth is defined as hypodontia excluding third molars. Esthetic, phonetic, psychological and functional problems may occur in these patients. Treatment options include orthodontic therapy, implants, adhesive techniques, and removable prostheses. The aim of this case report is to describe the multidisciplinary rehabilitation of patient with hipodontia.

**Material and Methods:** A-20 year old female patient who has hypodontia and hypoplastic mandibular teeth referred to Marmara University Faculty of Dentistry. After clinical and radiological examinations, multidisciplinary treatment planned. To be able to treat the patient with implant supported fixed prosthesis, anterior and posterior mandible were reconstructed horizontally by anterior iliac block graft. During this period, sufficient distance for maxillary lateral incisors was provided with orthodontic treatment. After 6 months of bone healing, 8 implants have placed to mandibula and maxilla. To achieve esthetic expectation of patient; implant supported e.max crowns for missing lateral incisors and implant and tooth supported fixed PFM bridges for mandibula were planned. First, for the lateral incisors, temporary crowns have been made to accomplish emergence profile. After 4 weeks of recontouring gingiva, digital impression were taken with ti-base abutments and scan bodies. Design of the screw retained e.max crowns were completed in CEREC inlab software and crowns were fabricated.

**Results:** after the prosthetic treatment, the patient reported that she was satisfied with the aesthetics and function of the implant supported fixed dental prosthesis. The patient was recalled at the 6th month and 1st year and no complication was founded after augmentation and implant placement. The patient satisfaction was high at 1-year evaluation.

**Conclusion:** In complex cases the involvement of a multidisciplinary team is needed to improve outcome. With careful planning, patients with severe hypodontia can be rehabilitated very effectively in most cases achieving a good functional and aesthetic result.

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## ID.7

Baran Tursun - Gülsüm Dal - Nuran Yanıkoğlu

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**Multidisciplinary Treatment of Aesthetic Problems At Maxillary Anterior Region**

**Aim:** In this case, the aim is to correct the aesthetic impairment at the maxillary anterior region by applying gingivectomy followed by full ceramic restorations at the new level of the gingiva.

**Case:** A systemically healthy 24-year-old male patient came to Atatürk University Faculty of Dentistry to complain of aesthetic problems at the maxillary anterior region. There were multiple defective restorations with improper gingival levels were found in their respective teeth. The initial periodontal treatment was completed followed by the surgical phase. First, the depth of periodontal pockets were measured, markings were made at the desired gingival level. External bevel incisions were made followed by gingivoplasty procedure. At oral examination large composite fillings were found in 11, 21 and 22 teeth. For this reason, full ceramic restoration was made including tooth number 12 to achieve a more appropriate aesthetic appearance. The 12, 11, 21, 22 teeth were prepared with chamfer- step finish line. The appropriate aesthetic appearance was achieved with the produced lithium disilicate glass ceramic crowns. The restorations were cemented with dual cure resin cement.

**Result:** Gingivectomy produce positive results at areas with sufficient bone level and aesthetic problems. The procedure is limited to the gingival and was not extended to the bone. Full ceramic crowns that meet the high aesthetic expectations of the patients are frequently used in the teeth at the anterior region.

**Keywords:** Aesthetic, gingivectomy, lithium disilicate glass ceramic

**Introduction:** Aesthetics is an integral part of today's dental treatment and has affected the treatment of dental diseases to varying degrees for many years. In recent years, the aesthetic demand of clinicians and dentists in dentistry has increased rapidly with the effect of increasing awareness of beauty and aesthetics. The ultimate goal in modern dentistry is to achieve "white and pink" aesthetics in the aesthetically important area. Pink esthetic refers to the surrounding soft tissue, including the gums and lips, which can increase or decrease esthetic results (1).

Gingivectomy is the oldest surgical treatment method in periodontal treatment. Over the years, the technique has changed. Gingivectomy is the most important surgical treatment method in periodontal treatment. Indications for gingivectomy are removal of the periodontal pocket (gingival enlargement/eg hyperplasia, subgingival caries, subgingival located crown margins) and increasing clinical crown length. Gingivoplasty is also performed during surgical removal of the free gingival margin. There may be a long and painful recovery period for the patient (2).

The content of the IPS e.max Press system is glass ceramic containing lithium disilicate,



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as in the Empress II system produced before it. However, the difference between the two systems is the different applied firing technique. In this way, the aesthetic and physical properties of the new system, the IPS e.max Press, have been increased (3).

Pressable ceramics are among the products that are frequently used in restorative treatment for many reasons such as marginal integrity, superior aesthetic and mechanical properties, ease of production, and translucency (4). The fracture strength of IPS e.max Press is 400 MPa (3,5). The IPS e.max Press system can be used for laminate veneers, anterior and posterior single crowns, single implant-supported crowns in the anterior and posterior regions, three-unit anterior bridges, three-unit bridges on both the teeth supported bridge and implant-supported bridge that can be extended posteriorly up to the second premolar, and telescopic crowns. (3).

This study will explain the correction of aesthetic problem at the maxillary anterior region by periodontal and prosthetic treatments.

**Case:** A systemically healthy 24-year-old male patient came to Atatürk University Faculty of Dentistry to complain of aesthetic problems at the maxillary anterior region. There were multiple defective restorations with improper gingival levels were found in their respective teeth (Figure 1).

The initial periodontal treatment was completed followed by the surgical phase. First, the depth of periodontal pockets were measured, markings were made at the desired gingival level. External bevel incisions were made followed by gingivoplasty procedure (Figure 2).

The gingival levels were checked. Follow up were made after two weeks of the surgery, ideal healing of the gingiva was observed and prosthetic treatment was started.

At oral examination large composite fillings were found in 11, 21 and 22 teeth. For this reason, full ceramic restoration was made including tooth number 12 to achieve a more appropriate aesthetic appearance. The 12, 11, 21, 22 teeth were prepared with chamfer-step finish line (Figure 3). 1mm retraction cord (Ultrapak, Ultradent, Utah, USA) was chosen. Retraction cord was applied to the prepared teeth followed by two-step impression technique using addition silicone impression material (Elite HD +, Zhermack, ITALY) then the dental cast was poured. Tooth shade was selected with VITA Easyshade V (VITA Zahnfabrik, Bad Sackingen, Germany), 2M2. The appropriate aesthetic appearance was achieved with the produced lithium disilicate glass ceramic crowns (IPS e.max Press, Ivoclar Vivadent, Liechtenstein). The restorations were cemented with dual cure resin cement (Panavia V5 Professional Kit, Kuraray Dental, New York, USA).

No complications were observed during 6-month clinical follow-up (Figure 4).

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**Discussion:** Gingivectomy is the most common surgical procedure to reproduce the desired level of the clinical crown length. The most important advantage of the gingivectomy procedure is the absence of bone intervention. Since there is no procedure done to the bone, the patient has less postoperative pain and edema. Only soft tissue intervention will result in a short recovery period. On the other hand, it may not be appropriate to perform a gingivectomy procedure in cases where there is not sufficient biological width. Most of the time, it can be seen that gingivectomy procedures fail in cases where the biological width is ignored. Another limitation of the gingivectomy procedure is that the teeth are not in a certain alignment. In the presence of crowded teeth, the desired clinical crown size will not be achieved. In some cases, while trying to reveal the desired crown length level, the cemento-enamel junction (CEJ) may appear early. In such cases, prosthetic procedures are applied to bring the crown length to the desired aesthetic level (6).

For many years many studies have been carried out on all-ceramic systems for, and lots of all-ceramic systems have been developed until today (7,8,9,10).

In a study by Albakry et al. (4), the biaxial bending strength of IPS e.max Press was found to be higher than IPS Empress and IPS Empress II.

In addition to the features such as biocompatibility, aesthetics, natural appearance and low plaque accumulation, long longevity is considered as a factor of the success of all-ceramic restorations. There are many studies on the long-term clinical follow-up of all-ceramic restorations, and as a result of these studies, all-ceramic restorations have been evaluated as clinically successful with long-term (9,10).

When making an all-ceramic restoration, especially if glass-ceramic systems are used, adhesive cementation systems should definitely be used for the cementation process (11,12). It was found that the fracture resistance of the used glass ceramic restorations have increased when cemented with adhesive cements (13,14).

**Conclusions:** Gingivectomy produce positive results at areas with sufficient bone level and aesthetic problems. The procedure is limited to the gingival and was not extended to the bone. Full ceramic crowns that meet the high aesthetic expectations of the patients are frequently used in the teeth at the anterior region.

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## Figure

**Figure 1:** Vestibule view before treatment



**Figure 2:** Vestibule view after gingivectomy



**Figure 3:** Vestibule view after preparation



**Figure 1:** Vestibule view after treatment



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Fulya Bülte

Hatay Mustafa Kemal University

## Prosthetic Treatment of A Nasopharyngeal Defect: Case Report

**Purpose:** The prosthetic treatment of the nasopharyngeal defect formed after the treatment of malignant epithelial tumor with radiotherapy is presented in this report.

**Case Report:** A 52 year old male patient was admitted to our clinic due to the prosthetic restoration of the defect in the posterior maxilla after the treatment of malignant epithelial tumor. After the intraoral and radiographic examination, it was decided to extract the mobile teeth 16 and 17 due to periodontal damage and bone loss. After healing of the extraction areas, lower and upper jaw impressions were obtained with hydrocolloid impression material and a hard plaster model was obtained. Framework design was made for the removable partial denture by using the modification space for the upper jaw. Acrylic teeth were set up and try in was done clinically. The part of framework extending towards the defect was shaped with utility wax by making the patient make functional movements. The denture was finished with traditional methods. The removable partial denture was delivered to patient after the controls were completed.

**Result:** Obturators are prostheses that repair defects caused by trauma, cancer surgery or congenital reasons. In the treatment of congenital or acquired defects, the aim is to provide function, phonation and aesthetic appearance, as well as to eliminate the psychological problems caused by these defects. After the delivery of the obturator prosthesis, the nasal speech sound was eliminated. The nasopharyngeal gap is closed. With the restoration of missing teeth, chewing function is improved. The patient's quality of life has improved.

In this study, the nasopharyngeal gap of the patient was closed and the functions of chewing, swallowing, and speech without nasal speech sound were restored.



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Erencan Tuncer

Hatay Mustafa Kemal University

## Prosthetic Rehabilitation of The Maxillary Defect Field: A Case Report

**Purpose:** The purpose of this case report; to present the rehabilitation of the left maxillary defect area after the surgical treatment of Oral Squamous Cell Carcinoma.

**Case Report:** A 66-year-old male patient with painless swelling in the left maxillary region was consulted by the Otolaryngology (ENT) service of our hospital. After clinical and radiological examinations, Oral Squamous Cell Carcinoma was detected in the left maxillary region. According to the co-planning made with the Otolaryngology service, impressions were obtained from the patient before the operation. The resection line was drawn on the plaster model and a temporary surgical plate was produced by scraping that area. In order to provide post-operative comfort and accelerate healing, the surgical plate obtained during the operation was adapted to the cavity area and fixed to the maxilla. The surgical plate was removed one week later and the temporary obturator construction process was started. The temporary obturator scar tissues prepared on the first model obtained were used by the patient until completely healed. After the scar tissue in the surgical defect area was completely healed, the permanent obturator stage was started. The overly recessed areas in the upper jaw defect area were covered with vaseline gauze to prevent the impression material from escaping and ruptures in the impression taken. The impressions of the upper and lower jaws were taken with hydrocolloid impression material. The model was obtained with a hard plaster. Acrylic base plates were made and try in was done with appropriate vertical size and centric relation. Then the conventional finishing process was started. Maxillary obturator was adjusted according to the cavity area in order to both increase retention and eliminate the traumatic effect that will occur on the bone surrounding the defect during the use of the obturator. After intraoral controls, the prostheses were delivered to the patient.

**Conclusion:** Most of the maxillofacial deformities consist of defects resulting from resection of tumoral masses. In cases where the tissues lost as a result of resection can not be rehabilitated by surgical reconstruction, temporary or permanent treatment is performed with the help of obturators. In the presented case, the upper part of the bulb was emptied after polymerization of the acrylic resin to reduce the weight of the obturator. The heavy weight of the obturators causes a big problem during the function. As a result of the prosthetic treatment applied to this patient; Without the need for a naso-gastric tube, the patient's nutritional needs were met, functions such as speaking, chewing and swallowing were restored, and the patient's aesthetic appearance was improved by removing the complete edentulousness of the patient. The oroantral gap is separated from each other and the patient gains chewing function. The hollowed image on the face is prevented by supporting it with the obturator. No complications were observed in the patient in the long-term follow-up.



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Bahar Burçin Bol

## Socket-Shield Technique In The Esthetic Zone: A Series of Three Case Reports

**Purpose:** Alveolar bone resorption after dental extraction frequently leads to situations in which long-term function and esthetic success of rehabilitations with dental implants is a challenge. Socket-shield has been described as an alternative technique to maintain the alveolar ridge when placing immediate implants. The aim of these series of case reports is to evaluate the medium and long-term clinical outcomes of the socket-shield technique.

**Material and Methods:** This case report represents 3 patients with incisors indicated for extraction replaced with an immediate implant. While examining cone-beam computed tomography, thin buccal cortical plate was noticed which may get fractured during extraction. Socket-shield technique was designed for implant placement to protect buccal bone and to get the proper esthetic form. One millimeter of buccal fragment of the tooth was kept attached and the implant was placed in contact with tooth fragment.

**Results:** All implants were osseointegrated without any histologic inflammatory reaction and the tooth fragment was devoid of any resorptional processes. On the buccal side, the tooth fragment was attached to the buccal bone plate by a physiologic periodontal ligament. On the lingual side of the fragment, newly formed cementum was demonstrated directly on the implant surface.

**Conclusion:** The follow-ups of the three patients show proper healing and healthy peri-implant tissue shows that socket-shield technique with immediate implant placement will be a good alternative to preserve buccal cortical plate, especially in the esthetic area.

**Keywords:** Immediate implant, ridge preservation, socket-shield technique  
Immediate implant, ridge preservation, socket-shield technique

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## Students' Evaluation of Online Education During Covid-19Pandemic

During the Covid-19 pandemic, in the Dental Prosthesis Technology programs, which are within the Health Services Vocational Schools and aim to provide skills to the students with face-to-face education and theoretical courses as well as intensive practice courses, education was given only via online. However, the digital courses given during this period may not only have met the need, but also provided the chance to accelerate the digital transformation of education. The aim of this study is to determine the advantages and disadvantages of online education perceived by students and to shed light on taking steps to increase the quality of online education.

**Materials and Methods:** An observational study was conducted through an online survey with students studying at both public and private universities to assess the quality of the online education system in Dental Prosthesis Technology Programs across the country during the COVID-19 pandemic. The 20 questions in our survey were simple, concise, precise, and to be completed in 10 minutes or less. Survey questions were created online using google forms ([www.google.com/forms/about/](http://www.google.com/forms/about/)) and students were asked to participate in the survey on a voluntary basis.

**Results:** 1- In online education, 85% of the students stated that they used the school's own online educational system. In online connection, 49% had audio and video problems and 73.6% had internet connection problems.  
2- 65.5% of the students think that online education is not efficient for practical training.  
3- To the question of how often you participated in distance education; 22% of the students gave the answer sometimes, and 15.7% of the students gave the answer rarely.  
4- While 64.2% of the students do not prefer the courses to continue as online education after the pandemic is over, 18.2% of them want the courses to be continued as online.  
5- When asked for the reason of not attending the online classes and afterwards not watching the lesson videos; 30% excused to work at another job, 36.5% stated that they were unable to concentrate and 17% used the excuse that there is no attendance condition.

**Conclusion:** After the internet problems were resolved, the theoretical courses were beneficial for the students who attended the courses regularly. However, most of the students could not get efficiency from the practical courses via online education.  
Covid 19, Online Education, Dental Prosthetic Technology

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Mehmet Anıl Tütüncüler - Ceren Küçük - Rifat Gözneli

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## Treatment of Edentulous Patient With 4 Implant Supported Prosthesis: A Case Report

**Purpose:** Despite the fact that a variety of treatment options exist for partially edentulous patients, the emergence of implant-supported restorations has revolutionized the restoration of fully edentulous jaws. In edentulous jaws, the optimal number of four implants has previously been documented in the literature, with satisfactory 5- to 10-year results. Full mouth rehabilitation over the 4 implant treatment approach has been shown to be a reliable treatment option for full-arch rehabilitation, with positive short-, medium-, and long-term effects. The rehabilitation of an edentulous patient with the all-on-four approach is presented in this case report.

**Materials & Method:** 56 years old edentulous female patient was referred to Marmara University Faculty of Dentistry Department of Prosthodontics. After clinical and radiological examinations, all on four procedure was planned for the patient who lost her teeth due to periodontal disease. After gum recovery, 2 tilted and 2 straight (Straumann AG, Basel, Switzerland) implants were applied to the upper jaw and same procedure applied for lower jaw. During osseointegration period of 3 months complete denture was delivered by the patient. Following the osseointegration period, impressions were made with multiunits using open tray technique. Provisional wax ups were evaluated for aesthetic factors such as proper lip support, midline, smileline, axes of teeth, and vertical dimension. The final prosthesis were delivered after the framework and porcelain trial.

**Result:** Neither the implants nor the prosthetic restorations had any complications after a one-year follow-up period. Esthetic and functional demands were addressed.

**Conclusion:** For edentulous patients, full mouth rehabilitation over the 4 implant an aesthetically and functionally effective treatment option.

full mouth rehabilitation, edentulous, dentures

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## Treatment of Edentulous Patient With 4 Implant Supported Rehabilitation: Case Report

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**Aim:** Even though various treatment approaches are available for the restoration of partially edentulous patients, the restoration of fully edentulous jaws has been revolutionized, thanks to the introduction of implant-supported restorations. The number of four implants in edentulous jaws was previously reported in the literature with favorable 5 to 10 years results. The use of tilted implants together with the number of four implants to rehabilitate the completely edentulous mandible with a full-arch fixed prosthesis was recommended. In this case report, the rehabilitation of the edentulous patient with fixed prosthesis supported by four implants was presented.

**Materials & Method:** A 67 years old edentulous male patient was referred to Marmara University Faculty of Dentistry Department of Prosthodontics. As a result of radiological and clinical examinations fixed prosthesis supported by four implants was planned for the patient. The patient's implant (Frontier®, Ilerimplant, Lleida-GMI, Spain) operations were performed at Marmara University Faculty of Dentistry, Department of Surgery. The osseointegration period was determined as 3 months. After the osseointegration period, impressions were made with multiunits using open tray technique. Before the final prosthesis, provisional wax up was evaluated for aesthetic parameters such as adequate lip support, midline, smile line, axes of teeth, and vertical dimension control. After the framework and porcelain trial, the final prosthesis were delivered to patient.

**Result:** After 6-months follow-up period, there was no complication neither on the implants nor on the prosthetic restorations. Regarding the expectations of the patient and the limitations of this case, esthetic and functional demands were met.

**Conclusion:** Full mouth rehabilitation over the 4 implant are an aesthetically and functionally treatment option for edentulous patients.

full mouth rehabilitation, edentulous, dentures

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## Treatment of The Patient With Cleft Lip and Palate From Birth To Adulthood With The Cooperation of Orthodontics and Prosthodontics For 16 Years

Cleft lip and palate is the most common congenital anomaly. The treatment of these patients begins immediately after birth. The treatment of the patient, which started with preparation for the surgical operation by applying nasoalveolar molding, continued for 16 years. During the growth periods, the development of the dentition was intervened with various appliances. Fixed treatment with permanent dentition was started and prosthetic preparation was made. A minimally invasive aesthetic restoration was performed due to the continued growth of the patient in the department of prosthetic dentistry. In this case report, a patient who was successfully treated with the cooperation of prosthodontics and orthodontics is presented.

Cleft lip and palate, Multidisciplinary, Orthodontics, Prosthodontics



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Gizem Yesilyurt

Sivas Cumhuriyet University

## **Wear Resistance of Titanium and CoCr Ball Attachments After Thermomechanical Fatigue**

**Purpose:** The aim of this study is to investigate the wear resistance of the titanium and cobalt-chrome (CoCr) ball attachments after thermomechanical fatigue.

**Materials and Methods:** In this study, titanium and CoCr ball attachments were used. Study specimens were prepared with the 5-axis CNC milling machine and fixed to laboratory analogs. Thermomechanical fatigue was applied with the chewing simulator which corresponds to a 5-year aging process. After the thermomechanical fatigue process, loss of retention due to deformation of the ball attachments was measured with tensile bond strength test in an universal test machine. The changes in the surface topography as a result of the aging process were evaluated with SEM-EDX of the ball attachments and with XRD of matrices. Weight loss of the ball attachments were also recorded with a precision scale. Two-way ANOVA and Tukey post hoc tests were used to compare the data.

**Results:** Loss of retention and wear were observed on both titanium and CoCr ball attachments. Tensile bond strength of the CoCr group was significantly higher than that of the Titanium group ( $p < 0.05$ ). Weight loss values of the Titanium group was significantly higher than that of the CoCr group ( $p < 0.05$ ).

**Conclusion:** CoCr is more successful in terms of wear resistance than titanium material. ball attachment, titanium, cobalt chrome, tensile bond strength, wear resistance