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Foreword

Praise God for the publication of all abstracts that have been presented in The 12th Biennial Congress of Asian Academy of Prosthodontics: Virtual Online Conference & Dental Exhibitions, even in the form of webinars. We hope that all writers, readers and administrators remain in the protection of God Almighty

We hope that what we present in this special issue of the Indonesian Journal of Prosthodontics can be useful for its authors, readers, IPROSI and documentation for AAP management.

For information that the complete manuscript that meets the rules and regulations of the Indonesian Journal of Prosthodontics will be published in stages in regular publications.

Last but not least, we would like to thank drg. Siti Aliya Khairunnisa for her help so that these abstracts can be published in this special issue. Don't forget to also thank drg. Doddy Soemawinata, Sp.Pros as the President of AAP 2020 and his staff, drg. Leonard C. Nelwan, Sp.Pros as the chairman of the Indonesian Prosthodontist Society and its staff, and drg. Herawan Apidana, Sp.Pros as organizing chairman of the AAP Indonesia 2020 and the team including the scientific section.

As humans, according to the saying that there is no ivory that is not cracked, let us apologize deeply if there is a mistake in this special issue. This is really beyond our reach.

That is all and thank you. God bless.

Chief Editor of Indonesian Journal of Prosthodontics

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OP-1

A Report of Two Cases with Different Methods of Indexing for Orbital Prosthesis in Craniofacial Rehabilitation

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ABSTRACT

Prosthetic rehabilitation of an orbital defect plays an important role in restoring the aesthetics of the face; therefore psychology, well-being and social acceptance of the patient in the society. The most difficult task in fabricating an orbital prosthesis is maintaining the position of the eye shell in the silicone without positional discrepancy during processing. This presentation will describe two simplified techniques for the rehabilitation of two patients with an orbital defect, using two different indexing methods to maintain the integrity of an artificial eye with the silicone. The case report one discusses the technique of hollow orbital prosthesis fabrication by indexing on the rear side of an artificial eye and case report two discusses the technique of solid orbital prosthesis fabrication by indexing on the front side of the artificial eye. The techniques presented in this presentation are easy to perform to fabricate hollow and solid orbital prosthesis whereby, the wholeness of silicone with the artificial eye is maintained by two different indexing methods. The technique described is a simple and easy way for the fabrication and rehabilitation of an orbital defect with hollow and solid orbital prosthesis using silicone, where retention is achieved by a combination of medical-grade adhesive and to a very small extent by bony and soft tissue undercut, hence providing a better aesthetic and psychological outcome.

Keywords: custom made, indexing, orbital defect, orbital exenteration, orbital prosthesis

OP-2**Custom Made Hand Painted Iris Ocular Prosthesis: A Case Report**

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ABSTRACT

Trauma to eye, tumor, severe eye disease and infection can cause enucleation of the eye resulting to permanent defect of sight and aesthetic. Defects because of removing part of or the entire orbit will interfere to the patient's psychology and confidence. Thus, by restoring the defect with custom made ocular prosthesis will restore aesthetics and improve their life in community. This is a case report of construction the natural look of a custom-made ocular prosthesis of a patient with missing her left eye due to trauma. The iris was made by hand painted method to improve the aesthetic outcome. The case describes the construction process including the method of fabrication, fitting and maintenance. It is aimed to highlight the importance of good clinical skill and management, advantages of custom-made prosthesis as compared to prefabricated ocular prosthesis and maintenance by good hygiene practice to promised good prognosis and aesthetic satisfaction.

Keywords: ocular prosthesis, orbit defect, iris, eye enucleation

OP-3

Impression Techniques on the Management of Fibrous Maxillary Ridge

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ABSTRACT

Fibrous or flabby ridges on the edentulous maxillary arch are commonly found in combination syndrome or due to ill-fitting dentures. The main challenge in complete denture fabrication for these cases is the likelihood of displacing the mobile tissue from its resting position due to the forces exerted during impression taking. In this case report, two patients complained of ill-fitting maxillary complete dentures despite multiple adjustments. Upon intraoral examination, the patients presented with moderately to severely displaced flabby ridge on the premaxilla region. As both the patients are medically compromised and denied any surgical treatment, flabby ridges were conservatively managed using two modified impression techniques in fabrication of maxillary complete dentures. A single-step impression technique with simultaneous use of light and medium body silicone impression materials was utilized. It requires high clinical skills but offers a simple and least time-consuming approach in recording the surface details of severely displaced flabby ridge. A two-step technique records normal tissues and flabby ridges using zinc oxide eugenol (ZOE) and light body silicone impression materials respectively in sequence. This technique enables good control over the volume and flow of light body silicone as compared to single-step technique, but precautions should be taken to avoid custom tray misplacement during the second stage of impression taking. Custom trays were designed differently in both techniques, especially on the timing of tray perforations and handle position to further ease the impression making process. Both the dentures were delivered with good support, stability, and retention. The patients were satisfied with the outcome. In a nutshell, simplified solutions are recommended in this case report for clinicians with different levels of competence. A single custom tray with perforations and extra spacers is recommended as the most cost-effective manner to reduce the complexity of the procedure.

Keywords: fibrous ridge, edentulous, two-step impression technique

OP-4

Tooth Supported Overdenture vs Stud Retained Overdenture: A Case Report

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ABSTRACT

Residual ridge resorption is a continuous process that occurs throughout life. Severely resorbed ridge is classified as a technically difficult case due to the limited structural availability that is integral for the stability of a denture. Overdenture has the advantages of preservation of alveolar bone while providing support and stability to the prosthesis. A 67-year-old lady came to the clinic with a complaint of a loose upper and lower denture. Intraorally patient presented with discoloured and severely attrited upper anterior teeth and worn-down stud attachment on teeth 33 and 43. The treatment plan was to construct a tooth supported partial overdenture for the upper and lower stud retained overdenture. This treatment was chosen due the severely attrited upper anterior teeth and owing to the success of previous stud attachment on the lower overdenture. Stabilization of caries was done and patients' upper anterior teeth were contoured leaving 2 mm of coronal height for the upper partial overdenture abutment. All treatment stages were done in the same manner as the conventional denture, however, during the try-in stage it is crucial to assess the occlusal vertical dimension to ensure adequate interocclusal space for the tooth overdenture and stud attachment. After assessment of space, old studs on teeth 33 and 43 were removed. Preparation of chamfer margin was done and an impression was taken for the construction of new studs. After cementation, another impression was taken for denture processing and stud housing pick-up. During review visit, patient was happy and functioning well while the stability and retention of the denture was greatly improved. Overdenture is a simple and cost-effective treatment, an alternative to implant retained denture while providing better retention than conventional denture.

Keywords: overdenture, severe ridge resorption, stud attachment

OP-5

Interdisciplinary Treatment Approach of Skeletal Class III Malocclusion Patient with Multiple Missing Teeth: A Case Report

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ABSTRACT

A 30 years old female patient with Class III malocclusion and several missing maxillary anterior and posterior teeth and also mandibular posterior teeth came to the clinic to improve both her esthetic and function. Patient had a unilateral cleft lip and palate. History of combination between poor dental hygiene and dentistry was the cause of the multiple missing teeth. Periodontic, orthodontic, oral & maxillofacial surgery and prosthodontics treatments were undertaken in the proper timing and sequence with an interdisciplinary approach. Proper diagnosis and treatment planning were crucial to solve this case. After initial periodontal care was completed, orthodontic treatment was completed to prepare her orthognathic surgery. Space consolidation and occlusion correction were also completed to prepare her for final prosthesis post-surgery. Partial denture were delivered by the prosthodontists. As a result, a stable Class I occlusion with good esthetic and function treatment results were achieved. The case showed that proper diagnosis and treatment planning is very important especially in an interdisciplinary treatment of Class III malocclusion.

Keywords: class III malocclusion, missing teeth, cleft lift and palate

OP-6

Carbon Fiber Frameworks and Lithium Disilicate Crowns for Implant Rehabilitation: Case Report

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ABSTRACT

I would like to present a case report of a 27-year-old women patient. Her chief of complaint was to rehabilitate her mouth with a fixed implant prosthesis. The patient came to my dental clinic partially edentulous in the lower jaw with hopeless remaining teeth, completely edentulous in the upper jaw, reduced intraoral space and a gingival smile. The treatment plan for the patient was a full mouth implant rehabilitation: 18 implants (10 implants on the upper and 8 on the lower jaw) and both prostheses made with a carbon fiber framework and lithium disilicate crowns cemented over them. The first step was to extract all the remaining teeth, but without the provisional removable prostheses due the skeletal condition and the reduced intraoral space. Implant surgery was performed 2 months later: bilateral sinus lift, horizontal bone regeneration and 18 implants in one day under sedation. Was impossible to place the provisional prosthesis. In a second step, 4 months later, provisional prostheses in both arches were made and placed the day of the orthognathic surgery (maxillary impaction) under general anesthesia. Four months later, the final prostheses were performed: both screwed carbon fiber frameworks and lithium disilicate crowns cemented over them. Today, a new era of materials can improve our implant rehabilitations. Different materials such as Carbon Fiber, Peek, Glass Fiber or Quartz Fiber with composite, hybrid composites or lithium disilicate crowns cemented over them, can offer the best solution for our patients. Their occlusal impact absorbing and dissipating behavior (functional or parafunctional impact) allows to obtain a lower stress in the implant-bone-prosthesis area, reducing the risk of bone resorption of the implant when the patient has gingival inflammation. All of us have the patient with a high risk to have gingival inflammation: smokers, patient with poor hygiene, previous periodontitis, genetic factors.

Keywords: implant, carbon fiber framework, removable prostheses, maxillary impaction

OP-7

Neutral Zone Impression Technique for Implant-retained Mandibular Overdenture

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ABSTRACT

Neutral zone is an important concept in providing stable, retentive, and comfortable prosthesis within the zone of oral muscular balance. A 73-year-old man complaint of feeling “alien” on the lower right side of his implant-supported bridge and was uncomfortable. The discomfort feeling started following the construction of the bridge four years ago. Clinically, he was partially edentulous with several implant-supported bridges and the complaint site was a long span screw-retained bridge supported by four implants replacing the right mandibular second molar to the left second molar. His oral hygiene was poor, which was exacerbated by the poorly designed prosthesis hence, impeding the oral hygiene care. The mandibular implant fixtures had deep peri implant pockets with suppuration. He was diagnosed with peri-implantitis on his mandibular implants and the right posterior region of his bridge was probably encroaching the tongue space leading to the discomfort. It was then decided to convert the mandibular fixed bridge to an implant-retained removable denture with neutral zone impression technique to guide teeth setting. This was to allow the determination of optimal teeth positioning and to enhance oral hygiene care before embarking on any irreversible treatments. The mandibular bridge was removed, and the implant fixtures were debrided chemo mechanically. Locator attachments were fixed on two anterior fixtures and the two posterior fixtures were loaded passively. After the bite registration stage, a custom-made impression stent was created to record the neutral zone utilizing denture conditioner as impression material. Denture teeth were set within the stipulated neutral zone. The implant-retained removable denture was then delivered to the patient and oral hygiene care was emphasized. The patient expressed his satisfaction during subsequent reviews and the “alien” sensation disappeared. This case highlighted the importance of respecting the neutral zone despite a fixed bridge reconstruction and the role of staged treatment planning.

Keywords: neutral zone, overdenture, implant-retained denture

OP-8

The “All-on-X” Implant Prosthesis Opposing the Complete Overdenture on Class 2 Jaw Relation Patient

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ABSTRACT

Nowadays, there are many treatment choices to restore the full edentulous jaw in the elderly patients, such as the implant anchored denture. This denture consists of fixed implant retained denture and removable implant supported overdenture. These can be considered as a viable treatment, resulting in a better esthetics, retention, and a more comfortable mastication for the patients. This article describes a 67 years old male patient complained his upper broken old dental bridge had been pulled out two months ago and required new dentures to achieve good esthetic and function. This patient had several systemic problems. From intraoral examination, the maxillary was fully edentulous with sufficient volume of alveolar ridge. Some shortened vital anterior teeth, an old metal bridge, and good posterior alveolar ridge was found in the mandible. The jaw relation was Class 2. All soft tissues were in a good condition. Because the patient refused the sinus lifting procedure, the maxilla would be restored with the “All-on-X” system implant prosthesis (5 implants) with PEEK material. As the mandible would be fabricated an acrylic overdenture with some metal copings on anterior teeth and two Novaloc attachment implants in the posterior area. All the sequences of this treatment were done with mixed conventional and digital ways. An implant anchored denture is one of the best treatments for the edentulous patient. The good combination of examination, planning, and execution is required to achieve a positive outcome and satisfaction from the patient. The cooperation of the patient to do the maintenance well is highly required to achieve a long survival rate.

Keywords: implant, overdenture, class II jaw relation

OP-9

**Stress Distribution of Posterior CAD/CAM Three-Unit
Implant-Supported Fixed Partial Dentures (FPDs) Fabricated with
Different Esthetic Materials**

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ABSTRACT

PURPOSE: High esthetic demands and advancements in CAD/CAM technologies have increased the popularity of esthetic materials to be used as implant supported FPDs that can withstand high stress occlusal loading. The aim of this study was to investigate the effect of various force modules, simulating the functional occlusal contact, on stress distribution through a three-unit implant-supported FPD fabricated with different esthetic materials. **MATERIALS & METHODS:** For FEA study, 3D model of fully assembled implant-supported three-unit FPD including supporting tissue were prepared. FPD models, fabricated with CAD/CAM design software from one design file, were divided into four groups: PEKK+CR; PEKK+LD; zirconia+FA; and monolithic zirconia. In monolithic zirconia, there is additional model with SAH. The STL file for implant, abutment and screw were provided by the implant company. The mandibular cortical and cancellous model was fabricated from CBCT image of a patient. Mesh generation and data processing were carried out using ANSYS 7 (ANSYS Inc, USA). An 800 N load was applied to the center of pontic in 0°, 15°, 35° to the occlusal plane. Loading conditions, single tooth loading and simultaneous loading, were also applied. **RESULTS:** FPD fabricated with PEKK framework showed reduced stress in the framework compared to zirconia framework or monolithic zirconia. Stress in monolithic zirconia without SAH is lower than with SAH. Single teeth loading: stress at premolar > 1st molar > 2nd molar. There is increased stress with higher angle of loading. **CONCLUSIONS:** Oblique loading will increase risk of failure in the implant components. The use of PEKK materials showed reduced stress in the PEKK framework regardless of the point of loading and axial or oblique load. In fabricating monolithic zirconia with SAH, more attention is needed in selecting the abutment materials and size. All groups showed small amount of stress that reach the bone supporting the implants.

Keywords: Implant-Supported Dentures, CAD/CAM, stress distribution

OP-10**Splint-Transfer Technique in Achieving Passive Fit on Implant**

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ABSTRACT

Passive fit is of paramount importance to avoid loading stresses on implant-supported fixed partial dentures. Auto-polymerizing acrylic resin is a common splinting material used in impression taking but its high polymerization shrinkage may adversely affect the accurate positioning of implant analog in master cast. This case report describes a modified splinted impression technique to minimize the risk of auto-polymerizing acrylic resin shrinkage. A 60-year-old woman had implant therapy to replace her missing left mandibular teeth. She presented with mandibular partial dentate. 3 units of implant-supported fixed partial dentures were proposed to replace the missing teeth 34-37. After implant placements at edentulous region of 34 and 36, implant level impression was taken to fabricate a working cast containing implant analogs. Appropriate multi-unit abutments together with abutment-level impression posts were attached on implant analogs. A connecting bar with C-shape ring at mesial and distal end was custom made to splint both impression posts. C-shape ring of connecting bar at the distal end was initially joined with auto-polymerizing resin extra-orally. Prior to taking abutment-level impression, multi-unit abutments together with impression posts and the connecting bar were transferred and attached onto the 2 implants at edentulous region of 34 and 36 followed by joining of the C-shape ring at the mesial end with auto polymerizing acrylic resin. Ceramo-metal fixed partial denture was fabricated on the abutment-level working cast with a preliminary try-in of the cast metal framework. Passive fit of fixed partial denture was verified clinically and radiographically. This technique managed to establish an optimal implant analog position in the master cast and achieved passive fit on implant-supported fixed partial denture

Keywords: splint-transfer, passive fit, implant

OP-11

**Stabilization Appliance as Treatment Modality for Headache
Attributed to TMD**

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ABSTRACT

A 25-year-old female visited Universitas Indonesia Specialty Dental Clinic seeking treatment for her migraine headache (HA). With *visual analog scale* of 8, the pain was so severe that she often fell from motorcycle several times and suffered *sacro-iliac* joint pain due to her loss of balance. Upon presentation she appeared to be physically sound, yet she experienced continuous *tinnitus* and *photophobia* that affect her daily routine. Her oral status showed missing tooth 18,28,38,48 with occlusal interference at tooth 22 against 32. Her jaw movement were shown to be restricted during protrusive and laterotrusive movement, with pain in her right masseter muscle upon palpation. Trans-cranial x ray examination showed her condyle position to be inferiorly displaced during bite and relax position. After thorough examination using diagnostic decision tree developed by DC/TMD, she was diagnosed with *Headache attributed to TMD*. 400mg of Ibuprofen were given three times a day for two weeks and a *stabilization appliance* (SA) was also fabricated. This SA were indicated to provide patient with optimal and simultaneous tooth contact that promoted stability in patient's stomatognathic relationship. She was also encouraged to do physical self-regulation regime as well as removal of bad habits that contributed to her TMD. After one year and a half, her migraine condition improved and her mandible functioned within normal limits. It is important to note that temporomandibular joint disorder (TMD) and HA are often found to be a co-morbid condition. These conditions were related by them sharing similar neural pathway that converges into Spinal Trigeminal Nucleus. Treatment using *stabilization appliance* may show a very slow improvement due to how HA can negatively affects patient's motivation. It is crucial for operator to provide continual support so that patient could adhere to the treatment planned.

Keywords: stabilization appliance, TMD, migraine

OP-12

Surgical Obturator Post Hemimaxilektomy e.c Palatal Squamous Cell Carcinoma

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ABSTRACT

A male patient, 44-years-old, came to Dental Hospital Universitas Airlangga at the referral from General Hospital Dr Soetomo Head and Neck Surgery Department due to recurrent palatal squamous cell carcinoma. The patient needs surgical obturator to support hemimaxilectomy. Six months ago, the patient was diagnosed with localized squamous cell carcinoma of the maxilla so that a partial maxillectomy was performed on the anterior maxillary region. Three months later, He complained persistent ulcerated lesion in the mucolabial area of the maxillary fold and suspect as recurrence of the previous carcinoma. Treatment plan: Surgical obturator. Multidiscipline discussion forums were performed to determine the plan for tissue removal and the prosthodontist designed the surgical obturator. The design was made utilizing the retention of the remaining 17 and 27 teeth with Adams clasps. In this case, mechanical retention was achieved by a wire, which attached to the zygoma bone. The artificial teeth were performed only in the anterior area for aesthetic reason while in the posterior only a plate due to minimize the masticatory loading. The surgical obturator has the aim of shortening recovery time, supporting the formation of an intraoral defect, and improving the psychological aspects of the patient due to the defect after surgery so that the patient is ready to return to his social environment and increasing the patient's confidence.

Keywords: surgical obturator, hemimaxilectomy, maxillofacial prosthesis, carcinoma

OP-13

Shortening Dental Arch and Splint Crown in Mini Dental Implant

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ABSTRACT

A male patient, 40-years-old, came to Dental Hospital Universitas Airlangga with a complaint to replace the lower right and left teeth that had been extracted 1 year ago with a denture that could not be removed. The patient wants to make dentures to make them more comfortable when chewing. The tooth extraction was performed $\pm$ 1 year ago in the lower left posterior tooth region caused caries. **Treatment plan:** Implant supported splint crown Based on the existing clinical conditions in patient, we examined the thickness of the existing bone. Then we performed to insert an implant fixture 3.0x10 mm type TS III SA in region 34 and 3.5x10 mm type ET III SA Osstem in region 35. This treatment using one stage surgery with splint crown restoration. **Clinical significance of therapy/summary:** In this case, patient refused invasive surgical procedure as bone augmentation. Shortening dental arch was chosen due to the loss of the antagonist teeth. Implant supported splint crown can be another solution because it's able to maintain the long term of mini dental implant especially in the posterior region.

Keywords: shortening dental arch, mini dental implant, splint crown

OP-14

Stem Cells Approach for Implant Therapy in Diabetes Model

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ABSTRACT

Objective of Investigation: Dental implant osseointegration in patients with hyperglycemic conditions was reported to be delayed so the restoration procedure must be postponed. Mesenchymal Stem Cells (MSCs) is a tissue engineering material that has the potential to treat various systemic diseases. Human Umbilical Cord Mesenchymal Stem Cells (hUCMSCs) is proven to improve bone microenvironment and have osteogenic potential. Their excellent capability can be a new approach for osseointegration acceleration. The purpose of this study was to determine the capability of hUCMSCs to accelerate dental implant osseointegration in hyperglycemic condition through angiogenesis and osteoblastogenesis. **Experimental methods used:** 28 Wistar rats were injected intraperitoneally with Streptozotocin 20mg/kg body weight for 5 days in a row to make the diabetic model. The treatment was carried out after fasting blood sugar levels > 300 mg/dl and waited 5 days for the glycation period. The source of stem cell is human umbilical cord which has been isolated and cultured until passage 6. The experimental animals were divided into 4 groups, namely the 2-week implant group (K1), the 4-week implant group (K2), the 2-week implant + hUCMSCs group (P1) and the 4-week implant + hUCMSCs group (P2). The variables examined were BIC (Bone Implant Contact), VEGF and Runx2 expression. Data were analyzed using Analysis of Variance (ANOVA). **Result :** BIC, VEGF and Runx2 expression was higher in treatment groups compared with control groups. The highest expression of VEGF and Runx2 occurred in the P1 and decreased in the P2 group. While for BIC in groups P1 and P2 remained high to maintain osseointegration. **Conclusion :** With the limitation of this study, stem cells was proven to accelerate the osseointegration of dental implants through osteoblastogenesis and angiogenesis in diabetes model.

Keywords: hUCMSCs, implant, diabetes, osseointegration, BIC

OP-15

Effect of Sargassum sp. effervescent immersion on Acrylic hardness using CLSM (Confocal Laser Scan Microscopy)

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ABSTRACT

Background: The ideal denture base materials include aesthetics, strength, stiffness, hardness, high resistance, and surface roughness. Hardness is often used as an indicator of the ability of a material to withstand abrasion or erosion caused by denture cleaning techniques with abrasive materials and is needed to prevent possible fractures of the denture base. Denture cleaning materials on the market are available in several forms, one of which is effervescent granules. Effervescent granules of brown algae (*Sargassum* sp) have been shown to be effective in inhibiting the formation of *Streptococcus mutans* and *Candida albicans* colonies on acrylic resin plates, this shows the potential of effervescent granules to be an alternative denture cleanser.

Objective: Analyzing the effect of Brown Algae (*Sargassum* sp) effervescent and Alkaline Peroxide as cleaning agents on the hardness of acrylic resin plates. **Method:** This research was a laboratory experimental study with 27 samples of acrylic resin plates divided into three groups. Group A was immersed in Brown Algae (*Sargassum* sp) effervescent granules. Group B was immersed in Alkaline Peroxide (Sodium Perborate) and group C was immersed in Aquadest. Immersion was carried out for 15 minutes per day and lasted for 4 consecutive days and every day each solution was replaced with a new one. Hardness was measured using CLSM (Confocal Laser Scan Microscopy). **Results:** The Wilcoxon test on the mean hardness of each group showed an insignificant difference in hardness in the three experimental groups before and after immersion with p value > 0.05. **Conclusion:** *Sargassum* sp. effervescent granule solution and Alkaline Peroxide solution does not affect the hardness of the acrylic base, so it is good to use as a denture cleaning agent.

Keywords: hardness, acrylic resin, brown algae

OP-16

Prosthetic Approach Following Traumatic Evisceration: A Case Report

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ABSTRACT

Patient Chief Complaint: A 20-year-old male patient was referred to Prosthodontic Department Hasanuddin University Dental Hospital, Makassar with disfiguration of the face as chief complaint. Medical history revealed a significant trauma to the left eye 6 months ago which had been thereafter eviscerated. Patient has never used prosthetic eye afterwards. **Patient Status:** Examination of the left eye socket revealed a healthy conjunctiva covering the posterior wall of the anophthalmic socket with synchronous motions and absence of infection or inflammation signs. Sulcus depth was sufficient to retain prosthetic eye. **Treatment Plan:** Rehabilitation of the ocular defect with customized acrylic-based ocular prosthesis to increase patient's appearance and to prevent further shrinkage of the eye socket. **Details of Therapy:** Preliminary impression was done using customized tray fabricated from modelling wax and hydrocolloid irreversible impression material. An intraocular custom tray for secondary impression was fabricated with acrylic resin and modified with a syringe that attached to the custom tray. Secondary impression of the defect was recorded using polyvinyl siloxane light viscosity material followed by wax pattern fabrication using modelling wax. The wax pattern was tried in patient's socket and checked for size, comfort, support, fullness, and then packed with tooth colored heat cure acrylic resin. After determining the location and diameter of the iris with an optical vernier pupillary distance ruler, the color of sclera was determined by shade guide and confirmed with technician using digital photo. Ocular prosthesis was fabricated afterwards and inserted into the eye socket and evaluated for suitability, aesthetic, and movements with the contralateral eye. **Clinical Significance:** Customized ocular prosthesis was significantly more aesthetic than pre-fabricated one with better contouring, color matching, and coordinated movements with the contralateral eye. This prosthetic approach may restore patient's appearance, thus increase their self-esteem, and improve the quality of life.

Keywords: eye evisceration, ocular prosthesis

OP-17

Effect of Sargassum Sp Effervescent on Surface Roughness of Acrylic Resin

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ABSTRACT

Background: Denture cleaning materials on the market are available in several forms, one of which is effervescent tablets. Brown algae effervescent granules (*Sargassum* sp) have been demonstrated in several studies as denture cleansers but it has not been proven whether these materials affect the surface roughness of acrylic resins. **Purpose:** Analyzing the effect of effervescent *Sargassum* sp and alkaline peroxide as a soaking agent on the surface roughness of acrylic resin plates. **Methods:** This research is a laboratory experimental study with 27 samples of acrylic resin plates divided into three groups. Group A was immersed in effervescent granules. Group B was immersed in alkaline peroxide (sodium perborate) and group C was immersed in distilled water. Immersion was carried out for 15 minutes per day and lasted for 4 consecutive days and every day each solution was replaced with a new one. Measurement of surface roughness of samples after immersion using a surface roughness tester & hardness measurement using CLSM (Confocal Laser Scan Microscopy). **Result:** Wilcoxon's test on the Alkaline Peroxide group showed a p value of 0.008 ($p < 0.05$) indicating a significant difference in surface roughness values before and after immersion. Paired t-test in the Algae and Aquadest groups showed $p > 0.05$ (0.285 and 0.447) which means that there is no significant difference in surface roughness values before and after immersion. **Conclusion:** *Sargassum* sp effervescent granule solution does not affect the surface roughness of the acrylic plate.

Keywords: surface roughness, *sargassum* sp

OP-19

Propolis and Bone Graft Induced Alveolar Bone Enhancement Through SMAD3 Expression

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ABSTRACT

Objective of Investigation: Socket preservation is performed to maintain alveolar bone dimension after tooth extraction. The materials such as Bovine Bone Graft (BBG) are commonly used and in combination with propolis extract, it's hoped can accelerate the bone remodeling to increase the success of prosthodontics treatment. This study aimed to determine the capability of the combination of propolis extract and BBG in alveolar bone regeneration in terms of SMAD3 expression and the area of woven bone. **Experimental methods used:** This study used 84 Cavia cobaya which were divided into 4 groups for the 3rd, 7th, and 30th day, each group consist of 7 subjects. The propolis extraction performed a maceration method, while BBG was manufactured by The Tissue Bank of Dr. Soetomo Hospital, Surabaya. The combination was performed in a gel form. The first mandibular incisor of the subject was extracted then the socket for each group was filled with PEG (K1), propolis extract (K2), BBG (K3), and a combination of propolis extract and BBG (K4). After the duration was reached, the experimental animals were terminated and the specimen was processed to evaluate the expression of SMAD3 and calculate the area of the woven bone. Data were analyzed using Analysis of Variance (ANOVA) and Tukey HSD post-hoc test. **Essential results, including data, where appropriate, statistic:** All groups expressed SMAD3 and demonstrated the presence of woven bone. The highest expression of SMAD3 and the area of woven bone were found in the K4 group on the 3rd, 7th, and 30th days. There were significant differences in each group ($p = 0.00$; $p < 0.05$) both on the SMAD3 expression and the area of the woven bone. **Conclusion:** The combination of propolis extract and BBG supports enhancement bone formation by increasing SMAD3 expression and woven bone area.

Keywords: propolis, bovine bone graft, SMAD3, woven bone, socket preservation

OP-20

Comprehensive Approach of Highly Resorbed Mandibular Ridge with Complete Denture

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ABSTRACT

Patient's chief complaint: A 66-year-old female patient referred to the Hasanuddin University Dental Hospital with a fractured lower denture that impaired patient's chewing ability. **Patient's oral status:** Complete edentulous in maxilla and mandible with flat mandibular ridge. Clinical examination showed absence of inflammation and flabby tissues also absence of bone prominences. **Treatment plan:** Complete denture fabrication with semi-adjustable articulator and modification in impression technique to produce retentive denture. **Details of the therapy:** Preliminary impression and fabrication of anatomic cast followed by bolder molding and physiological impression. Two Dots method was used to determine the maxillomandibular relation and measure vertical dimension. Position of the maxilla was transferred using facebow which attached to the centric tray followed by mounting the cast on semi-adjustable articulator with guidance from centric tray. Artificial teeth were arranged in lingualized occlusal scheme on wax-pattern and try-in was done. After processing denture, remounting and selective grinding were done including finishing and polishing, followed by insertion of denture. **Summary:** Impression technique is one of primary factors in management of flat mandibular ridge to utilize surrounding tissues to have both active and passive retention in dentures.

Keywords: complete edentulous, flabby ridge, semi-adjustable articulator, complete denture

OP-21

Nasoalveolar Molding (NAM) in Early Management for Newborn with Labiognatopalatoschizis

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ABSTRACT

Patient's chief complaint: A 1-week-old female infant with bilateral cleft lip and palate was referred to the Department of Prosthodontic, Hasanuddin University Dental Hospital. Her parents provided informed consent prior to her treatment. Her nutrition was managed through a nasogastric tube (NGT). The patient was in primary need of appliance that could support her feeding. **Patient's oral status:** Intraoral examination revealed bilateral complete cleft lip and palate deformity diagnosed as *bilateral complete labiognatopalatoschizis*. **Treatment plan:** Fabrication of NAM to reduce the severity of the initial cleft deformity and to achieve better and more stable results in cleft lip and palate infants, in particularly advantageous to lengthen the deficient columella prior to the primary surgical repair of the lip and nose. **Details of the therapy:** Preliminary impression were done at the first appointment using custom tray and elastomeric impression material. At 2 weeks after birth, a conventional molding plate was fabricated on the maxillary cast obtained by preliminary impression. After the NAM was completed, try in was performed on the patient's mouth and adjustment were made to the edges of the NAM. **Summary:** Nasolalveolar molding (NAM) allows an overall improvement in functional activity thus increasing infant's weight prior to surgery, also correct the aesthetics of the nasolabial complex in bilateral cleft conditions while minimizing the extent of the surgery and the overall number of surgical procedures.

Keywords: nasolveolar molding (NAM), labiognatopalatoschizis

OP-22

Precision Attachments for Partial Edentulous Rehabilitation: An Option in Prosthodontic Treatment

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ABSTRACT

Patient's chief complaint: A 48-year-female patient was referred to Prosthodontic Department Hasanuddin University Dental Hospital, Makassar with complaints of experiencing difficulties chewing food due to partial tooth loss in upper jaw and all teeth in lower jaw. The patient had used a denture on the lower jaw, but the denture felt loose. The patient want to make dentures on both jaws without using wires so they don't interfere aesthetic. **Patient's oral status:** Intra-oral examination showed partially edentulous maxilla where there were nine remaining teeth with gingival recession and total edentulous mandible. **Treatment plan:** Partial denture with an attachment retained metal framework (hybrid denture) that can support the patient's esthetic and conventional complete denture on the mandible. **Details of the therapy:** Performed preliminary impressions on the maxilla and mandible for manufacturing study model. Determination of tentative vertical dimension followed by maxillomandibular relationship record then mounted on articulator. Preprosthetic treatment was performed including periodontal treatment in the form of scaling in maxilla, then endodontic treatment of teeth 13,14,24, and 25. Preparation of abutments 13, 14, 24, and 25 for the manufacture of PFM split crowns. Abutment impression with two step technique using polyvinylsiloxane. The mold is filled with dental stone and processed in the laboratory. Try-in coping metal and female, pick up impression and tooth-shade selection. Try-in split crown and metal frame. On the mandible individual tray are made and then border molding. Secondary impression was carried out using polyvinylsiloxane. Beading and boxing are done to make the cast that has been done secondary impression and processed in the laboratory. Two dots method was used to determine the maxillomandibular relation and measure vertical dimension. Packing and finishing, followed by insertion of the denture. **Summary:** Precision attachment in dentistry are the functional mechanical parts of the removable partial denture. Precision attachment denture has always been considered beneficial for the patient because it combines both fixed and removable prosthodontics, giving a more esthetic and functional outlook to the denture. Use of precision attachment has simplified and amplified the aspects of retention, function and esthetics when compared to the conventional removable partial dentures.

Keywords: maxillary partial denture, extracorona precision attachment, patient comfort

OP-23

Alternative Measurement of Vertical Dimension of Occlusion with Apikal Software

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ABSTRACT

Object: To find out the VDO measurement with digital photo analysis method using *Apikal* analysis software, which help to measure VDO directly based on patient's photograph. **Methods:** The samples are 15 patients, with condition of missing all teeth in the upper and lower jaws for at least 6 (six) months. Then measurements of vertical dimension of occlusion were made using *Apikal* digital analysis software and the Two Dots technique as comparison. **Results:** Using the *Kruskal Wallis* test to compare the measurement of the vertical dimension of the occlusion with the Two Dots technique and *Apikal* software, there is no difference between the direct and indirect (digital analysis) on vertical dimension of occlusion measurements. An insignificant difference found, and the same result occur between both, with p value > 0.05 (0.816*). **Conclusion:** There is no difference of results on measuring the vertical dimension of occlusion between the Two Dots and *Apikal* analysis software, and there is a significant relationship between measurements on the face using the Two Dots technique and *Apikal* software. *Apikal* analysis software can help determine and as alternative method to do the measurement of vertical dimension of occlusion in patient indirectly.

Keywords: apikal software, two dots technique, vertical dimension measurement

OP-24

Prosthodontic Treatment for Geriatric Patient with Parkinson Disease

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ABSTRACT

Introduction: Elder population with associated physical and neurological disorders requires special care that needs to be attended by dentists. Dentists have a significant role in geriatric oral health. This case report explains clinical strategies in maxillary full denture and root-supported mandibular overdenture of a Parkinson patient. **Case report:** An 87-year-old female patient with Parkinson's disease (PD) was referred for replacement of completely edentulous maxilla and partially edentulous mandibula. Multiple short visits in the morning and manual manipulation were needed to overcome muscle discoordination problem. Individual trays, fast setting impression material, thermoplastic impression compound, pressure indicator paste, non-anatomical teeth with monoplane occlusion, and denture adhesive are required to enhance denture stability. Prostheses were fabricated with metal framework to avoid fracture and repeated repair. **Discussion:** Parkinson's disease is a progressive neurological disorder characterized by tremors, rigidity, bradykinesia and postural instability. These symptoms are worsened by psychological factor such as anxiety and stress. Poor motoric coordination is the cause for their increased susceptibility to dental caries and periodontal diseases as found in this patient. Oral muscular movement is essential in fabricating denture with sufficient retention, stability, and comfort. Adverse effect of Parkinson's disease medication is xerostomia, which was also found in this patient. This lack of saliva strongly affects denture retention and increased mucosa sensitivity, which in turn exacerbate symptoms of Parkinson's disease. **Conclusion:** Effective dentures will help in restoring function, esthetics, and psychological condition of the patient.

Keywords: geriatrics, parkinson, maxillary full denture, overdenture

OP-25

Magnetic Attachment as Retained for Mandibular Overdenture: Case Report

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ABSTRACT

Patient Chief Complaint: A 41-year-old female, came to the Dental Hospital of UNHAS with a chief complaint of difficulty in eating and lack of confidence. **Patient Status:** Clinical examination shown a complete edentulous in the upper jaw and partial edentulous in the lower jaw. The remaining teeth were 33, 34 and 43. **Treatment Plan:** Magnetic Attachments were planned on 33 and 43 and metal coping on 34 as retained for mandibular overdenture. **Details of Therapy:** Pre prosthetic treatment was carried out by root canal treatment on teeth 33, 34 and 43. Primary impression of the maxillary and mandibular arch was made. Magnetic attachments were planned on 33 and 43 and metal coping on 34. The abutment tooth decapitated about the same as the gingival margin. A bevel around the circumference was made. Surface shape of the root tooth was dome-shaped, and the finishing line is shoulderless. Post space impression was made with polyvinyl siloxane. Metal coping for 34 and cast post with keeper magnet for 33 and 43 was fabricated. The metal coping and cast posts metal containing keeper magnet were carefully cemented using glass ionomer cement. Border moulding was done for maxillary and mandibular arch. Occlusal rims were fabricated on final cast. Vertical dimensions and jaw relation was done then face-bow transfer and mounting the rims on the articulator. Try in, then denture was processed and inserted in patient's mouth. The magnets are placed under the mandibular denture, which is faced the keeper teeth, then polished and checked for comfort, occlusion, and retention. **Clinical Significance:** Magnetic attachments significantly increase the retention of mandibular overdenture; patient is more satisfied and comfortable. Patient doesn't experience difficulties in insert and removing the denture because when the denture is slightly shifted, the magnetic attachment returns it to its original position.

Keywords: magnetic attachment, edentulous jaw, overdenture

OP-26

Fabrication of Metal Frame Partial Dentures with Alter Cast Technique

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ABSTRACT

Patient chief complaint: A female aged 48 years came to the Hasanuddin University Dental Hospital, Makassar. She complains difficulty of chewing and a lack of confidence. **Patient status:** Full edentulous maxillary and edentulous partial mandible. Diagnosis full edentulous maxillary and class 1 Kennedy mandible. **Treatment plan:** Fabrication of partial metal frame dentures using the altered case impression technique. **Detail of therapy:** Panoramic Radiological images appear to be missing all teeth in the maxilla, available teeth: 33,32, 31, 41, 42, and 43, residual the roots of teeth 15 and 28. The pre-prosthetic treatment plan was scaling and extracting the remaining roots on teeth 15 and 28. The first prosthodontic treatment is Preliminary impression was made. Subsequently, the diagnostic model is placed on top of the surveyor for inspection and design of the metal frame. Making individual impression upper and lower jaw using self-curing acrylic material, then doing border molding with greenstick. An additional laboratory procedure for altered cast technique is done by splitting the master cast with a saw. A groove or indentation is made on the cut surface of the mold to help retain the cast to be mixed. The denture metal frame is placed over the grooved mold. The final impression was then beading, and boxing made before it was cast with a cast so that an altered cast was obtained. Making bite rims of the maxilla and mandible and determining the alignment, vertical dimensions, using a bite rim made from the final impression, face-bow transfer, and installation on the articulator. Try the arrangement of teeth. Acrylic processing, selective remounting, and grinding. Denture inserted and controlled, checked for occlusion, articulation, retention, and stability. **Clinical significance of therapy:** Metal frame partial denture with Alter cast impression technique provides better and stable denture.

Keywords: edentulism, metal frame dentures, altered case impression

OP-27

Improve the Quality of Life with Magnetically Implant-Supported Overdenture

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ABSTRACT

Patient chief complaint: A 50-year-old woman comes to the Dental Hospital Hasanuddin University Makassar with complaints of masticatory disorders because the dentures that have been used for 9 years are loose and wobbly so that they feel painful when used to eat. **Patient's Oral Status:** Intra-oral examination revealed the upper and lower jaws the patient is completely edentulous. In the lower jaw is also accompanied by alveolar ridge resorption. **Treatment plan:** Using an implant-supported overdenture with magnetic retention in the mandible while in the maxilla a conventional denture because there was still a portion of the maxilla that could be used for retention. **Detail of therapy:** After obtaining the patient's consent and confirming that the patient had no parafunction, two implants were placed on the body of the mandible using a single stage. Right and left implant length 12.0 mm, diameter 4.0 mm. Surface Both the magnet and the attachment guard are coated with titanium nitride (TiN). **Clinical significance of therapy:** Magnetically implant-supported overdenture can restore masticatory function and restore quality of life.

Keywords: implant, magnetic overdenture, resorbed alveolar ridge, quality of life

OP-28

Full Mouth Rehabilitation with Fixed Restoration: Case Report

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ABSTRACT

Patient chief complaint: A 32 years-old male patient with chief complaints of difficulty to chew food because loss of teeth referred to Hasanuddin University Dental Hospital. **Patient status:** Intraoral examination showed edentulous 15, 16, 26, 36, 37, 46 and 47. Radiograph examination showed no presence of radiolucent and crown root ratio of 1: 2. **Treatment plan:** Full mouth rehabilitation utilizing an adhesive bridge and a fixed-fixed bridge on the maxilla, as well as a telescopic crown overdenture on the mandible. **Details of therapy:** Preliminary impression for manufacture of diagnostic model and manufacture of temporary denture. Preparation was performed in box-shaped on the occlusal teeth 25 and 27 for the manufacture of adhesive bridge and preparation of 14 and 17 for the manufacture of fixed-fixed bridge, followed by double impression method and bite registration. Adhesive bridge and fixed-fixed bridge insertion followed by preparation of 35, 38, 45 and 48 for primer coping on telescopic crown overdenture. Secondary impressions were done using elastomer material. Primary crown of the teeth 35, 38, 45 and 48 were made in advance and performed cementation followed by mandibular secondary impression. Bite registrations were taken and maxillomandibular relation were recorded. After that, performed the metal frame try-in, posterior teeth try-in, laboratory processing and then insertion. **Clinical significance:** Prosthetic rehabilitation is critical, especially in cases when posterior teeth have been lost, adequate treatment plan must be done to improve patient's mastication and maintain stomatognathic system with denture fabrication.

Keywords: adhesive bridge, fixed-fixed bridge, telescopic crown, overdenture

OP-29

The Surgical and Definitive Obturator after Hemimaxillectomy of the Palate Tumor

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ABSTRACT

Patient chief complaint: A 53-year-old female patient came to the UNHAS RSGM upon a referral from an ENT specialist, patient was planned to undergo surgical removal of the left upper jaw due to the presence of a tumor, the patient needed a prosthesis. **Patient status:** Clinical examination, there was enlargement with hard palpation of the left hard palate with involvement of teeth 21 to 27, caries in 18, 12, 38, 37 and root remnants in 17, 16, 26, 27, and 36. Patient will undergo hemimaxillectomy surgery in the area. On the panoramic radiograph, a radiopaque mass extends over the right hard palate. **Treatment plan:** The patient was planned to undergo surgical removal of the left upper jaw due to the presence of a tumor, needed a prosthesis (surgical obturator) after removal of the tumor for her oral cavity. **Details of therapy:** Then an initial impression was also performed using irreversible hydrocolloid material to obtain a diagnostic model for the maxilla and mandible. Multidisciplinary discussion was conducted with the ENT specialist. The surgical obturator was made of heat cured acrylic material, equipped with artificial teeth elements and clasps. All the abutment teeth were gripped with the half Jackson type. The clasps were placed on 18, 15, 11, and 28. the position of the obturator base in contact with the tissue. **Clinical significance:** The use of an obturator can help patients in swallowing, masticating, and speaking, as well as helping to restore aesthetic function.

Keywords: obturator, hemimaxillectomy, palate tumor

OP-30

Management of Palatal Defect Post Hemimaxillectomy: A Case Report

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ABSTRACT

Patient chief complaint: A 42-year-old woman was referred to Prosthodontic Department Hasanuddin University Dental Hospital with speaking, swallowing, and chewing difficulty caused by fractured acrylic obturator that could not be reused. Since the resection of maxillary tumor in 2012, the patient has been using an obturator, resulting in a significant and deep defect in the right maxillary region. **Patient status:** Intraoral examination showed a defect in the midline of the palate extending to the left alveolar bone, and edentulous are 21, 22, 23, 24, 25, 26, 27 and 16. The maxillary defect did not appear to be inflamed or infected, and the surrounding area appeared to be normal. **Treatment plan:** Fabrication of maxillofacial framework partial denture to rehabilitate maxillary abnormalities. This material was chosen because its biocompatibility and rigidity. **Details of therapy:** Primary impression was carried out with irreversible hydrocolloid material with a stock tray to obtain a study model. Custom tray was made for individual impression with polyvinyl siloxane material to get a working model. Surveying was done then framework and bite rim were made. Maxillary denture designed with Akers clasps on 35, 37, RPI on 45, full palatal palate as major connector. After that, try in framework, followed by determine the vertical dimension. Arrangement of artificial teeth in articulator using A3 shade. The next appointment was try in prosthesis by evaluate retention, articulation, phonetics and esthetics, then sent to the dental lab for processing, the obturator were then inserted in patient mouth. Patient was followed up 24 hours and 1 week after insertion. **Clinical significance:** Maxillofacial framework partial denture is a rehabilitation device that can produce decent of retention and stabilization, especially in acquired defect cases. Prosthesis can improve patient's adaptation and ability with the functions of speech, mastication, and ingestion.

Keywords: hemimaxillectomy, metal frame, obturator, maxillofacial prosthesis

OP-31

***Presurgical Nasolaveolar Molding for Infant with
Labiognathopalatoschizis Bilateral Complete***

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ABSTRACT

Introduction: Cleft lip and palate (labiognathopalatoschizis) is a common congenital defect on craniofacial anomaly, arises with considerable variation in severity and form. It caused by internal (genetic) or external factors (environmental). **Case report:** This case report presented a sixteen days infant with 2.3 kg weight who had bilateral cleft lip and palate. The prolabium and columella were fused without a philtrum. The premaxilla rotates lateroanterior that covers the left nostril. The width of the alar base was significantly increased, and the lip segment far apart. This patient experienced difficulty in breastfeeding and will be treated with presurgical nasoalveolar molding (PNAM) with extra oral strapping. Anatomical sections of the anterior premaxilla were adjusted at each visit and installation of extra oral strapping to direct the premaxillary segment towards the median. After used PNAM, the baby had good sucking reflex and easy to breastfeed. After five months of treatment the position of the premaxilla has begun to recede and is slightly more to the median, the width of the defect getting smaller. The baby has met the "rule of ten" criteria and referred to the surgical department to undergo labioplasty surgery. **Discussion:** The PNAM design used was a hotz and Kogo modification. It's a combination of the Hotz plate that covers the alveolar segment and then extends posteriorly to the uvula combined with the Kogo design with a 2 mm elevation on the posterior plate which acts as a close box. When a reduction in the width of the alveolar cleft is achieved, the nose floor and lip segments achieve better alignment. The PNAM installation also functions as a drinking aid so that the baby does not choke and can get good nutrition. **Conclusion:** Installation of PNAM will make it easier for surgical operators to perform repositioning and reconstruction properly.

Keywords: labiognathopalatoschizis bilateral complete, presurgical nasoalveolar molding, cleft lip and palate

OP-32

Management of Completely Edentulous Resorbed Mandibular Ridge with Flabby Tissue Using Suction Method Impression Technique and Lingualized Posterior Occlusal Scheme: A Case Report

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ABSTRACT

Background: Oral health problems often leads to edentulism. Post-extraction alveolar ridge will undergo bone resorption and can be aggravated by ill-fitting denture. There are some treatment options for completely edentulous patients. However, conventional complete denture is still one of the most popular treatment options as it is predictable, cost effective, and non-invasive. There are some principles that should be followed to ensure a more comfortable and functional complete denture. **Objective:** The purpose of this article is to describe how a case of fully edentulous patient, with flabby tissue and flat mandibular ridge, is managed using suction method impression technique and a lingualized posterior occlusal scheme. **Case Report:** A female patient aged 68 years old came to the Universitas Airlangga Dental Hospital to get a new denture since her previous denture is ill-fitting and unfunctional. The mandibular alveolar ridge is flat and there is flabby tissue in the anterior region of the maxilla and mandible. **Case Management:** First, a preliminary impression was taken using the reversible hydrocolloid alginate impression material. Then, a bite rim was fabricated from the preliminary model. Next, the horizontal and vertical position of the mandible was determined using the bite rim. The lower bite rim was cut into 4 pillars so that a suction method impression technique could be done. A neutral zone registration was also done for guiding the lower denture teeth arrangement. The posterior occlusal scheme was arranged to be lingualized occlusion. The denture needed some minor adjustment during control. **Conclusion:** Suction method impression technique combined with lingualized posterior occlusal scheme will make a more retentive and stable complete denture.

Keywords: complete denture, suction method, lingualized posterior occlusal scheme

OP-33

Establishing Clinically Acceptable Threshold for Pink and White Esthetics Scores

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ABSTRACT

Objectives: The esthetic success of single-tooth implant restorations (STIR) requires an objective tool such as one devised by Belser et al., 2009 - pink esthetic scores and white esthetic scores (PES/WES). This study aims to (1) establish a threshold for PES/WES, based on the detectability of STIR by laypeople (2) establish a threshold for PES/WES based on the acceptance rate of STIR by laypeople (3) study the pink and white deficiencies in relation to the detectability (4) study the difference in the ability of laypeople and dentists in detecting STIR. **Methods:** Thirty-eight photographs of STIR in the esthetic zone were given PES/WES scores by 3 evaluators. The photographs were distributed to 100 laypeople and 60 dentists to identify the STIR and provide reasoning. Then, the participants were asked if the STIR was acceptable. Receiver Operating Characteristics (ROC) analysis was utilized to determine the threshold. **Results:** At the PES/WES score of 17, 71 laypeople unable to identify the STIR, and at the score of 12, 80 laypeople accepted the implant. Out of 3,800 occasions, laypeople correctly identified the STIR 1,770 (46.58%) of those occasions; 751 (42.43%) of those occasions were correctly identified with pink deficiencies and 1019 (57.57%) of those occasions with white deficiencies. In comparison to the layperson group, out of 2,280 occasions, dentists correctly identified STIR 1,869 (81.97%) of those occasions. **Conclusion:** The PES/WES score of 12 indicates the clinically acceptable threshold while the score of 17 indicates the detectable threshold for an exceptional esthetic outcome. For both laypeople and dentists, root convexity/soft tissue color and texture are the most focused criteria of pink deficiencies, while overall white deficiencies remain influential. Compared to laypeople, dentists tend to have a higher ability to detect STIR.

Keywords: single-tooth implant restoration, pink esthetic score, white esthetic score

OP-34

Neutral Zone: A Concept and Technique Application for Managing Severely Resorbed

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ABSTRACT

Background: Full dental prosthesis rehabilitation on flat mandibular ridge has been a difficult case for clinician for a long time. A huge resorption of mandibular ridge resulted in not enough retention, tongue muscle force as well as lips and cheek muscle causing a decrease in denture's stability and retention. Neutral zone is a potential area or position where lips and cheek on one side, and tongue on the other side have balance pressure. Purpose: To acquire optimum stability of the denture, arrangement of the mandibular teeth in full dental prosthesis must follow the neutral zone. **Case Report:** A 60-year-old male patient with a chief complaint of difficulty in mastication, loosening of upper and lower dentures, he also complained of denture moving during swallowing and speaking. **Case Management:** Preliminary impression was done using alginate. Then, horizontal and vertical jaw relation was recorded using bite rim. Suction method impression technique was used to acquire functional impression. Lower denture teeth arrangement followed the result of neutral zone impression. Acrylic denture was being contoured to follow natural anatomy of the oral cavity. **Conclusion:** The result of the treatment is patient get full denture with maximum retention and stability while speaking as well as masticating. This article explains about the making of full dental prosthesis with pressure point on neutral zone impression technique on flat mandibular ridge caused by huge resorption.

Keywords: flat mandibular ridge, denture stability, neutral zone, impression technique

OP-35

Neutral Zone and Copy Denture Techniques in a Geriatric Patient

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ABSTRACT

Severe alveolar ridge resorption is a key problematic feature in the fabrication of full dentures. The instability and looseness of a lower full denture are among the most prevalent issues observed in an edentulous patient. Complete dentures are mechanical devices. Functionally, they must be fashioned in harmony with normal neuromuscular function in oral cavity. This report describes the treatment of a 72-year-old female who came with a complaint of an unstable, loose lower denture due to a severely resorbed mandibular residual ridge. Medically, the patient presented with multiple systemic diseases with various medications taken. Clinical examination showed that the mandibular ridge was flat with insufficient width and height. Treatment consisted of maxillary and mandibular dentures construction utilizing the neutral zone technique. At one year review, the patient expressed her satisfaction with her existing dentures and requested to have similar dentures made as a spare in case she ever lost the current dentures due to her old age condition. Hence, she was offered a copy denture. The neutral zone technique is a physiological and functional strategy to manage unstable lower full denture cases by determining optimal teeth positioning in relation to neuromuscular activities as well as the shape of the polished surface of the denture. On the other hand, copy denture increases neuromuscular adaptation to new denture, minimizes patient-clinician chairside time, decreases laboratory processes, reduces the number of patient visits, simplifies jaw relation registration and offers greater guidance to tooth position. Overall, the patient was satisfied with the results. Combination of neutral zone technique in elderly patient and subsequently, copy denture provision at a later stage proved to be a successful treatment modality in elderly patient.

Keywords: complete denture, atrophic ridge, neutral zone, copy denture

OP-36

Rugoscopy and Blood Group - An Aid to Forensic Odontology

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ABSTRACT

Statement of problem: Identification plays a major role in any crime investigation. It is difficult to identify people when visual recognition and fingerprint analysis turn out to be ineffective like in advanced stage of decomposition or burnt cases. **Aim:** The aim of the present study is to determine the correlation of Rugoscopy with Blood groups. **Objectives:** To evaluate the pattern of palatal rugae and distribution of its characteristics among subjects having different ABO and Rh blood groups. **Methods:** A total of 40 subjects were enrolled in this study in the age group of 18–60 years. Pattern of palatal rugae regarding the number, size and shape of rugae was identified according to the classification of Kapali et al. The palatal rugae of each subject were recorded by using an irreversible hydrocolloid impression material(alginate) in a perforated tray. Blood sample for blood grouping was taken and verified for blood group. The palatal rugae pattern of 40 subjects were then co related with blood groups and recorded. The data was subjected to chi square test. **Results:** Primary rugae type showed the highest number while the most frequent shape was the wavy shape, followed by the curved shape. Converging form of unification was also found to be more prevalent than the diverging form. No statistically significant correlation was found between blood group and distribution of its characteristics of palatal rugae. **Conclusion:** Correlation of palatal rugae patterns and blood groups might give valuable indications for the identification of suspect and help in gaining forensic evidence. This study showed a specific rugae pattern in the studied adult Indian population when compared to other populations' patterns that were reported in the literature.

Keywords: forensic identification, palatal rugae, rugoscopy, blood groups

OP-37

Management of Maxillary Anterior Flabby Ridge in Fabricating Complete Denture: A Case Report

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ABSTRACT

Introduction: Flabby ridge is one of the complicating factors in fabricating of the denture, because it could affect retention and stabilization of denture. Management of flabby ridge can be done in two ways, with surgical and non-surgical. Non- surgical treatment option is the first alternative. The factors that need to be considered in the fabricating of denture on flabby ridge are impression technique. The main purpose of taking impression is to achieve retention, stabilization, and support for denture that are useful for maintaining healthy tissue in oral cavity. **Case report:** A 65 years old male patient with chief complains of missing all of the maxillary and mandibular teeth. On intraoral examination, there was flabby ridge on the anterior maxilla. Treatment plan for this patient was fabricating of complete denture using selective pressure technique. This technique start giving spacers on the flabby area, then holes are made on the individual tray to make it easier for excess impression material to come out. When taking impression only the posterior part is pressed, thereby reducing pressure on flabby areas. **Discussion:** Non- surgical management of flabby ridge can be used is selective pressure technique, which aims to reduce the pressure on the flabby area so as to avoid tissue distortion. In this case, a selective pressure technique can avoid tissue distortion so this stability of the denture can be archived when used the denture in function. **Conclusion:** It was concluded that the technique results in minimally distorted on flabby tissue, so a good working model can be achieved to produce optimal stable and good retention denture.

Keywords: flabby ridge, complete denture, selective pressure technique

OP-38

Effect of PNAM with Nasal Stent on Infant Nasal Symmetry Correction of Complete Unilateral CLP Pre-Labioplasty: Three-dimensional Anthropometric Analysis

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ABSTRACT

Introduction: Infants with complete cleft lip and palate (CLP) exhibit asymmetrical characteristic of nasal deformation. Pre-surgical treatment by making presurgical nasalveolar molding (PNAM) with a nasal stent aims to assist the sucking and swallowing function of infants with CLP as well as passively moving separated alveolar segments and correcting nasal deformities in order to obtain more functional and aesthetically satisfactory surgical results. **Objective:** This study aimed to analyze the effect of PNAM insertion with a nasal stent on the correction of nasal symmetry in infants with complete unilateral cleft lip and palate. **Methods:** This research is a quasi experimental with one-group pre-treatment and post-treatment design. Five unilateral complete CLP infants were subjected to anthropometric measurements of alar displacement, columella height, nostril width nostril height and nostril axis inclination to obtain anthropometric ratios on the cleft and non-cleft sides with three-dimensional surface scanning before (T1) and after (T2) insertion of PNAM with nasal stent. **Results:** Analysis of the students' t-test showed a significant (p -value <0.05) between T1 and T2 in four anthropometric-ratio. Insertion of PNAM with nasal stent has resulted symmetrical nasal morphology of infants with complete unilateral CLP pre labioplasty with an increased ratio of columella height, nostril width, nostril height and nostril axis inclination between the cleft and non-cleft sides. **Conclusion:** Installation of PNAM with nasal stent can correct pre-labioplasty nasal symmetry.

Keywords: presurgical nasalveolar molding, nasal stent, nasal deformity, nasal symmetry

OP-39

Edentulous Treatment with Non-Retentive Overdenture Maxilla and Magnets to Retain Mandibular Tooth Tissue Supported: A Case Report

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ABSTRACT

Introduction: Overdenture is a complete or partial denture supported by mucoperiosteum and a few teeth or roots that have been done endodontic treatment. Technic of using coping cast and magnetic connection is very simple and shaping the course of aesthetics and retention for both complete and removable partial overdentures. Their benefits include simplicity, low cost, self-adjustment, inherent stress breaking, automatic reseating after denture displacement, comparative freedom of lateral denture movement, and increased masticatory efficiency due to better stability and retention also reduced mucosal pressure. **Case report:** This case discussed overdenture treatment by using metal coping and magnet retention in a patient with partial edentulous upper and lower jaw. A 69-year-old male comes with a chief complain of missing teeth and a lot of damage teeth that cannot be used to eat. Preliminary treatment was tooth extraction on #26, #13, #11 and endodontic treatment on #21, #33, #34. On teeth #21 was used by a single coping cast non-retentive, #33 was used magnet retention and #34 was glass ionomer coping. **Discussion:** Treatment full overdenture using metal coping and magnet retention may be an alternative treatment in partial and fully edentulous maxilla and mandibula. Clinical experience has shown that non-retentive overdenture preserves alveolar bone and increased denture stabilization and magnetic retention in mandibula can be used effectively to improve retention, overcome lateral forces of abutment teeth and easy application. Magnets have a small size but have great attraction and were placed on the inside of the denture so that it does not interfere with aesthetics, especially on anterior teeth. **Conclusion:** Natural tooth roots, even if periodontally involved, can serve as useful aids in tooth support and retention, more affordable and in many cases superior to implanted dentures.

Keywords: overdenture, magnet, coping metal, edentulous

OP-40

Management Of Fully Edentulous Patient with Semi-Adjustable Articulator: A Case Report

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ABSTRACT

Introduction: Loss of tooth could cause many anatomical, physiological, and functional changes, also could cause psychological trauma. Patient who loss all their tooth needed denture to fulfil their needs, both functionally and esthetically. **Case report:** This article showed treatment for 71 years old man came to Universitas Padjadjaran Dental Hospital with chief complaint pain in left mandibular ridge from the past 6 months and couldn't masticate well. This patient wore acrylic full denture made by denturist from the past 7 years. Intraorally, both occlusion at posterior part of the denture were open, found enlargement of palatal mucosa because usage of vacuum chamber dan mandibular flat residual ridge. Treatment plan of this patient was fabrication upper and lower denture with facebow transfer and semi adjustable articulator. **Discussion:** Full denture in flat ridge cases needed proper treatment because lack of retention and stability. Extension of denture flange at sublingual area could increase stability and retention in this case. Fabrication of full denture with facebow could record maxillary relation with rotation of the mandible and allowed maxillary cast model placed according to the semi adjustable articulator. Semi adjustable articulator was an effective tool to fabricate full denture because could minimize adjustment of artificial tooth and occlusal contact. **Conclusion:** The usage of facebow and semi adjustable articulator could help dentist to achieved artificial teeth arrangement like patient occlusal scheme while function so that dentist could minimize reduction and adjustment of artificial teeth also increased patient's comfort while wearing the denture.

Keywords: semi-adjustable articulator, facebow transfer, denture, flat ridge

OP-41

**Aesthetic Treatment of Lateral Peg-Shaped Incisive with
Indirect Veneer Restoration Using Ceramo Polymer Restoration: A
Case Report**

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ABSTRACT

Introduction: Peg shaped is one of the abnormalities of dental anatomy, ie tooth size is smaller than normal, and tapered shape. These peg-shaped teeth are often found in the maxillary lateral incisors and third molars. The shape on the lateral incisor often causes aesthetic problems because of its anterior position. One of the treatments for peg-shaped teeth is Veneer. **Case report:** 26 years old woman, had a peg-shaped shape on both lateral incisors. Indirect veneer aesthetic treatment was performed using Ceramage to correct the shape and cover the diastema so that better aesthetics would be achieved. Wax-up is done to see the suitability of the shape and proportion of the veneer. The patient can get a visual picture of the expected treatment results. **Discussion:** The result of the treatment is Ceramage gave a good shape in improving the shape of the Peg-shaped incisor. The color of the veneers also resembles the color of their natural teeth, and the patient is satisfied with the results of the treatment. Ceramage can be used as a treatment option for anterior teeth with deformities. **Conclusion:** Ceramage veneer is an alternative that can be done to improve the aesthetic appearance at a more economical cost for anterior teeth.

Keywords: peg-shaped lateral incisive, indirect veneer, ceramo polymer restoration

OP-42

Photofunctionalization: “Revitalizing Dental Implant Surfaces” - A Histomorphometric Animal Study

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ABSTRACT

Objective: Photofunctionalization is a very recent development introduced for rapid, chairside conditioning of dental implants for superosseointegration without altering any morphologic features. All the surface properties that had been lost due to biological aging can be revitalized using this cutting-edge light technology by doing a surface conditioning of the implant immediately before surgical placement. This study attempts to compare and evaluate the degree of osseointegration of UV treated (photofunctionalized) and non UV -treated dental implants surface by histomorphometric analysis in a rabbit model. **Methods:** Proximal femoral condyle of nine New Zealand white rabbits (*Oryctolagus cuniculus*) were implanted with one UV treated and one non-treated implant per animal. All the implants were tapered dental implants (3.2 mm diameter and 8mm length) coated with Calcium phosphate by Resorbable Blast Media (RBM) technique. Photofunctionalisation was carried out using UV chamber [GENESIS LAMINAR FLOW-240-260nm] prior implantation of the study group. Histomorphometric analysis was done after 12 weeks of implantation using Image J software. **Results:** The bone implant contact and bone volume density were analysed using unpaired t test. There was a statistically significant difference in the bone implant contact and bone volume density between the two groups. The mean difference in bone implant contact was 30.2144 ($p=0.000$). Histologic and histomorphometric analysis revealed higher percentages of bone implant contact as well bone volume densities for the UV photofunctionalized dental implants. The newly formed bone was much denser and continuous along the UV-treated implant surfaces at 12 weeks suggesting that photofunctionalisation of titanium enables more rapid and complete establishment of bone-titanium integration. A need to popularize photofunctionalisation as a cost-effective method to promote superosseointegration (biologic capacity) of indigenous dental implants by reducing the healing time and increasing the success rate justifies the study.

Keywords: photofunctionalization, implants, histomorphometric study

OP-43

Indirect Sinus Lift Procedure with Immediate Implant Placement: A Case Report

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ABSTRACT

Chief Complaint: Patient complains of missing teeth in the upper left back region of the jaw
Patient's oral status: Missing teeth : 25, 26, 27, 37, fixed prosthesis: 18, 17, 16, 15, 14, 13, 12, 34, 35, implant retained prosthesis: 37, 36, 35, Siebert's classification: Class II (Loss of ridge height with normal ridge width). **Treatment plan:** Implant retained prosthesis with 25,26,27 (maxillary left second premolar and molars) with indirect sinus lift surgery. **Details of therapy:** On CBCT examination obtained and the bone height in the region of 27 was found to be 5mm. Therefore, an Indirect Sinus Lift procedure was planned with immediate implant placement following the Hydraulic Sinus Lift Technique. The implant size was determined as 4,5 X 8.5mm. The DioNavi Sinus Lift drill kit was used. The drilling protocol to be followed for Sinus Lift procedure. For the 27 region, tissue punch was made, and sequential drilling was followed till 3.2 X 7mm drill. 3,2 X 17mm drill was used with a 5mm stopper and 4mm stopper respectively to create an opening in the sinus floor. The nozzle was then applied to the bone cavity such that the connection is airtight. The syringe, filled with normal saline, is depressed slowly, and helps in detaching the membrane from the sinus floor. Hydroxyapatite bone graft was filled into the cavity and the implant was placed 6 months post the surgical phase, phase II was carried out and the impression was made, and prosthesis delivered. **Clinical significance of therapy:** To achieve adequate osseointegration, there should be good quality and quantity of bone around the osteotomy. This may be compromised in edentulous posterior maxilla in the vertical direction. Therefore, the Sinus Lift procedure is helpful in overcoming this limitation.

Keywords: sinus lifting, implant, bone graft

OP-44

Digital Mock-up Helps Patient to Choose Treatment Plan during Pandemic: A Case Report

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ABSTRACT

Introduction: *Communication* is very important for doctors and patients to choose the final treatment outcome. Patients often do not understand the treatment plan so that the result is not as expected. Digital communication can be done to help patients describe the final result and reduce patient visits in the pandemic. A clear picture helps patients understand the advantages and disadvantages of treatment plans and can choose, especially in cases where the ideal result is not possible. **Case report:** The 24 years old patient came with a complaint that there were multiple diastemas in the upper anterior teeth interfere with esthetics. The diastemas appeared after he finished fixed orthodontic treatment. Initially, he was advised to perform fixed orthodontic therapy accompanied by orthognathic surgery, but he refused. He wants to make fixed restorations to close the diastemas. The Patient undergoes anamnesis, photo-taking, and impressing for diagnosis. The treatment plan is then made with a digital mock-up using the smile design application. The treatment plan was made with two alternatives because there were differences in the size of the diastema on the right and left sides. The first alternative is made by shifting the median line while following the golden proportion protocol. The second alternative was made without shifting the median line by overriding the golden proportion protocol, but aesthetic modifications were made by masking. **Result:** Digital online communication is carried out to patients to provide a final overview of the treatment plan. The advantages and disadvantages of both alternatives are communicated. Patient can describe the final result of treatment and choose one of the two treatment plans provided without coming to the clinic. **Conclusion:** Digital communication can be an option to help patients choose a treatment plan without a visit in the pandemic era.

Keywords: fixed dental restoration, mock up, digital communication, smile

OP-45

Auricular Prosthesis for Post Traffic Accident Patient: A Case Report

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ABSTRACT

Patient Chief Complain: Patient Mr. F, 18 years old, came to the dental and oral education hospital of Hasanuddin University with complaints of losing his left ear due to a traffic accident and often feeling pain in his ear especially when blown by strong winds. The patient wants to make an ear prosthesis to return his confidence. **Patient Status:** The convex profile, oval-shaped face, symmetrical eyes, nose, and lips on the right and left, submandibular lymph nodes no complaints and no complaints. The right and left ears are not symmetrical **Treatment Plan:** Manufacture of silicone ear prosthesis with adhesive retention **Details of Therapy:** Anatomical impressions of the patient's and his siblings' ears were performed as a guide for duplication of the patient's left ear using an irreversible hydrocolloid impression material. The wax pattern of the ear prosthesis that had been made on the die was paired with the patient to check for size accuracy and left and right symmetry. Then proceed with the process of packing and coloring. After the lab process is complete, insertion is carried out. **Clinical Significance:** Silicone ear prosthesis with adhesive retention restores the patient's appearance and confidence.

Keywords: auricular, prosthesis, adhesive retention

OP-46

Temporomandibular Disorder Therapy with Stabilization Splint

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ABSTRACT

Patient Chief Complain: A female patient, 14 years old, came to the General Hospital with complaints of swelling on the left cheek, the right jaw joint often made noises $\pm$ since 6 months ago. The patient had a motorcycle accident 2 years ago and hit his left cheek at the time of the accident. The patient is dizzy, nauseous and does not vomit. The patient was referred from the public medical centre to an oral surgeon because of a suspected infectious disorder, but after examining the patient was suspected of having a jaw joint disorder and was referred to the prosthodontics department. **Patient Oral Status:** Intraoral examination of the patient showed good OHIs (3,2) with 32 missing teeth. Examination of the right and left lymph nodes showed normal conditions. On its own, the right temporomandibular ring sounds but is not painful. Examination of the masseter, temporalis, trapezius, and sternocleidomastoid muscles showed complaints of pain felt by the patient Examination of the masticatory muscles, panoramic and transcranial photos. The patient's history was that he often bit a pencil when he was still in elementary school and had a bad habit of bruxism and stopped at the 6th grade of elementary school. **Treatment Plan:** Treatment of temporomandibular joint disorders with splint stabilization **Details of Therapy:** Preliminary impression was carried out using irreversible hydrocolloid to obtain an anatomical model of the patient, followed by taking the patient's bite to make a stabilization splint. Supportive therapy consists of patient education, warm compresses, and physical self-regulation. Control was carried out 1 week and 1 month after using the stabilization splint. **Clinical Significance:** TMD therapy with stabilization splint supported by supportive therapy can reduce pain in the temporomandibular joint and eliminate swelling on the left side of the face.

Keywords: temporomandibular disorder, stabilization splint, supportive therapy

OP-47

Implant Overdenture using CAD/CAM Milled Titanium Bar with Locator Attachment

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ABSTRACT

Chief complaint: A 70 years old female patient presented with a complaint of loose denture. She dislikes using adhesives and requests for fixed treatment. **Patient's oral status:** Clinical examination revealed that she has compromised bone, loss of anterior labial vestibule, inadequate lip support and may require extensive bone augmentation for fixed denture. Due to costly and complicated surgical treatment, the patient agreed for a removable implant retained overdenture with partial palatal coverage design. **Details of therapy:** A new set of interim dentures was fabricated and converted into surgical and radiographic guides. Bilateral sinus augmentation was performed via lateral approach using bovine derived xenograft (BDX Bio-Oss). After nine months, four implants (Straumann Roxolid 4.1, 4.8 x 12 mm) were inserted into the healed augmented maxillary sinus. Master impression was taken using vinyl polysiloxane (VPS) with splinted impression coping using an open tray technique. The cast was verified, and maxilla mandibular relationship (MMR) was recorded. The clinical try in was done to confirm aesthetics and act as an index for suprastructure fabrication. The milled framework was then tried in the mouth to confirm fitting. During delivery, the laboratory male processing was changed with light retention (blue). After two weeks of review visits, she was satisfied with the prosthesis. **Clinical significance:** 4 long textured surface implants placed in augmented sinus are sufficient to retain maxillary overdenture. Unlike gold or metal casting, the lightweight CAD/CAM titanium produces a precise, economical, and lightweight attachment for oral rehabilitation. The auxiliary locator attachment incorporated into the milled bar has given an additional retention and provides vertical resiliency during occlusion. Additionally, the bilateral splinted approach is useful for cross arch stabilization. The partial palatal design has enhanced phonetics and improved taste reflection for the patient.

Keywords: implant, overdenture, bone augmentation, sinus augmentation, bilateral splint

OP-48

Creating “Magnetic” Functional Aesthetics- A Case Report

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ABSTRACT

Chief complaint: A 70 years old female patient presented with a complaint of loose denture. She dislikes using adhesives and requests for fixed treatment. **Patient's oral status:** Clinical examination revealed that she has compromised bone, loss of anterior labial vestibule, inadequate lip support and may require extensive bone augmentation for fixed denture. Due to costly and complicated surgical treatment, the patient agreed for a removable implant retained overdenture with partial palatal coverage design. **Details of therapy:** A new set of interim dentures was fabricated and converted into surgical and radiographic guides. Bilateral sinus augmentation was performed via lateral approach using bovine derived xenograft (BDX Bio-Oss). After nine months, four implants (Straumann Roxolid 4.1, 4.8 x 12 mm) were inserted into the healed augmented maxillary sinus. Master impression was taken using vinyl polysiloxane (VPS) with splinted impression coping using an open tray technique. The cast was verified and maxilla mandibular relationship (MMR) was recorded. The clinical try in was done to confirm aesthetics and act as an index for suprastructure fabrication. The milled framework was then tried in the mouth to confirm fitting. During delivery, the laboratory male processing was changed with light retention (blue). After two weeks of review visits, she was satisfied with the prosthesis. **Clinical significance:** 4 long textured surface implants placed in augmented sinus are sufficient to retain maxillary overdenture. Unlike gold or metal casting, the lightweight CAD/CAM titanium produces a precise, economical, and lightweight attachment for oral rehabilitation. The auxiliary locator attachment incorporated into the milled bar has given an additional retention and provides vertical resiliency during occlusion. Additionally, the bilateral splinted approach is useful for cross arch stabilization. The partial palatal design has enhanced phonetics and improved taste reflection for the patient.

Keywords: fixed denture, bone augmentation, implant, bilateral splint

OP-49

Single Implant Mandibular Overdentures in 4 Different Clinical Situations: Case-Series

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ABSTRACT

Objective: This paper highlights the successful rehabilitation of a multifaceted defect using a two-piece prosthesis connected with magnets. **Chief complaint:** An 80-year-old male reported for rehabilitation of an extensive orofacial defect on the left side acquired due to multiple resections for recurrence of adenocystic carcinoma resulting in fluid leakage, aesthetic, and phonetic compromise. **Oral status:** The lateral midfacial defect involved the left cheek extending to infratemporal fossa and communicates with the intraoral maxillary defect with limited mouth opening and jaw deviating to the left side. The mandible was intact whereas in the maxilla all teeth except 11,12,13 was missing. **Treatment plan:** Fabrication of acrylic palatal plate with the flange extending into the left buccal sulcus. Fabrication of cheek prosthesis and attaching it to the buccal flange of the palatal plate with magnets to provide retention and prevent separation of the prosthesis during function **Details of therapy:** Impression of the maxillary arch and the face was made using irreversible hydrocolloid material. Casts were made and wax patterns were fabricated. Palatal plate was fabricated using heat cure acrylic resin. Cheek Prosthesis was fabricated using autopolymerising resin and pigments were added. Dyna dental magnets were fixed on the buccal side of the palatal plate and on the inner surface of the cheek prosthesis. **Clinical significance of the therapy:** Reversing the devastating functional and aesthetic impact of large maxillofacial defects on patients is a challenging task because of its impact on the physical and psychological wellbeing of such unfortunate patients. Magnetic retention enjoys a longer fail-safe period than other retentive aids. This user -friendly prosthesis with ease of insertion and removal helps to restore both aesthetics and function thereby contributing to the overall wellness of the patient.

Keywords: implant, overdenture, adenocystic carcinoma, cheek prosthesis

OP-50

Calibrated Pressureless Impression Technique of Ocular Prosthesis for Eviscerated Socket

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ABSTRACT

Ocular prosthesis for post evisceration socket often has feeble adaptation to the surrounding tissue due to high sensitivity of the remaining part. Excessive pressure given by impression technique would lead to improper record of tissue surface resulting irritably intaglio and bulky palpebral contour of the prosthesis. This article describes a modified method of functional impression for the fabrication of ocular prosthesis which made it easier not only to record the tissue surface of the defect but also to get the right contour of the palpebral surface at the same time. A 60-year-old male came to Dental Hospital Universitas Sumatera Utara with evisceration defect as a result of injury 40 years ago. He complained a facial disfigurement that made him formidable with social interaction. Upon examination, the defective right eyelid was retracted. Intra ocular tissue bed and muscles were intact and free of inflammation. For the contralateral eye, lid position was normal, no nystagmus and no history of strabismus. Pressureless impression combined with calibrated conformer was planned for the patient. Low viscosity polyvinylsiloxane material was injected into the socket under slight pressure and the conformer made from visible light cure acrylic resin was in position as a tray. Vertical and horizontal lines marked in the conformer calibrate with the facial marking as a guidance for three dimensions (3D) position. Patient was instructed to perform eye movements while the impression material sets. Numerous impression techniques have been described in the literature, the technique used should cover sensitive area of tissue bed and take concern for minimally pressure treatment. The method is intended to get the fast and accurate 3D position to provide ocular prosthesis that have better adaptation to underlying tissues offering the patient a great comfort as well as to provide facial contours that improve the patient's psychological and physical outlook.

Keywords: evisceration, customized ocular prosthesis, functional impression, pressureless impression, calibrated conformer

OP-51

Two Pieces of Sectional Interim Obturator with Magnet Retention and Posterior Bite Plane

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ABSTRACT

Background: Defects in the palatal area with a hard and soft condition are caused by some factors: heredity, congenital, or growth problem. Prosthetic rehabilitation on a patient with total or subtotal maxillectomy in obturator is challenging work because of the difficulty to get support, retention, and stability of protheses, as well as not good maxillary structure. **Aim:** This study aims to determine how to close palatal defects in dentulous or edentulous patients so that chewing, speaking, swallowing, and esthetic functions can be improved. **Case:** A 47 old years man presented with defect maxillary dextra post hemimaxillectomy, no swelling in the extraoral and intraoral area, no crepitus, palpation on the right submandibular feels rigid and stiff, mouth opening (initial distant maxillary and mandibular) ± 12 mm, *Candida* was found in the palatal area and tongue. He complained of difficulty opening his mouth, and the prosthesis after surgery was uncomfortable. He underwent hemimaxillectomy on the maxilla dextra in September 2020. He has undergone 33 chemotherapy and eight times radiotherapy. He has been diagnosed with Aramany class I maxillectomy defect with microstomia because of muscle fibrosis in the sternocleidomastoideus. Treatment planning uses two sectional interim obturators with magnet retention on the mandibular's maxillary and posterior bite plane. **Discussion:** Patients with microstomia due to pathology or extensive surgical procedures may present with symptoms of difficulty opening the mouth. Using a two sectional interim obturator can improve the patient's complaint of difficulty speaking and eating. Using a posterior bite plane in a limited opening mouth can help to wider it.

Keywords: palatal defect, obturator, microstomia, hemimaxillectomy

OP-52

Removable Acrylic Denture with Eucalyptus Extract Clinical Evaluation as an Herbal Prevention Therapy for Sars Cov-2

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ABSTRACT

Eucalyptus known as one of Indonesian local plants, which has many medical benefits and used in some dental medical material product. Eucalyptus contain tanin, flavonoid, cineol that has potential effect to inhibit growth and replication of bacterial, fungal and virus. This experimental clinical and laboratory research has a purpose to know about possibilities and effectiveness of using eucalyptus extract as a part of denture material. Certain percentage of eucalyptus powder being mixed with dental acrylic powder and monomer to processing acrylic partial denture. 6 edentulous patients with no covid symptom and experienced has been chosen to be an experimental subject and filling informed consent. Sars Cov-2 PCR examination has been taken twice at the beginning and at the end of the denture prosthetic treatment. Clinical denture treatment done at Sardjito Central Hospital and laboratory denture making process has been done at dental laboratory. 30:70 Composition between eucalyptus extract and acrylic powder has been chosen to get the resistant strength denture. 14 days observation being chosen to see the effectiveness of eucalyptus as a herbal preventive therapy against Sars Cov-2. At the result is being proven that every experimental subject found negative result for PCR Sars Cov-2 examination after 2 weeks. Analytical observation using regression and correlation after 2 weeks on experimental subject for oral tolerance did not find any allergic reaction or other body rejection reaction.

Keywords: eucalyptus, denture, sars-cov2

OP-53

Iris Positioning Technique by Using Face Symmetric Measurement-Tool on the Custom Ocular Prosthesis

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ABSTRACT

Loss of eye generally requires surgical intervention in removing the eye so that it can have a major psychological impact on the patient. To overcome this problem, fabricate an ocular prosthetic like the natural eye. Various techniques are documented to determine the symmetrical bilateral iris position, but these methods can be subjective, have no measurement guidelines and difficult to stabilize. This case report describes a simple technique for determining the symmetrical iris position using the face symmetric measurement-tool. A 20-year-old male patient came to the Prosthodontic clinic of dental hospital Universitas Sumatera Utara with the main complaint feeling less confident and intended to fabricate a right ocular prosthesis. The diagnosis of this case is post enucleation socket syndrome. We fabricate a custom ocular prosthesis by determination of the iris position using the face symmetric measurement-tool by focus to the vertical and horizontal lines of the facial symmetry guide. The patient is instructed to sit up straight, with wax sclera in the patient's eye, apply the tool. Ensure the alignment of the vertical lines by connecting the trichion – glabella – subnasal– gnathion guide points so that they vertically divide the two sides of the face. Confirm the alignment of the two horizontal lines by connecting the left-right cheilion with the mesial-distal canthus of the right and left eyes. This tool is in the form of a face mask with vertical and horizontal guidelines connecting the symmetrical guide points of the face accompanied by centimeters and millimeters making it easy to measure distances and sizes of the iris symmetrically vertically and horizontally. The use of this tool has given good results in determining the position of the iris because easy to use, accurate, stable, and can see facial symmetry compared to the techniques used previously.

Keywords: custom ocular prosthesis, iris position, face symmetric measurement tool, face symmetry

OP-54

Modified Functional Impression Technique for Managing Sensitive Evisceration Socket

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ABSTRACT

Evisceration patients usually have confidence problem. To restore their confidence, the patients need ocular prosthesis. The main problem for evisceration patients is having a very high sensitivity to ocular prosthesis, due to that even a few excess parts of the prosthesis may cause inconvenience. To overcome this problem, modifications were made to the custom ocular tray. A 21-year-old woman came to Dental Hospital Universitas Sumatera Utara with chief complaint lack of confidence due to her eye condition, she wanted to make an ocular prosthesis to enhance her appearance. On clinical examination of the patient's eye, it was found that the depth of the eye socket was shallow with the diagnosis of the patient's eye was post-evisceration socket syndrome in the right eye. To obtain a comfortable ocular prosthesis for this patient, modification was made to the custom ocular tray, and using functional impression technique with light body polyvinylsiloxane. Modification made in the form of an ocular tray mold made from wax pattern which provides good support for the tissue around the eye. Another modification was made in the form of impression which was done with tubeless impression. The ocular tray obtained from this wax pattern will provide good support and contour to the patient's eye. These tubeless impressions aim to avoid interference to the patient's eye movements and to avoid operator errors during impression where there are external forces that can affect the impression. This impression technique also obtains the intaglio surface and thickness of the ocular prosthesis that is comfortable for the patient because it doesn't give the pressure to the eye during impression and have a good adaptation with no over extension. Patient feels comfortable by using ocular prosthesis obtained with this impression technique and have an aesthetically pleasing eye contour.

Keywords: ocular prosthesis, evisceration, functional impression, custom ocular tray

OP-55

Denture Tracker for Edentulous Alzheimer's Patients – A Simulated Model

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ABSTRACT

Problem: Alzheimer's disease accounts for 60 to 80 percent of dementia patients. Attempts made across the world to discover the methods to prevent its development, hinder the onset, and to treat the disease. The treatment procedures cannot prevent dementia but it can reduce the progress of symptoms. Among the issues of dementia there are possibilities of losing the patients due to disorientation and wandering. Many methods were studied and suggested to overcome this limitation. **Treatment Plan** Alzheimer's patients are mostly associated with teeth loss and required prosthesis to improve their oral function and quality of life. Attaching a tracker to the dentures and tracing the patients through GPS modules can be helpful to the care providers. **Details of the device** GPS tracker device sends signals that will be received and decoded through the mobile phones. The tracker designed works with Android, I Phone and other applications. The device shall send information on location, speed, distance traveled, route, long distance accuracy and auto report position through the established free mapping systems available on the phone networks. The GPS denture tracker can aid in establishing the contact of missing patients. It improves the quality of life, care both to the patient and care giver. Though many GPS options are available, the use in denture is simple and effective approach in edentulous patients. Major issues existing in costing and device may not be worn by the patients. This customized open-sourced device is simple, easy to fabricate and has a significant advantage of attaching to dentures that shall be used by patients. **Clinical significance:** The report described provides a simplified approach to track the edentulous patients with Alzheimer disease.

Keywords: denture, alzheimer's disease, dementia, GPS tracker

OP-56

Rehabilitation of Congenital Maxillary Defect with Modified Fixed Removable Prosthesis

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ABSTRACT

This article describes a case of missing maxillary anterior teeth with cleft in the pre-maxillary region which was rehabilitated using modified Andrews's bridge design. **Chief complaint:** Female patient with alveolar cleft reported complaining of poor aesthetics and difficulty in maintaining hygiene. She complained of nasal regurgitation of fluids due to the oro-nasal communication. Oral status A congenital maxillary defect involving premaxilla and alveolus which was not surgically obturated. A Vitalium fixed prosthesis extending from right maxillary central incisor to the left maxillary second premolar was used to replace missing 22,23,24. Existing abutment teeth were mutilated Treatment plan due to compromised clinic conditions; a fixed removable prosthesis was planned for the patient. Additional anterior and posterior abutments were included as abutments. All the proposed abutment teeth were endodontically treated followed by preparation for full veneer metal ceramic restorations. Bar connection attached to the abutment teeth and removable component retained to the bar with clip. Clinical significance of the therapy in case of oro-nasal defect patients, these fixed partial denture design can provide adequate access for cleansing with removable pontic design. Degree of retention and stability that aid for patient adaptation and comfort is not compromised in this design. Considered the periodontal conditions of teeth adjacent to these defects, this design provide a stress breaking effect to forces acting on the denture.

Keywords: maxillary defect, fixed prosthesis, andrew's bridge

OP-57

Modified Impression Tray and Iris Positioning Ocular Prosthesis of Post Enucleation Socket Syndrome

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ABSTRACT

The cosmetic disfigurements which arise due to loss of orbital volume after enucleation of an eye include enophthalmos, superior sulcus deformity, upper eyelid ptosis, and lower eyelid laxity. Superior sulcus deformity produces deep surface contours in the upper eyelid above the tarsus and may arise from atrophy of the orbital fat or degeneration of the extraocular muscles. The treatment can be either conservative or surgical. For patients who does not want to undergo further surgical procedures, the conservative treatment is simple, noninvasive, and appropriate. This case report describes modified impression tray and iris positioning technique of post enucleation socket syndrome to achieve aesthetics and function. A 65-year-old male patient reported to the Dental Hospital Universitas Sumatera Utara with the chief complaint of facial disfigurement due to loss of the right eye. History of eye loss due to there was bleeding after remove an object (hair) in the right eye. Patient post enucleation 6 months ago and conformer use after surgery. The diagnosis was post enucleation socket syndrome. Impression was done by injecting polyvinyl siloxane impression material (light body) into the eye socket then inserting clear acrylic sclera as a tray and the patient was instructed to close and make eye movements. Determining iris position was using eyebrow ruler. Clear acrylic sclera as a tray without handgrip will precisely records of the palpebre convexity and specified socket. Subsequently, after the convexity has been obtained correctly, the use of eyebrow ruler helps accurately determine the symmetrical iris position compared to only visually determining which is subjective with the possibility of interobserver errors. Clear acrylic sclera as a tray without handgrip will precisely records of the palpebre convexity and support, making easier to determine the position of the iris with eyebrow ruler and resulting in patient satisfaction due to aesthetics and function.

Keywords: postenucleation socket syndrome, impression tray, iris position, eyebrow ruler

OP-58

Modified Maximizing Post-Evisceration Patient Comfort by Modifying Ocular Prosthesis Intaglio Surface

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ABSTRACT

Evisceration, enucleation, or exenteration is a surgical management of the eye that often done. Evisceration is removal of contents of globe but leaving sclera, extraocular muscles and optic nerve intact, hence treatment plan to produce custom ocular prosthesis must be done carefully since it's more sensitive. The prosthesis itself and its interaction with the direct environment may induce socket pain. A continuous mechanism of friction between prosthesis and socket may result in mechanical trauma. Therefore, an alternative modified fabrication of custom ocular prosthesis was made to avoid this problem. Fifty-three years old female patient came to Dental Hospital Universitas Sumatera Utara wants to restore her left eye. Patient had a history of eye infections due to soaking her left eye that itched in betel leaves water and became loss of vision, evisceration then performed and using a conformer after. There were no signs of inflammation on tissue bed, presence of sulcus deepening and adequate superior inferior fornix depth. The prosthesis made by paying attention to the modified fabrication technique on intaglio surface to maximize patient comfort. Relieving the intaglio surface on working cast with aluminum foil $\pm 1-1,5$ mm to avoid friction within the prosthesis. Keeping relief area from reaching periphery border to maintain stabilization and retention of prosthesis. Treatment planning in evisceration cases often becomes difficult due to negligent operators in paying attention to anatomy and consideration of eye defect. With an improve modified fabrication techniques, ocular prosthesis feels comfort with good retention. Relieving intaglio surface with aluminum foil providing a space between prosthesis and tissue bed that will minimize contact that can result on pain and watery eye. Aluminum foil was chosen because it's easier to control shape and thickness. Relieving ocular prosthesis intaglio surface on post-evisceration patient may be an alternative solution to minimize pain that related to prosthesis.

Keywords: custom ocular prosthesis, evisceration, fabrication technique

OP-59

Modified Sculpted Composite Resin Iris Pattern for Customized Ocular Prosthesis

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ABSTRACT

Patient with loss of eye demands natural ocular prosthesis for self-esteem and social intercourse. Iris texture and coloring technique are crucial procedure to recreate natural iris which looks like the remaining eye. During the iris painting stage, suitable paints and reliable technique are required, because one has no control over the texture and color after packing. The purpose of this paper is to explain sculpting method using composite-resin to achieve natural iris pattern before coloring iris. A 29-year-old male patient came to Dental Hospital Universitas Sumatera Utara with chief complaint of demanding to make new ocular prosthesis because the old stock ocular prosthesis had been used for 12 years, iris position was not good and not aesthetically pleasing. The modification in this case is the use of a 12mm diameter iris base made from light-cured composite resin then a thin layer of composite resin is placed evenly, and texture of iris is formed directly on composite resin material according to the designed pattern and then being light-cured again. Then coloring with acrylic paint according to the color of patient's left iris. The technique for duplicating iris is highly dependent on the operator's ability, both in color selection and iris patterning. Coloring is done layer by layer and must wait for the color on the first layer to dry before being colored on the next layer to get the texture and pattern of the iris. The use of composite resin in this case makes it easier to get a good texture of the iris pattern so as to facilitate the coloring process with the ultimate goal of achieving an aesthetically pleasing ocular prosthesis after packing procedure. The patient is very satisfied with his new ocular prosthesis because it looks natural.

Keywords: ocular prosthesis, iris pattern, sculpting, composite resin

OP-60

Comparison of Bone Loss around Implants using Radiograph

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ABSTRACT

Objective: To compare and evaluate the vertical crestal bone changes around implants with different surface coatings and diameter using cone beam computed tomography (CBCT) and radiovisiography (RVG) taken at the time of loading and one year after loading. **Methods:** A total of 36 samples with 9 samples in each group was selected based on parameters: 1) Implant surface coating (ADIN (Aluminium Oxide) Vs ADIN Osseofix (Calcium phosphate biocompatible resorbable blast media,RBM) 2) Implant Diameter (ADIN,3.75×10mm Vs ADIN,4.2 ×10mm) 3) Single versus multiple implant supported bridges. Length of all the implants is kept standardized at 10mm. CBCT AND RVG were taken at both intervals. Statistical analysis done using Students paired t-test. Comparison between CBCT and RVG is done using interclass correlation test. **Results:** The mean crestal bone loss has increased to a statistically significant value from the time of loading and after one year of loading. ADIN OsseofixTM surface treated implant showed reduced marginal bone loss when compared with ADIN Alumina blasted implants at both intervals. 4.2×10 mm implant showed less bone loss when compared to 3.75 ×10mm implant. The average crestal bone loss on single implants were less compared to multiple implant-supported bridges at both timings. CBCT shows more reliable values than RVG both clinically and statistically. **Conclusion:** Within the limitations of this study, it was concluded that crestal bone loss was less among single implants with calcium phosphate surface coating and wider diameter than multiple alumina blasted and narrow diameter implants. CBCT shows an accurate method of detecting implant bone defects than RVG.

Keywords: bone loss, implant, radiovisiography

OP-61**Modified Functional Ocular Impression of Post-Enucleation Socket**

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ABSTRACT

The disfigurement associated with the loss of an eye can cause significant physical and psychological problems. Therefore, a good ocular prosthesis is needed to restore the patient's quality of life. One of the factors that determine the quality of an ocular prosthesis is accurately impression. In the case of enucleation where the eyes socket has a soft and movable tissue bad will result inaccurate impression. The difficulty of post enucleation impression in such case is the compression of the tissue eyes socket. This case report will discuss the modification in functional impression technique using a modified custom tray. A 39-year-old male patient came to dental hospital Universitas Sumatera Utara with chief complaint an unaesthetic and loose left stock eye that had been used for 10 years. Clinical examination shows moderate depth eye socket with soft and movable tissue. The functional impression technique was modified using a self-curing clear acrylic sclera without handle as a custom tray with 2mm reduction on the intaglio surface and light body polyvinyl siloxane as impression material. The aim of this modification is to avoid the tendency of the eye socket to compress during impression taking and to achieve a natural contour of the eyelid convexity because of the absence of the tray handle. This technique produces an ocular prosthesis that has good retention with excellent aesthetic result.

Keywords: enucleation, modified functional impression, ocular prosthesis

OP-62

A Hollow Obturator Design in Large Maxillectomy Defect

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ABSTRACT

Large maxillary defects often result in heavy and unretentive prosthesis. Hollow features have been suggested to be integrated to create a functional obturator that is lightweight and straightforward to construct. We reported a prosthetic rehabilitation of a 63-year-old man presented with an edentulous oronasal defect, classified as Class 2b Brown's Classification of Maxillectomy Defect. His main concern regarding looseness of his existing prosthesis was addressed by providing maximum flange extension on the lateral wall of the defect. Therefore, a hollow design was planned to aid in weight reduction of the prosthesis. A customizable laboratory technique to fabricate a definitive one-piece obturator with closed, and open hollow bulb design for the defect was highlighted. The closed hollow bulb was contained at the area of the alveolar ridge of the prosthesis with the defect portion made open hollow. This approach was able to retain the prosthesis and serve the demand of the patient. The laboratory steps are yet simple, reproducible, with shorter working time and can be utilized to rehabilitate such large defects.

Keywords: hollow obturator, maxillectomy, oronasal defect

OP-63

Functional Impression using Imprinted Waxed up for Custom Ocular Prosthesis in Contracted Eye Socket

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ABSTRACT

Enucleation leads to contracture of orbital tissue accompanied by reduction in volume and forniceal depth results in an inability to sustain a prosthesis. Shallow inferior fornix in contracted eye socket compromises the adaptation, retention, stabilization, and the duplication of palpebral opening similar to natural eye in terms of size, support, contour and convexity make the fabrication of custom ocular prosthesis become challenging. Hence, the present article describes about the use of ocular prosthesis as conformer to obtain better appearance and enlarge orbital dimension in contracted socket. A 21-year-old male came to Dental Hospital Universitas Sumatera Utara with a complaint of unaesthetic face appearance due to enucleation of left eye since 5 years old subsequent to trauma by sharp blades. He had ever used an ocular prosthesis but lost it 6 years ago and didn't used it until now. In clinical examination, the anophthalmic socket had good posterior wall mobility and absence of infection but, mild contracted socket (Grade 1) with shallow inferior fornix depth was examined. In this case, increasing of eye socket volume in order to get adaptation, retention, stabilization and similar palpebral opening are gained by performing functional impression using imprinted waxed up that had been tried and checked for size, comfort, support for getting favorable peripheral eye seal. Anophthalmic socket syndrome encompasses several anomalies including shallow lower fornix but, adequate retention of the ocular prosthesis requires a well-formed inferior fornix which in this case required modification of custom tray in functional impression. Besides, role of ocular prosthesis in this case as conformer also used to expand the lid anteriorly and the conjunctiva and fornix via posteriorly. Accurate fitting of custom ocular prosthesis brings back superior facial symmetry, aesthetics, self-esteem and comfort to patient with contracted eye socket that are influenced by fabrication technique and impression procedure.

Keywords: custom made ocular prosthesis, enucleation, waxed up convexity, functional impression, contracted eye socket, conformers

OP-64

Severely Resorbed and Flabby Mandibular Ridge Management with Mandibular Suction Effective Denture

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ABSTRACT

Complete denture treatment in edentulous patient with severely resorbed and flabby mandibular ridge poses challenges to a prosthodontist in fabricating denture with maximum support, retention, and stability. The difficulty in patient with severely resorbed mandibular ridge is in acquiring maximum denture bearing area. In flabby ridge, the existence of mobile tissue can distort the impression result, affecting the denture retention and stability. The purpose of this paper is to describe the management of severely resorbed and flabby mandibular ridge with mandibular suction effective denture. A 65-year-old female reported to Dental Hospital Universitas Sumatera Utara with a chief complaint her loose old denture fell and broken. On intraoral examination, an edentulous maxilla arch and an edentulous mandibular arch with a severely resorbed and flabby ridge was observed. This case was managed using mandibular suction effective denture. The mandibular suction effective denture treatment in this case consists of mucostatic diagnostic impressions with frame cutback tray, modified custom tray with myostatic outline and escape hole, close mouth final impressions using low viscosity polyvinylsiloxane, jaw relationship record with gnathometer, and tooth arrangement using lingualize concept. The mandibular suction denture design utilizes mobile oral mucosa to seal all the denture borders, when occlusal forces are applied to the denture, saliva is squeezed out, temporarily creating negative pressure to the interior surface of the denture base. Systematic treatment concept from mucostatic diagnostic impression, custom tray modification, and close mouth final impression using low viscosity polyvinylsiloxane was done to achieve an accurate impression without exerting force on the mobile soft tissue on the ridge. The mandibular suction effective denture proven to be effective in severely resorbed and flabby ridge by reducing force exerted into the mandibular ridge, prevent displacement of mobile tissue and providing improved retention and stability through the suction effect.

Keywords: severely resorbed ridge, flabby ridge, mandibular suction effective denture

OP-65

Prosthetic Rehabilitation of a Midfacial Defect with Magnet Retained Intraoral-Extraoral Combination Prosthesis: A Case Report

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ABSTRACT

Large maxillofacial defects resulting from malignant tumor treatment are rarely rehabilitated by surgical reconstruction alone. In the post-surgical defect, prosthetic rehabilitation is the treatment of choice to restore esthetics and function. Achieving adequate retention, stability, and support is the most common prosthetic treatment problem when treating such patients. This clinical report describes prosthetic rehabilitation of a midfacial defect following surgical resection of squamous cell carcinoma. The intraoral defect was restored with a maxillary obturator prosthesis with salivary reservoir and the extraoral defect was restored with magnet retained facial prosthesis having an acrylic resin framework and an overlying silicone facial prosthesis.

Keywords: midfacial defect, prosthetic rehabilitation, malignant tumor, maxillary obturator

OP-66

Modification of Custom Tray and Occlusal Scheme in Edentulous with Compromised Ridge and Abnormal Jaw Relationship

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ABSTRACT

Complete denture treatment in full edentulous with compromised ridges (flat and flabby ridge) and abnormal jaw relationship (class II and III) are a challenge for prosthodontist because each condition has its own problem in obtaining support, retention, stabilization, and esthetic of the denture. The main problem is to obtain a maximum denture bearing area in flat and flabby ridge and to fulfil favorable functional and esthetics teeth arrangement in abnormal jaw relationship. The purpose of this paper is to describe the modification of the custom tray, impression technique and teeth arrangement in edentulous case with flat ridge, flabby ridge, and class III jaw relationship. A 58- year-old man came to Dental Hospital of Universitas Sumatera Utara with a chief complaint difficulty in chewing. Based on anamnesis, the patient had worn dentures, but the old dentures were loose. On intraoral examination, full edentulous with flabby ridge on anterior region of maxilla, left and right maxillary tuberosity, flat ridge in maxilla and mandible with a class III jaw relationship were observed. The treatment planning in this case includes modification of custom tray and occlusal scheme. The modified maxilla custom tray consists of dual tray with magnet retained to manage flat and flabby ridge which are made of auto polymerizing acrylic resin and thermoplastic vacuum-formed. Cocktail impression technique is used to obtain the maximum denture bearing area on mandible. A modified buccalized occlusion scheme provides good function and esthetic in class III jaw relationship. The usage of modified maxilla custom tray ensures flabby ridge not distorted while taking impression. Cocktail impression technique is used to obtain denture bearing area extension accurately. Modified buccalized occlusion reduces the force exerted on the denture bearing area. By these modification techniques, great outcome was obtained in terms of retention, stability, esthetics, and functionality.

Keywords: compromised ridge, abnormal jaw relationship, custom tray, cocktail impression, buccalized occlusal scheme

OP-67

Combination of Digital and Modified Conventional Procedures on Attachment Retained Denture

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ABSTRACT

Digital technology, such as computer-aided design and manufacture (CAD/CAM) systems, also three-dimensional (3D) intraoral scanning, has been evolved rapidly which led to a large impact in the field of prosthodontic. One such alternative of prosthodontic treatment for partially edentulous condition, especially on patient with high demand in aesthetic and functional terms, is attachment retained denture. This clinical report aims to describe combination of digital workflows and modified conventional approach which was applied in fabricating attachment retained denture. A 70-years-old (geriatric) male patient wanted to replace his old removable partial denture and maintain existing maxillary teeth. Attachment retained denture was suggested in which significant number of considerations could be benefited to the patient. Pre-prosthetic treatments were provided on the maxillary teeth, following the digital impression technique to produce a 3D digital dental cast. Precision coping bridge with female housing, which was also vertically milled on its palatal surface, was fabricated by CAD/CAM system in dental laboratory. Modified final impression on free-ended edentulous region by using bio-layered impression technique was applied to fabricate metal framework with male housing. CAD/CAM technology has several advantages, including digital impression from chairside system up to fabrication of the attachment retained denture from laboratory system, which provides precision result in marginal fitting of the metal copings. However, the implementation of digital technology is still considered expensive and may be limited to distal-extension edentulous case due to differences of oral tissue compressibility. Therefore, combination of digital and modified conventional approach may be required to obtain better result in fabricating attachment retained denture. In this case, that combination may provide highly precise, aesthetic, and functionally stable of attachment retained denture.

Keywords: CAD/CAM, intraoral scanning, attachment retained denture, digital impression

OP-68

Masticatory Muscle Activity in Complete Denture Wearers: Surface Electromyographic Analysis

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ABSTRACT

Objectives: The investigation of the adaptation process to a new denture is relevant to understand the control of muscles and may provide essential information for the diagnosis of dysfunctions of the masticatory system. Surface electromyography measurements can provide, documentable, valid, reproducible data on functional condition of masticatory muscles. It has an adjunctive value in assessing the performance of dentures. A longitudinal study with simultaneous evaluation of jaw muscles activity by surface electromyography in complete denture patients was done by measuring electric potential in masseter and anterior temporalis during clenching at maximum intercuspation position and mastication at 2 months after denture insertion and one year later. **Methods:** Surface electrodes were placed in the region of right and left anterior temporalis and masseter of 22 patients and they were asked to perform maximum voluntary clenching and chewing. Statistical analysis of the electromyographic recordings was performed by paired -t test. **Results:** A significant increase in electrical activity of the masseter and anterior temporal muscles was found during tooth clenching and chewing after one year compared to two months. Significantly higher values are observed for masseter than temporalis during clenching at both sessions. The overall mean EMG value of masseter is found to be significantly higher than temporalis during chewing at 2 months ($p < 0.001$) and 1 year ($p < 0.001$). A negative correlation was found with respect to age and masseter EMG value. **Conclusion:** The electrical activity of the masseter and anterior temporal muscles in maximum voluntary clenching and mastication presented statistically significant difference after one year of wearing the new complete dentures indicating improved functional quality. A good rehabilitation improves the efficiency of muscles. Monitoring the effect of rehabilitation on stomatognathic system help to preventively warn about dysfunctions and treatment modifications needed.

Keywords: surface electromyography, stomatognathic, rehabilitation, complete denture

OP-69

Fabrication of Custom-Made Ocular Prosthesis with Silicone Soft Liner of Patient with Rheumatoid Arthritis

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ABSTRACT

Rheumatoid arthritis (RA) is an autoimmune and inflammatory disease, causing inflammation in affected parts of body including eyes. Chronic ocular inflammatory condition causes phthisis bulbi. It is a condition eyeball may look collapsed in form and lead to scarring, inflammation. Eye socket tends to be more sensitive. Stock eye is indicated to phthisis bulbi. Anatomical changes caused loose of stock eye that results in irritation, discomfort, and difficulty in adjustment. Fabrication of custom-made ocular prosthesis modified by using silicone soft liner is one of the efforts taken to conquer this problem. This case report describes preparation before treatment, modification of technique and material for RA patient with fabrication of custom-made ocular prosthesis. A 25-year-old female was referred to Dental Hospital Universitas Sumatera Utara, with a chief complaint of blindness in left eye and unaesthetic face. Patient was suffering RA when she was 23-year-old. One year later, she was visual loss on left eye, ocular inflammation, and small eye. Based on ophthalmologist evaluation, she was diagnosed with phthisis bulbi. After six months wearing stock eye, she felt sunken, and prosthesis was unable to move. Clinical examination revealed inflammation socket. Treatment plan was consulted with ophthalmologist and internist. Patient should take medicine 60 minutes before starting treatment in afternoon and accompanied with closed family. Treatment for this case was fabrication of custom-made ocular prosthesis with permanent silicone soft liner. Using light body and special tray for preliminary impression. Permanent silicone soft liner was applied on intaglio surface of prosthesis. Clear acrylic was processed, finished, polished, and insertion. Using low viscosity impression material without pressure because of remaining sensitive tissue. Permanent silicone soft liner will give comfort, minimize trauma and long-term of wear. Comfortable, retentive, and aesthetics custom-made ocular prosthesis with permanent silicone soft liner is good alternative option to patient with RA.

Keywords: rheumatoid arthritis, custom-made ocular prosthesis, permanent silicone soft liner

OP-70

Wireless Intraoral Sensor for The Physiological Monitoring of Body Temperature

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ABSTRACT

Objectives of investigation: non-contact thermometers that detect the heat emitted from our skin have the potential to help screen masses of people for fever, but the body of evidence on their accuracy is dissatisfying. In the age of COVID, non-contact, accurate screening of body temperature is vital. Thus, a wireless, non-contact device was developed which can be worn intra-orally by fusing it to denture base resin or thermoplastic vacuum sheets. The aim of this investigation was to evaluate and compare the efficiency of novel wireless non-contact device with the non-contact infrared thermometers. **Experimental methods used:** Prototype assembly. **Methods:** Two hundred and seven volunteers were selected, and measurements were taken simultaneously using mercury in glass thermometer, digital thermometer, liquid crystal forehead thermometer, and Prototype unit. All measurements were taken following the manufacturer's recommendations. Measurements were taken using the prototype unit by asking the patients to wear the appliance for 3 minutes. All temperatures were measured in degrees Celsius (°C). **Essential results:** To assess the concordance between the mercury in glass thermometer readings and the new methods, the Bland Altman test was used. Overall, the digital thermometer gave the best concordance. The prototype appliance was the next best with a narrower mean difference than the digital thermometer but unacceptable limits of agreement. The liquid crystal forehead thermometer gave the least concordance. **Conclusion:** The digital thermometer appears to be the best alternative to the traditional and time-tested mercury in glass thermometers. It is reliable, safe, easy to use and cost effective. Using prototype device, individuals with hyperpyrexia can be easily detected without any close contact, thereby satisfying the social distancing guidelines. The liquid crystal forehead thermometer is best used at home and even so, readings must be interpreted with caution.

Keywords: intraoral sensor, body temperature, digital thermometer

OP-71

Acupuncture – The Trend in Treating OSA

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ABSTRACT

Introduction: Obstructive sleep apnea (OSA) is a common sleep disorder causing excessive daytime sleepiness, increasing risk for motor vehicle accidents, and impairing quality of life, and it is closely associated with cardiovascular events, diabetes, and other diseases the prevention and treatment of OSA is of great importance. Currently, therapies for OSA have been designed and proposed to reduce the frequency of sleep-disordered breathing events, including continuous positive airway pressure (CPAP), surgical procedures, mandibular advancement devices, weight loss and lifestyle interventions, and pharmacotherapy. One traditional and novel intervention is the application of acupuncture, the traditional Chinese medicine (TCM). **Chief complaint:** patients complained of being tired the entire day, drowsy and experiences headache in the mornings and snoring during sleep Patient status: Patient was diagnosed with mild to moderate obstructive sleep apnea with high snoring index **Treatment plan:** Traditional Chinese Medicine – Acupuncture to treat obstructive sleep apnea. **Therapy:** Certain acupuncture points were selected based on the signs and symptoms and puncture was performed in the points such as stomach 36, kidney 6, heart 7, conception vessel 23, extra 1, and spleen 6. The mentioned points tend to improve the condition by secreting melatonin and serotonin that helps in reducing the anxiety and obstruction of the pharyngeal muscles respectively. **Results & Conclusion:** The AHI index, snore index, oxygen saturation levels, and hypopnea count was evaluated at the start and end of the treatment. Acupuncture significantly improved the muscle activity and the results obtained were statistically significant. Hence TCM had a direct effect on sleep pattern which was disturbed due to the pharyngeal collapse in patients with mild to moderate OSA. Therefore, acupuncture is one treatment protocol which can be followed to treat OSA effectively and safely.

Keywords: Obstructive sleep apnea, traditional Chinese medicine, acupuncture

OP-72

Rehabilitation of Subtotal Maxillectomy Patient with Obturator

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ABSTRACT

Prosthodontists face a challenge when treating a maxillary defect caused by a tumor, trauma, or congenital deformation. With the help of maxillofacial prosthetic rehabilitation, defects can be restored to near-normal function and appearance. The goal of maxillectomy prosthetic rehabilitation is to separate the oral and nasal cavities to allow adequate deglutition and articulation to restore the midface contour and provide acceptable results. A thirteen-year-old boy presented with swelling on the right side of his face. The swelling began eight months prior and gradually worsened. Facial asymmetry was discovered due to swelling of the right buccal region, which was soft, painless, and covered by normal skin. An overgrowth was visible on intraoral examination on the maxillary right posterior teeth region, extending from the distal aspect of 14 to the mesial aspect of 17. The multidisciplinary approach of the head and neck surgeon, ophthalmologist, and prosthodontist is used to make decisions for definitive treatment planning. A week before surgery, patient referred to prosthodontist for consultation. For the fabrication of the immediate surgical obturator, a dental impression was taken using irreversible hydrocolloid impression material. The immediate obturator was pre-surgically fabricated and adjusted to fit the defect at the time of surgery. The first goal is to support surgical dressings that have been placed in the defect. Three weeks after, interim obturator is fabricated. In patients with maxillectomy, the obturator prosthesis contributes to improved speech intelligibility, good maxillofacial appearance, improved mastication, convenience, and social interactions.

Keywords: immediate obturator, interim obturator, maxillectomy prosthetic, maxillary defect

OP-73

Design and Calibration of Infrared Thermography Therapy Device for Temporomandibular Disorders

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ABSTRACT

The using of infrared thermography in the field of dentistry has recently begun to be found in line with the development of technology. In dentistry, infrared rays are used for physiotherapy, one of which is the treatment of the temporomandibular disorders (TMD). The effect of infrared heating can cause increase blood flow around the joint area and can also provide comfort and relaxation to reduce pain. The aims of this study were to design and calibration of the therapy device to relieve symptoms of TMD. The research method was carried out by designing the addition of some modified components to the therapy device, calibration of the LM35 sensor with a thermocouple sensor in terms of measuring the increase and decrease temperature repeatedly 3 times. An ultrasonic sensor was also added to the device to control the distance of the light exposure to the subject. The results of measurements were analyzed using interrater reliability statistical tests with Interclass Correlation Coefficient (ICC) and measuring from the mean value of both the increase and decrease temperature with the Mann Whitney analysis test Asymp Sig. 2 (tailed) of 0.860, which means it can be assumed to be the same or not different. The result showed that the ICC single measurement on the LM35 was 0.894, while the ICC single measurement on the thermocouple was 0.887. For the ICC value of single measurement on the LM35 was 0.999, while the ICC value for single measurement on thermocouple was 0.993. It can be concluded that there was no difference between the value of increase and decrease temperature using the LM35 sensor or thermocouple. It can be assumed that the results were the same, for both the LM35 sensor and the thermocouple and it means that the infrared therapy device was suitable for use.

Keywords: calibration, infrared, heat therapy, thermography, ultrasonic sensor

OP-74

Analysis of Antimicrobial Effect and Cell Toxicity of Dipsaci Radix

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ABSTRACT

The purpose of this study was to investigate its cytotoxicity and antimicrobial effect on several periodontopathic and cariogenic bacteria of Dipsaci Radix. To evaluate the antimicrobial effect of Dipsaci Radix, the minimum inhibitory concentration (MIC) against the *P. gingivalis*, *P. intermedia*, *F. nucleatum*, *S. mutans*, *S. sobrinus* was measured by broth dilution method. We tested NO production and cytotoxicity in this study. Overproduced nitric oxide (NO) by inducible nitric oxide synthase (iNOS) causes tissue damage, chronic inflammation, and carcinogenesis. the potential iNOS inhibitors have been considered as anti-inflammatory or cancer chemopreventive agents. Dipsaci Radix did not show decreased cell viability at any concentration and low NO production. In conclusion, Dipsaci Radix is one of the safe and effective natural herbal plants and it can be useful in developing the oral hygiene product for the prevention of periodontal and caries diseases.

Keywords: antimicrobial effect, cell toxicity, *Dipsaci radix*, nitric oxide

OP-75

Color Stability of CAD-CAM Restorative Materials after Oral Hygiene Procedures

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ABSTRACT

Objectives: Esthetic restorations using restorative materials fabricated by digital dentistry are becoming popular. This study investigated the impact of various oral hygiene methods on the optical and surface characteristics of CAD-CAM restorative materials. **Methods:** For Experiment I, eighty square-shaped monolithic zirconia specimens were divided into two major groups based on the finishing methods—polished or glazed. Subsequently, specimens from the two major groups were categorized into four subgroups: stored in distilled water, brushed with a fluoride-free conventional dentifrice, brushed with a fluoride dentifrice, and brushed with a whitening dentifrice. Experiment II consisted of two hundred specimens being fabricated from five high-translucency CAD/CAM ceramics: a resin nano ceramic, a dual-network ceramic, a feldspathic ceramic, a lithium disilicate, and a monolithic zirconia. Each ceramic was divided into four subgroups: conventional mouthwash, whitening mouthwash, chlorhexidine gluconate, and distilled water. Oral rinsing was simulated at 100 rpm for 180 h. During Experiment III, the resin nano ceramic, dual-network ceramic, feldspathic ceramic, lithium disilicate ceramic, and high-translucency monolithic zirconia was evaluated. The specimens were subjected to ultrasonic scaling. The specimens of each Experiment were then evaluated for color, translucency, surface gloss, surface roughness, crystalline phase, and superficial topography (all $\alpha = 0.05$). **Results:** According to the results of Experiment I, a statistically significant difference was observed among the ΔE_{00} , of the surface gloss, and surface roughness of monolithic zirconia. The results of Experiment II showed that the dual-network ceramic and feldspathic ceramic became brighter, opaquer, less glossy, and rougher after rinsing with the whitening mouthwash. According to the results of Experiment III, the monolithic zirconia and feldspathic ceramic showed significantly more color changes than other materials. **Conclusions:** The long-term use of certain oral hygiene procedures can cause deterioration of the optical and surface properties of CAD-CAM dental restorations.

Keywords: color stability, CAD/CAM, restorative material, oral hygiene

OP-76

**Occlusal Analysis Using Digital Data and Application for Setting a
Virtual Articulator**

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ABSTRACT

An articulator is an instrument that represents the maxilla, mandible, and temporomandibular joints, and it simulates mandibular movements. It is commonly used for analysis of occlusion, diagnosis, treatment planning, and fabricating prosthesis in dental treatment. The first articulator was made by Gariot in 1805, which could simulate only hinge movement, and has been used various types of articulators until now, including semi-adjustable articulators and fully adjustable articulators that accurately simulate patient's mandibular movements. Recent development of digital technology, various types of digital data and a virtual articulator in the dental CAD (computer-aided-design) software is increasingly used in fabricating prostheses. Using various digital data, more precise and accurate analysis of occlusion has become possible, and the digital technology has been developed to reproduce individual mandibular movement of the patient. However, in this method, the clinical procedure can be complex and special jaw motion tracker devices are needed, and the reproducibility of the virtual articulator has been reported to be limited. Therefore, it is needed a simpler method to set a virtual articulator. In this presentation, we review the application of the digital data for occlusal analysis and setting a virtual articulator.

Keywords: occlusal analysis, digital data, virtual articulator

OP-77

Multidisciplinary Approach for Aesthetic Rehabilitation in Gummy Smile and Fluorosis

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ABSTRACT

Introduction: Teeth, gingiva and lips are the three interrelated primary components in aesthetic dentistry. The key element in this case report is the multidisciplinary approach for aesthetic rehabilitation involving gingivectomy and minimally invasive tooth preparation for porcelain laminate veneer (PLV) restorations. **Case:** A 25-year-old female patient attended with existing space between maxillary anterior teeth post orthodontic treatment and missing mandibular anterior teeth. Intraorally, patient had uneven interdental spacing in between 13 to 23, missing 31 and 32, with merging and irregular opacities suggestive of enamel fluorosis appearance (TFI score 3), high smile lines and fair oral hygiene. The zenith lines were asymmetrical with short clinical crowns and disharmonious teeth axes. **Treatment plan and details of the therapy:** A predictable outcome of aesthetic rehabilitation is achievable with diagnostic evaluation, pre-treatment mock-ups, gingivectomy, teeth preparation, impression, and adhesive cementation. Diagnostic wax-up helps the patient to visualize the proposed outcome in terms of both aesthetics and function. To assess the aesthetic, function and phonetics of the patient, diagnostic chairside mock-up was used. PLVs and zirconia resin bonded bridge were the treatment of choice for maxillary and mandibular anterior spacing. These managements able to achieve favorable functional and aesthetic outcome with less maintenance care compared to other dental material restorations. Aesthetic pre-evaluative temporary (APT) technique was used to prepare the teeth to achieve minimal preparation and predictable results for aesthetic rehabilitation. In addition, to optimize the aesthetic outcome of the soft tissue and overall smile appearance, gingivectomy was performed. **Summary:** This case report may help the clinicians to perform a well-planned multidisciplinary approach via prosthodontic-periodontal management to provide patients with a promising aesthetic rehabilitation outcome.

Keywords: aesthetic rehabilitation, gummy smile, fluorosis, aesthetic pre-evaluative temporary

OP-78

Retentive Ocular Prostheses Restore Physical and Psychological of Post Evisceration Patients

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ABSTRACT

Loss of eye at an early stage of life not only affects the facial esthetics but also imparts a pervasive impact on the psychological health of the patient and often leads to social disability. Custom-made ocular prosthesis replacement as soon as possible is a good alternative to promote physical and psychological healing for the patient and to improve social acceptance. Evisceration leaving the intact suspensory ligaments and pulley system, thus in fabrication ocular prosthesis should pay attention in impression procedure. Hence, the present article describes fabrication of ocular prosthesis to rehabilitate post evisceration socket. A 5-year-old female patient (case.1) and 18-year-old patient(case.2) was reported dental hospital Universitas Sumatera Utara with the chief complaint that she often received insults from schoolmates for her appearance (case.1) and lost confident to socializing around due to his appearance (case.2). In these cases, modification of custom tray was made by using a putty index obtained from wax pattern to produce a better fitting custom ocular prosthesis, so it expected to be retentive as to produce comfort and increase patient confidence. Custom tray design with escape holes to reduce pressure on residual sclera. Ocular prosthesis, though not functional, is a very suitable esthetic replacement restores self-confidence in patients and prevents social embarrassment. Contact between the ocular prosthesis and tissue bed is necessary to evenly distribute the pressure obtained with proper impression technique. This technique ensures a good fit of the custom tray thereby produce accurate adaptation of the custom ocular prosthesis to the tissue surface can increase the movement of the prosthesis and provide a good natural esthetic outcome. Rehabilitation ocular defect post evisceration using custom ocular prosthesis are challenging and require long-term follow up. Post evisceration patients need psychological support to restore confidence and self-esteem in today's cosmetics challenging world.

Keywords: physical and psychological, ocular prosthesis, evisceration, custom tray

OP-79

Rehabilitation of Post-Enucleation Eye Defect with Custom Ocular Prosthesis with Modification in Impression and Iris Button

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ABSTRACT

Loss of eye have physiological and social impact on patients, especially in pediatric patients so it can reduce the patient's quality of life. Stocks eye can be use but it is very difficult to get natural movement and iris color that suits the patient. To overcome this problem, custom ocular prosthesis can be made similar with the color, shape, size and movement of the patient's eye, so the ocular prosthesis can look natural. A female patient, aged 6 years, came to the dental hospital Universitas Sumatera Utara with chief complain right stock eyes that had been used for 4 years already loose and unaesthetic patient want to fabricate a new eye prosthesis. The patient had a medical history of retinoblastoma at the age of 2 years and had enucleation surgery. The diagnosis of this case is an anophthalmic socket post enucleation. The patient is fabricate a custom ocular prosthesis with modifications on physiological impression using temporary sclera and light body Polyvinylsiloxane using closed eyes technique and iris pattern is made by sculpting composite resin as for the iris button is made by using customized iris button cuvet. Modifications to physiological impression and modifications to the fabrication of iris buttons will provide movement, shape and 3D effects of iris that are better than stock eye prosthesis. Custom ocular prosthesis with modification on physiological impression will provide a better and more natural movement. While modification on making iris button by using customized iris button cuvet will facilitate the process of making iris button while using composite resin to form iris pattern will give a better 3-dimensional effect on the iris produced.

Keywords: custom Ocular Prosthesis, Physiological impression, Iris Button

OP-80

Multidisciplinary Approach for a Full Mouth Rehabilitation

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ABSTRACT

Introduction: The gradual wear of the occlusal surfaces of teeth is a normal process during the lifetime of a patient. However, excessive occlusal wear can result in pulpal pathology, occlusal disharmony, impaired function, and esthetic disfigurement. The vertical dimension of occlusion (VDO) is maintained by tooth eruption and alveolar bone growth. As teeth are worn, the alveolar bone undergoes an adaptive process and compensates for the loss of tooth structure to maintain the VDO. Oral rehabilitation often requires a multidisciplinary approach including restorative dentistry, prosthodontics, and periodontology to fulfill high esthetic and functional demands, frequently combined with changes in the vertical dimension. Management of worn dentition using fixed or removable prostheses is complex and among the most difficult cases to restore. Assessment of the vertical dimension is important for the management, and careful comprehensive treatment plan is required for each individual case. Articulated study casts and diagnostic wax-up can provide important information which is helpful for the evaluation of treatment options. Tolerance of changes to vertical dimension of occlusion is usually confirmed with the clinical evaluation of the patient having a diagnostic splint or provisional prosthesis.

Patient's chief complaint: Patient complains of some teeth missing in upper arch and all teeth missing in the lower arch. **Patients' oral status:** Partially edentulous maxilla and completely edentulous mandible. **Treatment plan:** Maxillary arch tooth supported hand layered zirconia crowns and mandibular arch over denture with nano composite teeth set. **Details of the therapy:** Diagnostic impressions were taken, and jaw relation was done, then it was scanned in 3 shape to make temporaries, after that final impression was made and customized copings were prepared after periodontal and endodontics treatment, implants were placed in lower arch and then the denture loading was done after three months. **Clinical significance of therapy:** The goal of full mouth rehabilitation should be the restoration and maintenance of the health of the entire oral mechanism. It demands rehabilitation within the physiological and functional harmony of the stomatognathic system. Careful evaluation of the etiology, history, and factors relative to occlusal vertical dimension are essential to appropriate treatment planning. This full mouth resulted in a great outcome, which was both esthetic and functional, it was not merely a dental treatment but an overall different approach and view to one's life.

Keywords: occlusal wear, dental crown, zirconia, nano composite, full mouth rehabilitation

OP-81

Incorporating Ajwain Extract in Provisional Luting Cement for Bacterial Inhibition

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ABSTRACT

Aim: The focus of this study was to evaluate the antimicrobial properties of Ajwain seeds when incorporated in provisional luting cement. **Materials and Methods:** A total of 12 samples of provisional cement [TEMP-BONDTM] were prepared. Extraction from 5gms weighed Ajwain seeds with 100ml distilled water was done until reduced to 10ml. Minimum Inhibitory Concentration (MIC) was determined using agar diffusion broth method against *Streptococcus mutans* and *Candida albicans*. Independent t-test was conducted to assess the level of significance of difference between mean values. **Results:** For both *Streptococcus mutans* and *Candida albicans*, the difference between two methods (Incorporated or Dipped/Coated) showed statistically significant difference ($p < 0.05$) in antimicrobial activity and both the methods are clinically acceptable as it had adequate zone of inhibition. **Conclusion:** The zones of inhibition in the agar diffusion test showed the antibacterial efficiency of provisional luting cement when incorporated or dipped with Ajwain extract is more than the control group and Ajwain can be considered as a promising natural source of antibacterial agent for management of dental secondary caries.

Keywords: ajwain extract, anti-microbial properties, long term temporisation, oral health, provisional luting cement

OP-82

Dynamic Navigation the New Future of Zygoma Implants?: A Case Report

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ABSTRACT

Chief complaint: The patient, a 63-year-old man, complained of multiple missing teeth in the upper and lower arch in the last 11 months. **Patient oral status:** On examination it was observed that the upper and lower arch consisted of periodontally unsalvageable teeth. On taking a CBCT it was observed that insufficient width and height of bone was present in the upper arch posteriorly for conventional implants. **Treatment Plan:** zygoma implants were planned for the upper arch posteriorly and anterior conventional osstem implants were planned post extraction, of all mobile teeth. **Detail of the therapy:** All implants were placed using a dynamic navigation system, which consisted of a sensor attached to the maxilla and guidance from a planned CBCT as reference. The implants were placed post extraction of all mobile teeth. **Clinical Significance:** The quality of life a fixed prosthesis provides is far superior to a removable prosthesis. Insufficient bone which was viewed as a limitation towards oral rehabilitation can now be overcome with the help of zygoma implants. The placement of zygoma implants is technique sensitive and the dynamic navigation system helps guide in their placement ensuring greater accuracy and success rate.

Keywords: zygoma implant, dynamic navigation

OP-83

Prosthetic Rehabilitation of a Patient with Oral Submucous Fibrosis and Carcinoma of Buccal Mucosa: A Case Report with 3 Years Follow Up

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ABSTRACT

Patient's Chief Complaint: Patient complains of missing teeth in the upper and lower jaw along with restricted mouth opening. Patient wanted an esthetically pleasing smile with fixed prosthesis. **Patient's Oral Status:** On extraoral examination it was observed that the mouth opening was restricted (around 36mm) and there was deviation of the angle of the mouth on the right side. Intraoral examination revealed completely edentulous upper and lower arch. Thick white bands were evident in the Buccal mucosa suggestive of oral submucous fibrosis. Patient was also operated for carcinoma of Buccal mucosa on the right side, 13 years back and underwent chemotherapy and radiotherapy. Radiographic examination showed there were root stumps in 18, 27 and 43 region. **Treatment plan:** Full mouth rehabilitation with implant supported overdenture (locator for upper arch and ball attachment for lower arch. **Details of therapy:** Cone Beam Computed Tomography was used to study the dimensions of bone and blood investigation was taken and 4 implants were planned and placed in 12,14,22,25, 33,43 region after physician's consent. The root stumps were not extracted as they were asymptomatic and access was difficult because of very restricted mouth opening. After 4 months the implants were loaded with locator in upper arch and ball attachment in lower arch. As the space was less to accommodate locator in the lower arch, mini ball attachment was used. The impression for upper arch was made using split tray and oriented together. Jaw relation and wax trial was done and a denture was fabricated. The palatal plate was trimmed off and the locator housings were picked up in the denture base, retrograde. **Clinical significance :** From this case report, it is evident that locators and ball attachment can be used in same patient. And fixedly- removable options like over denture help patient maintain proper oral hygiene and repair is easy in future.

Keywords: oral submucous fibrosis, carcinoma, buccal mucosa, prosthetic rehabilitation

OP-84

Do Complete Denture Patients need Food Supplement? A Randomized Controlled Trial

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ABSTRACT

Background: Neglected oral health is major issue specially in women of developing countries, leading to early loss of teeth. This ultimately leads to malnutrition, degradation of overall health and increased chances of osteoporosis. This may be prevented with the use of complete denture, but evidence is lacking to prescribe with or without food supplement. **Objective:** Effect of food supplement on masticatory performance, nutritional status, electromyography, and bone mineral density among the elderly women rehabilitated with complete denture. **Materials and methods:** Randomized controlled trial with 106 women patients of 45-65 years rehabilitated with complete denture (56 received food supplement, 50 did not receive food supplement) and 52 healthy control was conducted. The outcomes were assessed at baseline, 3 and 6 months of follow-up (after complete denture fabrication). Outcomes were nutritional status (hemoglobin, serum calcium, albumin, and vitamin D level), masticatory performance, electromyography (EMG) of masseter and temporalis muscles and bone mineral density (BMD). Friedman's ANOVA test was used as a non-parametric test and statistical packages for social sciences version 21.0 at significance level .05 was used for statistical analysis. **Result:** A statistically significant change was observed during follow-up for the group with food supplement for BMD, EMG and masticatory performance. When biochemical parameters were assessed during follow-up, no statistically significant change was observed for both groups (with and without food supplement), except for serum calcium level in group which received food supplement. **Conclusion:** It was observed that magnitude of effect was remarkably meager in food supplement group which could be perhaps due to less time given for follow-up period. Longer duration of trials would yield better results.

Keywords: bone mineral density, edentulism, electromyography, elderly woman, loss of tooth, masticatory performance

OP-85

An Optimal Design for Posterior Implant-Supported Fixed Dental Prostheses?

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ABSTRACT

Dental implants restored with fixed dental prostheses have been reported to have a high survival rate, but with relatively higher technical complications. The major technical complications were ceramic fracture, screw loosening, and loss of retention. In addition to metal-ceramic restorations, zirconia has been introduced for implant-supported fixed dental prostheses (ISFDPs) because of its superior esthetic and mechanical characteristics. However, chip-off fracture of veneering porcelain has been reported to be the most common complication of zirconia-based ISFDPs. Monolithic zirconia design has been advocated to avoid the possibility of porcelain chipping. In my prospective clinical study, the overall survival rate of 56 modified monolithic zirconia ISFDPs was 98.2% after 2 years of clinical service, and the complication-free rate of prostheses was 91.1%. Another randomized clinical trial of mine also reported that the modified monolithic zirconia design applied to the posterior implant-supported SCs had a significantly lower technical complication rate than did the metal-ceramic ones, which had the complication-free rates of 97.1% and 79.4% respectively. Based on the findings of the limited clinical data, monolithic zirconia seems to be an ideal design for posterior ISFDPs with lesser technical complications. However, based on my own clinical observation, more catastrophic complications had been noticed, such as abutment and implant fractures. Is there an optimal design which can avoid all the technical complications for posterior ISFDPs? In this presentation, let us try to find the optimal design for ISFDPs based on the clinical research and my own clinical experiences.

Keywords: dental implants, fixed dental prostheses, monolithic zirconia

OP-86

Is Mandibular Deformation a Risk of Implant Treatment?

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ABSTRACT

Objectives: The factors contributing to mandibular deformation during mouth opening in the edentulous mandible currently remain unclear. To identify these factors, mandibular deformation during mouth opening in edentulous patients treated with an implant-supported fixed prosthesis was investigated in the present study using strain gauges. **Methods:** Twenty patients with a fully edentulous mandible who received 4 or ≥ 6 implants were included. The most distal implants were placed mesial to the mental foramen (the premolar region) in patients with 4 implants, and distal to the mental foramen (molar region) in those with ≥ 6 implants. Measurements of mandibular deformation during mouth opening were conducted in the anteroposterior and lateral directions between the most distal implants on the left and right sides (arch width) using strain gauges. Mandibular anatomies were also evaluated using computed tomography data. The Mann–Whitney U test and Spearman's rank correlation were used for statistically analysis. P-values < 0.01 were considered significant in both analyses. **Results:** Arch width reduction between the left and right implants during mouth opening ranged between 47.38 and 512.80 μm ; the range of deformation in the anteroposterior direction was between 0.12 and 15.14 μm . Moreover, arch width reduction in the premolar region positively correlated with the ratio between the height and width of the symphyseal bone ($P = 0.0003$; $r = 0.72$). **Conclusions:** The present results on patients with an edentulous mandible showed that reduction of arch width was greater in the molar region than in the premolar region. Furthermore, mandibular arch width reduction during mouth opening may be greater in the mandibular symphyseal bone as it is greater in height and lesser in width. Our findings indicated that mandibular symphyseal bone shape should be evaluated to assess the risk of mandibular deformation before deciding on an implant treatment plan and prosthodontic design.

Keywords: mandibular deformation, mouth opening, implant-supported fixed prosthesis

OP-87

Clinical Efficacy of Digital Complete Dentures Fabricated from Intraoral Scanning

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ABSTRACT

Objectives: The aim of this randomized, crossover-designed, clinical trial was to compare the performance and satisfaction of digital complete dentures (CDs) fabricated from intraoral scan data with conventionally fabricated CDs. **Material and methods:** Two sets of CDs, one set through digital workflow (DCD group) starting from digital scanning with an intraoral scanner and the other set through the conventional workflow (CCD group), were fabricated for each of the eight study participants. They were given one set of CDs in the first month and the second set in the subsequent month (the order determined randomly). The masticatory efficiency expressed as a masticatory ability index (MAI) and internal adaptation (gap) were evaluated for objective analyses. The responses to a 12-item questionnaire were evaluated for subjective satisfaction analyses. Following the statistical analyses of carryover effects of each parameter, the parameters were further analyzed to assess the differences between the two groups with the Mann-Whitney U test using a statistical software program, with statistical significance set to $\alpha = 0.05$. **Results:** The carryover effects were not observed for all measured parameters ($p > 0.05$ for all). The MAI was statistically significantly superior in the CCD group (60.04) compared to the DCD group (36.96) ($p = 0.029$). The mean internal gaps of the maxillary CDs in the CCD and DCD groups were 55.25 μm and 72.07 μm , respectively, and those of the mandibular CDs in the CCD and DCD groups were 35.58 μm and 39.15 μm , respectively. However, they did not exhibit statistically significant differences for both arches ($p = 0.686$ for both arches). No statistically significant difference was observed in overall satisfaction between the two groups ($p = 0.114$). **Conclusion:** Digital complete denture treatment starting from digital scanning with the intraoral scanner may be a clinically feasible option for treatment of edentulous patients.

Keywords: digital denture, intraoral scanner, edentulism

OP-88

**The Use of Dental Pulp Cells, Platelet Rich Fibrin, and Gelatin Sponge
on The Improvement of Alveolar Bone Regeneration and Implant
Osseointegration**

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ABSTRACT

Alveolar bone volume and implant osseointegration have an important role to achieve the success of dental prostheses in the oral cavity. The purpose of this study was to determine the effect of the use of dental pulp cells (DPCs), platelet rich fibrin (PRF), and gelatin sponge on the improvement of alveolar bone regeneration and implant osseointegration. First, DPCs was extracted from impacted third molars and developed them in vitro. To see the potential of stem cells in these cells, stem cells markers such as Oct4 and Nanog were characterized using PCR analysis. To study the effect of DPCs, PRF and gelatin sponge in enhancing alveolar bone regeneration, these materials were applied into 3x3x3mm³ defect in the condyle femur male Wistar rats. To study the implant osseointegration, DPCs, PRF and gelatin sponge were applied on implant bed in the condyle femur male Wistar rats before inserted the implant screw. Observation of osteogenesis and osseointegration process were carried out on day 28th using hematoxylin eosin, trichrom mallory and immunohistochemistry staining. The data obtained were analyzed by t-test. Results showed that there was a significant difference in the increase in osteogenesis and osseointegration of the treatment group compared to the control group ($p < 0.05$). The conclusion of this study is the use of DPCs, PRF and gelatin sponge can improve alveolar bone regeneration and implant osseointegration in animal model.

Keywords: pulp cell, platelet rich fibrin, gelatin sponge, bone regeneration, osseointegration

OP-89

The Effect of Thickness and Abutment Substrates on Masking Ability of Translucent Monolithic Zirconia Ceramics

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ABSTRACT

Introduction: Translucent monolithic zirconia restorations were developed to solve porcelain chipping associated with veneered zirconia crowns. However, eliminating the use of coping underneath the crowns affect their aesthetic outcome when utilised over dark substrates. This study was carried out to determine the minimum thickness of monolithic zirconia to achieved acceptable masking ability and to evaluate the effects of brands, thickness, and types of different substrates on colour difference. **Material and Methods:** 72 square-shaped disk specimens from 3 commercially available A2 shade translucent monolithic zirconia brands; HTA (Nacera® Pearl 1), HTB (DD cubeX2) and HTC (XTCERA TT) were prepared into 3 different thicknesses (1.0, 1.5 and 2.0 mm). The specimens were placed on a D4-shade composite resin (SA) and white acrylic (control) substrate, and their CIELab values were measured with a spectrophotometer. ΔE values were calculated and compared with the established acceptable (5.5) and perceptible (2.6) tolerance thresholds. Brand specimens that showed the greatest masking ability were further analysed on another 2 abutment substrates (D3 shade composite resin (SB) and precious gold alloy (SC)). Two-way ANOVA was used to assess the interaction of brand, thickness and types of abutment substrates on ΔE . **Results:** Acceptable tolerance threshold was achieved with the combination of brand and abutment substrates of specimen's thickness; HTA-SB (1.5 mm), HTA-SA (1.5 mm), HTA-SC (1.0 mm), HTB-SA (2.0 mm) and HTC-SA (2.0 mm), while HTA-SB (2.0 mm), HTA-SA (2.0 mm) and HTA-SC (1.5 and 2.0 mm) achieved perceptible tolerance threshold. Zirconia brand, thickness and abutment substrates affect the ΔE ($P < 0.001$). **Conclusion:** Within the limitation of this study, the acceptable masking ability of monolithic zirconia could be achieved with 2.0 mm thickness. Types of abutment substrates, brands and thickness affect the masking ability of translucent monolithic zirconia.

Keywords: abutment substrate, thickness, masking ability, monolithic zirconia

OP-90

Rotational Load Fatigue Performance of Titanium Vs Titanium-Zirconium Implant-Abutment Connections

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ABSTRACT

Purpose: Titanium-Zirconium (Ti-Zr) alloy has been developed to strengthen the implant body, but clinically relevant information is still limited. The aim of this in vitro study was to compare the rotational load fatigue performance of narrow diameter (3.3mm) and regular diameter (4.1mm) dental implants made with CPTi-G4 and Ti-Zr. **Materials and methods:** Narrow diameter (N) and regular diameter (R) implants with CPTi-G4 (Ti) or Ti-Zr (Tz) materials were tested. This resulted in 4 test groups: NTi, NTz, RTi and RTz. 5 samples were made for each group (n=5). Abutments used were milled from titanium-aluminum-niobium alloy abutment blanks. A rotational load fatigue machine applied a sinusoidally varying load at an angle of 45 degrees to produce an effective bending moment of 35 Ncm at a frequency of 14 Hz in air at 20°C. The number of cycles to failure was recorded. The upper limit was set as 5 million cycles. Results were evaluated using ANOVA and Tukey's post hoc tests. Failure locations and patterns were evaluated with SEM. **Results:** All regular diameter test groups reached the upper limit of 5 million cycles without failure. All narrow diameter test groups failed within the range of 402,530 cycles to 3,374,353 cycles. It could be observed that NTz showed a higher mean cycle count as compared to NTi. NTi group recorded 2 implant damage, 1 implant fracture, 5 abutment fractures and 4 screw fractures. NTz test group showed only abutment fracture at the level of implant platform, with no damage to the implant body. Significant difference was found between implants of different diameters. There was no significant difference between implants of different materials. **Conclusions:** Regular diameter implants performed significantly better than narrow diameter implants, regardless of material, while no significant difference in cyclic load to failure was found between groups of different alloys. All NTz failures were at the abutment only, without damage to the implant. This failure pattern can potentially be clinically advantageous in terms of retrieval and subsequent replacement of a failed prosthesis.

Keywords: titanium-zirconium implant abutment, rotational load fatigue

OP-91**The Future Trend of Tooth Replacement in Time of COVID**

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ABSTRACT

Tooth lost and replacement has been a major problem around the world. To replace the missing dentition with dental implants required lengthy treatment time in both recovery and process. Combining with today pandemic crisis around the world, the increased number of appointment and treatment time means the higher may result in higher chance of contracting COVID. However, with modern technological advances (CBCT, digital planning, guided surgery CAD/CAM) have contributed to streamlining and shortening the treatment process. In addition, they also allow the surgeon to perform the treatment in ways which were not readily possible before. These technologies have significantly influenced the approach of the treatment. The use of cone-beam computed tomography (CBCT) and computerized planning have led to efficient incorporation of restoration-driven implant surgery in reference to surrounding anatomical structures. Correct implant positioning improves the dentist's ability to enhance esthetic and prosthetic outcomes and maximize the potential to ensure optimal occlusion and implant loading. Prosthesis fabricated prior to the implant surgery, lead to shorten the treatment procedure dentist and faster recovery time for the patient. These factors can contribute to the long-term function and esthetic success of treatment. This presentation with demonstrate the clinical workflow to simplified and shorten overall treatment process of implant tooth replacement with predictable outcome.

Keywords: tooth loss, tooth replacement, computerized planning, CBCT