



SCOTTSDALE

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2011 Table Clinics

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1. Evaluating the Effectiveness of Mini-Implants to Stabilize Lower Dentures: A Two Year Clinical Study

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University of Tennessee

Mini Implants have been around for many years and their uses are primarily transitional or temporary in nature. As the edentulous population live longer with less income it is our responsibility as healthcare providers to come up with alternative means of stabilizing complete dentures. The study at The University of Tennessee followed 24 patients over a 2-year period who had four mini implants placed in the anterior mandible and immediately attached to their existing dentures. The patients were seen at 3, 6, 12, and 24 months for evaluation. Patient surveys demonstrated a high acceptance rate.

2. Maxillary Implant-Supported Bar Overdenture using CAD/CAM Technology (Clinical Case)

Alqahtani Fawaz, B.D.S.
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University of Medicine and Dentistry of New Jersey

Implant-supported bar overdenture are appropriate treatment choices for patients with inadequate bone volume in the posterior maxilla to placed more implant for fixed type of restoration. Computer-aided design/computer-aided manufacturing (CAD/CAM) technology has broadened the scope and application of those treatment options, allowing for ideal substructure design for optimal esthetics and biomechanics. Fabrication of a maxillary implant-supported milled titanium bar with attachments and an overdenture will be described.

3. An Alternative Strategy for Managing Implant Angulation in the Full Arch Fixed Dental Prosthesis.

Bryan M Limmer, D.M.D.
Third Year Prosthodontic Resident
University of North Carolina

The screw-retained, full arch fixed dental prosthesis is an increasingly common treatment option for the edentulous patient. However, implant angulation is a common problem, which can lead to esthetic and structural compromises, additional cost, additional complexity, and potentially unrestorable implants. An alternative approach to managing implant angulation using a strategically designed zirconia framework with cementable single unit crowns is presented. Benefits of the proposed method include the ability to correct a greater degree of angulation error and an efficient fabrication protocol, without a significant reduction in esthetics.

4. Developing Soft Tissue Contours on Implant Cast

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United States Army, Fort Gordon, GA

This table clinic will present a method to idealize the soft tissue mouldage to allow proper development of the subgingival portion of the abutment prior to definitive prosthesis fabrication. The fixture level impression is cast in dental stone. Upon recovery the gingival portion around the fixture analog is contoured to the desired form. A putty impression is made of this idealized form and afterwards, a block section of the stone around the fixture analog is removed. Finally, a gingival analog material is injected into putty matrix yielding the ideal soft tissue contours.

5. Retrieval Torque of Cement-Retained IPS e.max Press® Crowns

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Second Year Prosthodontic Resident

Montefiore Medical Center/Albert Einstein College of Medicine

Cement-retained, implant-supported crowns are indicated in certain clinical scenarios. The development of a design that incorporates a lingual or palatal retrieval slot into the abutment-to-prosthesis interface can address the main issue of predictably retrieving cement-retained, implant-supported prostheses. This design has been clinically successful with metal ceramic cement-retained, implant-supported crowns. However, when esthetics is a concern, an all ceramic crown can be the material of choice. The goal of this study is to measure the retrieval torque of a provisionally luted lithium disilicate pressable ceramic crown (IPS e.max Press®) on titanium and zirconia abutments.

6. Immediate Placement and Provisionalization of Implants Placed into Sites with Periradicular Infection: Influence of Antibiotics on Implant Survival Rates.

Edward J. Givens, Jr., D.D.S.

Third Year Prosthodontic Resident

University of North Carolina Chapel Hill

Immediate placement and loading of implants to replace a tooth with chronic apical infection has become an increasingly popular procedure with high success rate. However, like traditional implant surgery, there is controversy as to whether the use of peri-operative antibiotics is needed to improve treatment outcomes. We present here preliminary data on a prospective controlled clinical trial comparing outcomes of immediate placement and loading of implants replacing infected teeth with and without peri-operative antibiotics. Pre- and post-operative soft and hard tissues were also measured. Preliminary results suggest that antibiotic therapy may not be needed for this procedure.

7. Correlation Between Occlusal Wear and Non-Carious Cervical Lesions in Native American Skeletal Remains

Carl M. Pogoncheff, D.D.S.

*Third Year Prosthodontic Resident
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The aim of this study was to investigate the relationship between occlusal wear and non-carious cervical lesions in a population not exposed to modern day oral hygiene practices. 118 jaws, maxillas and mandibles, including 1096 teeth were examined. The skeletal remains originated from three different states spanning 3000 BC to 1400 AD. All teeth were scored for amount of occlusal wear, and presence, size and shape of non-carious lesions. Despite various amounts of occlusal wear, zero non-carious cervical lesions were present. Based on the results of this study, there is no correlation between occlusal wear and non-carious cervical lesions.

8. Increased Cutting Efficacy of Diamond Burs with Biochemical Solution Spraying
Ramtin Sadid Zadeh, D.D.S., M.S.
*Third Year Prosthodontic Resident
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Cutting efficacy (weight loss and cutting length) and roughness (Ra) of 5 minute cuts (4/block) on 15 Empress blocks using a computer controlled air turbine were measured using 30 diamond burs and 3 lubricating solutions were used. cut (Depth=4mm). An air turbine (40,000 rpm) made the ceramic cuts (200g load). Ceramic weight loss, Ra and length of cut was measured before and after each cut. Ra was measured with 3D-noncontact profilometer. Data were compared using three-way and separate one way ANOVA ($\alpha = 0.001$). One solution produced significantly longer cutting lengths and greater weight loss ($p < 0.001$) than the other 2.

9. Restoring Edentulous Mandible with an Implant- Bar Supported Overdenture in a Patient with Limited Inter-Arch Space.
Zeina Al-Salihi, B.D.S., M.Sc.
*Clinical Lecturer
University of Michigan*

According to the 2002 McGill Consensus Statement on Overdentures, restoration of the edentulous mandible with an implant overdenture is the first choice standard of care. Adequacy of restorative space is an important consideration in successful implant overdenture planning, as it must accommodate a denture base of sufficient dimensions, appropriately positioned denture teeth, and an implant attachment system. A report on implant overdentures suggested that a minimum of 13-14 mm of vertical space is required for bar supported overdentures. This clinical report describes the rehabilitation of a patient with two mandibular implant bars-supported overdenture, who presented with limited vertical space.

10. Treatment of Edentulous Mandibulectomy Patient with Implants Retained Complete Dentures
Eassa A. Alobaidi, B.D.S.

*Third Year Prosthodontic Resident
Indiana University*

The prosthodontic rehabilitation of an edentulous patient with a resected mandible can be very challenging. Very few of these edentulous patients with mandibular discontinuities will approach the previous masticatory efficiency presented before the resection because of many factors, such as compromised denture bearing area, deviation of the mandible, angular pathway closure, compromised tongue function, and etc. Using implants in these cases improves the prosthesis retention and can facilitate more effective mastication than was previously obtainable with a conventional prosthesis for a patient with mandibular discontinuity.

11. Evaluation of Fracture Resistance of Monolithic Lithium Disilicate (LD)
Customized Implant Abutments with Lithium Disilicate Full Coverage
Restorations

Techkouhie Hamalian, D.D.S.
*Third Year Prosthodontic Resident
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To date, there has been no published study exploring the use of lithium disilicate (LD) glass ceramic as an option to fabricate implant abutments. With 360 megapascals of biaxial flexural strength, this material has the potential to be used for definitive implant restorations. When compared to zirconia, LD has the advantage of being etchable and having excellent optical properties, maximizing esthetical outcomes. Therefore, the main objective of this in-vitro pilot study is to explore the feasibility and evaluate the fracture resistance of customized LD abutments using three different implant connections; e-max CAD and e-max Pressed LD (incorporating the metal insert) under e-max anterior monolithic crowns. Results and comparison with prefabricated zirconia abutments will be presented.

12. CAMBRA and its effect on surface roughness of various restorative materials

Lauren M. Bolding, D.D.S.
*Third Year Prosthodontic Resident
University of Maryland*

CAMBRA was set forth to give clinicians mechanisms and guidelines for caries management based on risk assessment. These guidelines recommend the use of different caries agents based on risk category. As prosthodontists, many of our dentate patients fall into a high risk category and would benefit from regular use of anticaries agents. It is important to know what effect a medicament is going to have on a particular restorative material, because certain effects can lead to potential problems in the oral environment. Research will be presented which examines the effect on surface roughening by anticaries agents on various restorative materials.

13. Comparison of the Esthetic Outcome of a Heat-Pressed Glass-Ceramic Lithium Disilicate-Reinforced Monolithic Crown and CAD/CAM Crown on a Dark-Colored Abutment Tooth

CASE REPORT

Johanna Yopez D.D.S

Second Year Prosthodontic Resident

University of Texas Health Science Center

The use of an all-ceramic restoration for an anterior tooth is a clinical esthetic challenge. The decision of which system to use depends upon a number of factors such as the underlying abutment tooth color, margin location, ceramic thickness, restorative space and cement color. The conventionally glass based all-ceramic system has better optical properties than alumina or zirconia systems. This system exhibits a better shade matching to natural dentition as well as excellent translucency. The objective of this table clinic is to compare the esthetic outcome of a two different glass based all-ceramic restoration on a dark-colored prepared abutment tooth.

14. Liver Transplant-Late Implant Failure Prognosticator?

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Third Year Dental Student

New York University College of Dentistry

A 61 year old male patient was seen in the NYUCD undergraduate clinic and complains of a loose mandibular implant overdenture. Upon examination, unilateral implant mobility exists. He has a medical history of Hepatitis C infection for 15 years, liver cancer for 8 years and subsequently underwent a liver transplant in 2008. The prescribed polypharmacy includes post-transplant immunosuppressant therapy. What are some possible causes for late implant failure in relation to immunosuppressive therapy and implant design?

15. Resolution Before Diagnosis: Ensuring Predictable Reconstruction

Patrick Miklos D.D.S.

Third Year Prosthodontic Resident

United States Air Force Prosthodontics - Lackland AFB, TX

The ability of the masticatory system to function optimally and pain free depends on the proper occlusion being in harmony with the musculature and the temporomandibular joints. It is impossible to have a stable occlusion if the temporomandibular joints themselves are unstable. Thus, during the diagnostic work-up, before the final diagnostic waxing and before reconstructive procedures are initiated, the temporomandibular joints must be prepared (pre-treated) to a healthy and stable condition, capable of complete and repeatable condylar movement into centric relation. Otherwise, any attempts to reconstruct the stomatognathic system in this unresolved, malfunctioning state will invariably meet with failure.

16. Nervosa about Bulimia?

Rebecca Sternberger B.A, M.A

Fourth Year Dental Student

New York University College of Dentistry

Dental Health care providers play an integral role in diagnosing early stages of eating disorders. Dentists can help prevent further dental destruction of oral tissue by prescribing rinses such as sodium bicarbonate/magnesium hydroxide after vomiting, fluoride treatments, full coverage crowns to protect remaining tooth structure, and frequent recall visits. However, barriers such as fear of offending the patient and fear of misdiagnosis limit dental health care providers' ability to provide eating disorder-specific secondary prevention. Details of a suggested treatment approach will be elucidated.

17. Female Bruxing and prosthetic treatment: A Review of the Literature

Ahmed Beheiry D.D.S.

Fourth Year Dental Student

New York University College of Dentistry

A 59 y old female, presented for treatment in the undergrad DDS clinic at NYUCD. Upon examination, it was concluded that the patient had a parafunctional bruxing habit. Prior to initiating restorative and prosthetic treatment, a review of clinical evidence of appropriate treatment was decided upon. A literature search was conducted and a review of the pertinent published papers will be presented.

18. The Management of Worn Dentition with Mandibular Overlay Removable Partial Denture: A Case Report

Sumana Posritong D.D.S.

Third Year Dental Resident

Indiana University

In recent times, elderly patients tend to have retained more teeth than in the past due to the increase in overall quality of dental care. However, retained teeth frequently present with severe wear and esthetic problems. The overlay removable partial denture is one of the alternative treatment options for these patients. This prosthesis is inexpensive, durable and esthetically acceptable. This case report describes the use of a maxillary immediate denture and a mandibular overlay removable partial denture to treat a patient with an extremely worn dentition.

19. Is There an Increased Incidence of Obstructive Sleep Apnea in Patients with Moderate to Severe Wear Due to Sleep Bruxism?

Christopher Jones D.M.D.

Third Year Prosthodontic Resident

United States Air Force Lackland AFB TX

Sleep disordered breathing (SDB) afflicts an estimated 30% of the US population with approximately 24% currently undiagnosed. SDB is linked to serious systemic diseases such as hypertension, atherosclerosis, arrhythmias, stroke, and insulin resistance. Recently, evidence has arisen suggesting a relationship between SDB and sleep bruxism (SB). Dentistry's role in managing excessive wear of the dentition from SB is well established while its role in managing the obstructive sleep apnea (OSA) component of SDB is rapidly advancing. If a true correlation between OSA and SB exists, dentistry is uniquely positioned to aid in the concomitant diagnosis and management of both entities.

20. Comparison of Lithium Disilicate (IPS emax CAD) microstructure crystallized in a microwave oven to a conventional oven.

Kamolphob Phasuk D.D.S.

Third Year Prosthodontic Resident

State University of New York at Buffalo

The goal of this study is to use a microwave processing oven to crystallize Lithium Metasilicate blocks (IPS e.max CAD, blue block) into Lithium Disilicate. The test microwave processing oven represents a system that combines free radiating heating elements with a microwave field (conduction heat) This technology allows volumetrically heating. The principle advantages of heat processing the ceramic with a microwave oven include greater energy efficiency, faster sample heating and more uniform heating. This results in improved material properties. Initial SEM observations of microwave crystallized test samples have demonstrated similar crystal structures as conventional crystallized product in less time. Subsequent structural and color properties tests are in process.

21. Use of Indexes to Control Final Outcome of Metal Ceramic Crowns

Sun-Yung Bak D.D.S.

Third Year Prosthodontic Resident

Michael E. DeBakey VA Medical Center

My table clinic will demonstrate the use of various indexes for fabrication of metal ceramic crowns.

22. Marginal adaptation and internal fit of recently introduced CAD/CAM copings

Dimitrios Chronaios B.D.S

Lisa Kane D.D.S.

Third Year Prosthodontic Residents

University of Michigan

The purpose of this study was to evaluate the marginal adaptation and internal fit of milled Co-Cr and e.max copings (before and after crystallization) produced by the Procera CAD/CAM system, using laser videography. Master epoxy dies of standard shoulder and chamfer preparations were used for scanning and subsequent luting of Co-Cr and e.max copings using a light body poly vinyl siloxane impression material. Laser videography was used to scan and superimpose the images of both the original epoxy die and the 3-dimensional space recorded by the PVS material. Accuracy of the milling procedure was assessed at five different areas and statistical significance was observed.

23. The Utilization of an Extracellular Membrane to Augment Keratinized Tissue around Dental Implants

Sidney Sternberger D.M.D.

Helios Zeno D.M.D.

2nd Year Prosthodontic Resident

New York Hospital Queens

The presence of attached keratinized gingiva around dental implants has been previously discussed in the literature. The rationale for increasing the zone of keratinized tissue is to enhance esthetics, facilitate plaque control, and to prevent further gingival recession following restorative procedures. Recent studies have demonstrated clinical success

augmenting keratinized tissue around teeth using extracellular membranes. This approach supplants the need to harvest autogenous soft tissue from a donor site. In this poster we will present a treatment involving a bi-layered extracellular collagen membrane that was utilized to augment keratinized tissue around a dental implant.

24. Effect of Material Thickness on the Fracture Resistance of Custom Zirconia Implant Abutments

Miles Cone, D.M.D., M.S.
Third Year Prosthodontic Resident
Fort Gordon Garrison

One of the greatest challenges restorative dentists encounter involves overcoming unsatisfactory implant angulation for anterior single-tooth prostheses. Achieving appropriate contour and profile for over-angled implant restorations often requires substantial reduction of the axial walls of the underlying abutment's screw-access channel. The threshold values for fracture resistance of zirconia implant abutments that have been adjusted beyond the recommended 0.8 mm is not well-documented in the literature. Tests were conducted to determine if a corollary exists between reduction in abutment wall thickness and fracture strength. All specimens tested exceeded normal human physiological mastication values for the anterior region of the mouth.

25. Fixed- Removable Retreatment: An Evolution in Therapeutic Approach

Amit Punj, D.M.D.
First Year Prosthodontic Resident
Montefiore Medical Center

A combination of tooth supported fixed and removable dental prostheses have been utilized as a classic restorative approach to treat partially edentulous patients. The dental implant modality has contributed to increasing the options available to restorative dentists and patients, while simultaneously improving the effectiveness and predictability of the outcome. This report presents a fixed and removable treatment in a patient with a surgically repaired cleft palate initially restored with a fixed removable approach over 20 years ago. Details of the maxillary dental reconstruction which involves survey crowns and a bar retained, implant supported, removable partial over denture will be presented.

26. The effect of electrical stimulation on success of bone grafts: an in vivo study.

Garmina Talwar, D.D.S.
Third Year Prosthodontic Resident
University of Maryland

Successful bone grafting is a very important and necessary intermediate step for reconstruction of the masticatory system and is commonly used before placing intraoral implants. Bone grafting is also commonly used to reconstruct bony defects created by periodontal disease. Bone grafting is often not predictable and is associated with extended healing times and morbidity. Ongoing research is aimed at addressing these problems and any methods that will help make graft healing more predictable and faster will contribute to the overall success of reconstructive efforts. Research will be presented

which examines the effect of Electrical Stimulation on Bone Graft Healing in Rat Calvaria.

27. Prosthodontic Treatment Difficulties in Myotonic Muscular Dystrophy (MMD)
Patient

Yinghan Tan B.D.S.
Second Year Prosthodontic Resident
University of Maryland

Myotonic muscular dystrophy (MMD) is the inability to voluntarily relax the muscles coupled with progressive muscle degeneration. It affects tooth eruption at a young age and makes determination of the vertical dimension difficult. Masticatory muscle spasms result in an unstable stomatognathic system which affects recording of the centric relation position. An occlusal splint therapy to create an orthopedic stable environment is recommended prior to prosthodontic rehabilitation. MMD patients are more prone to caries and periodontal disease due to poor motor co-ordination; therefore, implants and removable prostheses are preferred. However when fixed dental prostheses are indicated, supra-gingival metal margins are suggested.

28. Implant placement using a model-based surgical guide: A case report

Areej Al-Hawarini D.D.S.
Daniela Orellana D.D.S.
First year Prosthodontic Residents
University of Michigan

Successful implant assisted restorations start with accurately placed implants. Guided surgery with the use of CT scans, while desirable, incur an additional cost to the patient. Another method of guided surgery utilizes conventional radiographs, models and bone sounding techniques.

This case report will illustrate the laboratory steps for fabricating a model-based surgical guide to aid in the implant placement in areas #7 and #9. Using this surgical guide enabled the surgeon to maintain the implant direction and depth during the entire series of surgical drills, resulting in prosthetically driven implant placement

29. Two Injectable Filler Treatments (Hyaluronic Acid and Platelet-Rich Plasma) To Enhance Deficient Interdental Papillae: A Pilot Study

Frank Maratta D.M.D.
Third Year Prosthodontic Resident
Montefiore Medical Center

Interdental papillae are important for both esthetics and function. Loss or deficiency of papillae in patients is a common problem encountered by all clinicians. Conventional solutions to this deficiency include invasive periodontal surgical procedures and/or prosthetic solutions. The aim of this study was to develop a standardized protocol for injection technique, measurement and analysis of two different injectable filler treatments: hyaluronic acid (Restylane™) and platelet-rich plasma. A secondary

objective was to determine safety and efficacy of these fillers in selected subjects. Results from the study are promising, and randomized prospective studies will be planned.

30. Fluorescence of teeth and porcelain by excitation with far-visible and near-UV light

*Sheena Allen D.M.D.
Third Year Prosthodontic Resident
United States Army*

Little is known regarding the fluorescence emission spectra between human teeth and porcelain. Therefore, this study investigated the hypothesis that fluorescent spectral emissions, following exposure to a controlled level of radiant energy, will be significantly different within a sampling of commercially available dental porcelains as compared to human dentin and enamel. Results indicated significant differences existed between porcelain as compared to teeth. Clinicians need to be aware that dental porcelains do not produce similar spectral emissions as that seen in human teeth, which could potentially result in restorations that do not match. Fluorescence also varies among brands of porcelain.

31. Influence of Surface Treatment of Y-TZP and Luting Cements on Crown Retention of Y-TZP Crown

*Mehdi Karimpour D.M.D.
Third Year Prosthodontic Resident
University of Alabama Birmingham*

90 extracted molars were mounted in acrylic (1mm above CEJ). Specimens were restored in distilled water at room temperature. Crowns were prepared with flat occlusal surface and axial wall with 20 degree convergence angle. Impression was made using a custom-made tray and an addition silicon impression material. Impressions were poured with ADA Type IV gypsum and scanned for fabrication of CAD/CAM zirconia crowns. They were divided to 9 groups; each group was received different surface treatment and cementation. 24 hours after Cementation, specimens fatigue loaded for 100,000 cycles. Universal Testing Machine was used to evaluate crown retention.

32. Retentive Strength Evaluation of a Bioceramic Luting Cement

*Andrianto, Fransiskus
Second Year Prosthodontic Resident
Columbia University*

Nanostructurally Integrating Bioceramic (NIB) luting cement has been introduced recently. This dental material distinguishes itself from existing primary classes, such as resins and glass ionomers, and also from water-based cements, such as zinc phosphate cement. It has the capability of sealing the interface and creating the conditions necessary for building hydroxyapatite. Minimal information has been published evaluating the

retentive strength and solubility of this new class of luting cement. The purpose of this study is to evaluate the retentive strength test of this new class of luting cement compared to the other two traditional self-etching, self-adhesive resin cements.

33. Marginal fit of single unit metal crowns fabricated using CAD-wax or the conventional waxing technique

David Lalande, D.M.D.
Third Year Prosthodontic Resident
United States Army

Crowns with open margins are a known problem leading to complications. There has been no research done on the marginal fit of full gold crowns (FGC's) manufactured from CAD-wax patterns using computer aided design/computer aided manufacturing (CAD/CAM) technology. The purpose of this study was to compare marginal gap widths of cast metal crowns that were fabricated either using conventional hand waxing (manual), or CAD/CAM technology (CAD-wax) techniques. The results demonstrated that there is no significant difference in mean marginal gap width between cast metal crowns fabricated using conventional hand waxing as compared to those fabricated using a CAD/CAM technique.

34. Articulation Schemes for the Edentulous Maxilla opposing the intact Mandible

Sarra Cushen D.D.S.
Third Year Prosthodontic Resident
United States Air Force

Restoring an edentulous arch against a dentate arch can present challenges in creating an articulation scheme that promotes patient comfort, masticatory function and tissue health. Available choices include bilaterally balanced articulation as well as anterior guidance. A patient presented with a dentate mandibular arch and an edentulous maxillary arch. The mandibular arch was restored to an ideal occlusal plane with fixed restorations and the maxilla was restored with two a complete dentures, one utilizing the functionally generated path technique for bilateral balance and the other anterior guidance. The patient wore each denture and was asked which denture he preferred.

35. Implant Overdentures: A novel attachment for reduced diameter implants

Alejandra Guzman Lopez D.D.S.
Third Year Prosthodontic Resident
University of Texas

Locator attachments may not be available for certain reduced-diameter implants. This could represent an obstacle when the final prosthesis is planned for an implant supported overdenture. An alternative attachment design for this prosthesis is presented: A wax-up using a precision attachment (preci-sagix) was accomplished to then create a metal cast attachment that was cemented to a titanium abutment. This was then picked-up using

resilient parts that engage the cast attachment. This alternative can be used when forces are also distributed properly with conventional locator attachments.

36. Combination Lower Lip Prosthesis Retained by an Intraoral Component

Helios Zeno D.M.D.

Sidney Sternberger D.M.D.

Third Year Prosthodontic Residents

New York Hospital Queens

A fifty-year-old male diagnosed with lower lip SCC, underwent resection and tumoricidal radiation therapy. The patient was surgically disfigured and decided to undergo reconstructive surgery, which failed twice. He was referred for prosthodontic evaluation to New York Hospital Queens Department of Graduate Prosthodontics. This clinical report describes an innovative method of fabricating a two-piece combination lip prosthesis. The intraoral portion has retentive elements embedded into a “Snap-on prosthesis.” The extraoral portion that replaced the vermilion border and missing skin anatomy is anchored to the intraoral portion. Once delivered, speech and swallowing function was improved and adequate cosmesis was provided.

37. : Is Lateral Cephalometric Evaluation Necessary for Prosthodontic Treatment Planning?

Gillian Alexander D.D.S.

Second year Prosthodontic Resident

University of Maryland

The lateral cephalometric radiograph is frequently used in orthodontics as a diagnostic aid in treatment planning. In 1976, DiPietro and Moergeli discussed the value of lateral cephalometric analysis in determining the Frankfurt Mandibular Plane Angle (FMA), which can have an impact on prosthodontic treatment in a number of ways. Others have suggested methods for using the lateral cephalogram as a diagnostic aid in determining a patient’s occlusal vertical dimension. Given the multitude of analytical tools we use to develop complex treatment plans for our prosthodontic patients, is there a place for the lateral cephalometric tracing?

38. Effect of repeated firings on the color and translucency of a zirconia ceramic system

Sotirios Vrettos D.D.S.

Second Year Prosthodontic Resident

Panagiota-Eirini Spyropoulou D.D.S.

Third Year Prosthodontic Resident

University of Michigan

The purpose of this study was to investigate the effect of repeated firings on the optical properties of shaded and non-shaded zirconia core materials.

Forty zirconia disc specimens (white, light, medium, intense) were fabricated by the manufacturer using CAD/CAM technology. Color measurements were made using a calibrated reflection spectrophotometer and color differences, contrast ratio and translucency parameters were calculated before and after polishing of the specimens and after each firing cycle.

The results revealed significant differences in optical properties among the several procedure steps.

39. Prosthodontic restoration of a cleft lip and palate defect using an implant supported prosthesis.

*Kevin Aminzadeh D.D.S.
Second Year Prosthodontic Resident
University of Michigan*

The case report of a 19-year old female patient with a repaired cleft lip and palate and buccally malpositioned dental implants in the cleft repair is presented. The defect in the maxillary alveolar process and the overlying connective tissue was remedied with the fabrication of an implant supported fixed prosthesis combined with telescopic crowns. Proper lip support and soft tissue profile was determined using a wax mock up of the implant bar and replacement teeth. Once the proper esthetic outcome was assured a zirconia fixed complete denture substructure was scanned and fabricated. Gingival porcelain was added to the implant bar to simulate the missing soft tissue volume prior to the placement of lithium disilicate crowns onto the bar.

40. Implications for Clinical Practice of Adult Outpatient Experiences Before and After Saliva, Blood and Urine Sample Collections for Clinical Testing in Medical or Dental Care Settings.

*Matilda Dhima, D.M.D
Third Year Prosthodontic Resident
Mayo Clinic*

Saliva's applicability as a point-of-care tool for the monitoring and management of diseases is related to its perceived noninvasiveness, ease of collection and cost efficiency. Perceptions of 105 patients before and after undergoing random saliva, urine, and blood sample collections for clinical testing in a medical and dental care setting were assessed. Prior to sample collections, 76 out of 105 patients reported saliva as the most convenient sample to be collected and 30 patients endorsed it as "easy to collect at home". The significant decline in saliva preferences post collections is evaluated with regards to sociodemographics, dentition status, comorbidities and polypharmacy.

41. Incidence of Interproximal Open Contact Related to Implant Placement Posteriorly and Anteriorly

*Spyridon Varthis D.D.S.
Dennis P Tarnow, D.D.S.
Anthony Randi, D.D.S.
Second Year Prosthodontic Resident*

Columbia University

The aim of this study was to determine the incidence of open contact in implant restorations and to identify the factors contributing to the loss of Interproximal Contact (IC) between implant prostheses and adjacent teeth. This study consisted of approximately 100 patients with implant restorations in the posterior or anterior region. Participants were evaluated ≥ 3 months after implant restoration insertion and seen at random intervals to identify IC openings. Cases were identified by using dental floss and factors leading to this phenomenon further investigated. Statistical tests were performed in order to determine incidence of and factors leading to IC loss.

42. Novel Uses for the Dental Surveyor

Jan-Ching Chou
Second Year Prosthodontic Resident
Marquette University

Three novel uses for the dental surveyor are presented: 1. Recording occlusal plane inclination of a wax rim by setting the master cast on a surveying table, setting the surveying table to level the wax rim, and scribing a line on the master cast. 2. Recording esthetic plane information by using a Kois Dento-Facial analyzer, setting a mounted cast on the surveying table, leveling the mounting plate, and scribing a line on the cast. 3. Analyzing the path of insertion of tooth preparations by viewing an alginate impression set on a surveying table through a microscope.

43. An evaluation of the mechanical properties of one- piece milled and two-piece fiber post and cores.

Carol Kim D.D.S.
Third Year Prosthodontic Resident
Columbia University

The increasing demand for the most esthetic and durable restoration has been a driving motivator for research on fiber posts and core systems. This relatively new material has shown promising outcomes which should allow clinicians to be able to readily provide this type of treatment for their patients. This study is exploring the characteristics of a one-pieced milled post and core and a two-piece prefabricated fiber post and composite core. The hypothesis of this study is that the one-piece milled fiber post and core will be able to withstand oblique forces better than the two-piece system.

44. Cantilever Resin Bonded Fixed Partial Dentures modified preparation: An alternative to implant-supported crowns in narrow anterior spaces

Luis Boza D.D.S.
Third year Prosthodontic Resident
Eastman Institute for Oral Health

Although dental implant-supported crowns are certainly the restoration of choice for single missing teeth with high survival rates, there are still situations in which implants

cannot be placed because of lack of interdental space, lack of bone structure, financial limitations, age of the patient, and others.

For these situations conservative and predictable treatment alternatives are needed.

Cantilever Resin Bonded Fixed Partial Dentures (CRBFPD) have shown a survival rate of 94.8% at 3 years (Botelho 2006), with acceptable periodontal tissue response (Rashid 1999).

The purpose of this presentation is to describe a modified approach for the preparation of CRBFPD.

45. Resinous Denture Base Fracture Resistance: Thickness, Teeth and Fracture Mechanics

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Third Year Prosthodontic Resident
New York University College of Dentistry*

The purpose was to evaluate the effect of thickness of a resinous beam and the influence of prosthetic teeth on flexural strength. Beam-shaped high-impact PMMA specimens, containing a molar denture tooth, were loaded in 3-point flexure until failure, and failure loads and fracture surfaces analyzed. The presence of a denture tooth substantially decreased beam strength. Increased thickness markedly increased load bearing capacity. At least 2mm in thickness was needed for reasonable mechanical performance. Crack initiation usually occurred at tiny surface defects close to, but not involving denture teeth. Fracture toughness was calculated fractographically, allowing future analysis of clinical prosthesis fractures.

46. Prosthodontic rehabilitation of the systemic compromised patient with fixed implant supported prosthesis

*Alexis Morales D.D.S.
Second Year Prosthodontic Resident
Nova Southeastern University*

Diabetes mellitus is classified as a precaution for implant treatment since higher failure rates have been seen, as well as other risks factors such as periodontitis and smoking. The aim of this clinical presentation is to discuss a treatment plan probability of implant therapy on the maxilla on a partially edentulous, compromised systemic patient which includes all the previously presented risk factors. This patient present to the Prosthodontic clinic at Nova Southeastern University, with past dental history of successful endosseous implants, restored with a fixed partial denture prosthesis in the anterior segment of the mandible, after 4 years.

47. Use of Ultrasonic Probe for 3D Surface Modeling of Tooth Preparations

Sarah Jarari-Namin D.M.D.

*Third Year Prosthodontic Resident
Columbia University*

Since their inception, impressions have evolved significantly in fixed prosthodontics. Digital impressions are emerging as the future, but still have the disadvantage of requiring gingival displacement to accurately capture finish lines/margins. Through the use of ultrasonography, it can be possible to create a 3D image of a tooth preparation without the use of gingival retraction. Ultrasound is a cyclic sound pressure with a frequency greater than 20kHz. An intra-oral device with a transducer can capture a B-scan image of hard tissue, thus masking the gingiva. With the use of specific algorithms and techniques, one can potentially use ultrasonography as a digital impressing tool.

48. In-vitro Comparison of the Tensile Bond Strength of Denture Adhesives on Denture Base Materials

*Doris Kore, D.D.S.
Third Year Prosthodontic Resident
Loma Linda University*

An in-vitro study to evaluate the tensile bond strength of Super Poligrip, Effergrip, Fixodent, and SeaBond on denture base resin cylinder models: Lucitone 199, SR Ivocap, and Eclipse with the Instron testing machine at 5 minutes, 4 hours, 8 hours and 24 hours. Maximum forces before failure will be recorded in megapascals. Significant differences among these variables are expected. Knowing the adhesive qualities of various denture adhesives gives the dentist options for dealing with patients.

49. Evaluation of dimensional accuracy of CAD/CAM implant components

*Fotini Chrisopoulos D.D.S.
Third Year Prosthodontic Resident
Columbia University*

CAD/CAM implant abutments have fundamentally changed the present protocols for implant dentistry. Various abutment systems with specific abutment screws that vary in constituent material, mechanical configuration and machining quality are available for the major implant systems. The Atlantis CAD/ CAM abutments (Astra-Tech) were introduced for cement-retained implant restorations and are available in zirconia, titanium and gold-shaded titanium. The purpose of this *in vitro* study is to evaluate dimensional accuracy and fit tolerance of the abutment-screw joint of Atlantis CAD/ CAM abutments relative to that manufactured from parent companies.

50. Surgical indexing and fabrication of a CAD/CAM provisional restoration

*Quinn Chan D.M.D.
Third year Prosthodontic Resident
University of Michigan*

Provisional implant restorations are an important procedure utilized in the treatment of the partially edentulous patient. Surgical indexing of the final implant position

immediately following implant placement has been described in the past to fabricate an immediate loaded provisional crown. However, immediate loading of an implant may not be attempted in every situation. A technique is described that utilizes a surgical indexing procedure and implant analog altered cast to fabricate a CAD/CAM custom abutment and provisional crown at the time of Stage II implant surgery to temporarily restore a missing maxillary central incisor.

51. Subpontic Osseous Hyperplasia Associated with Implant Fixed Partial Dentures-
a Case Report and Literature Review.

Kaylynn Flippo B.S.
4th Year Dental Student
University of Detroit

Subpontic osseous hyperplasia is a relatively uncommon benign mass of normal bone found beneath a pontic. Approximately 43 cases of subpontic hyperplasia associated with fixed partial dentures over teeth have been reported in the literature. We report a rare case of subpontic hyperplasia associated with osseointegrated implants.

A 56 year old Caucasian male presented with the lesion in the posterior maxilla involving a cantilever fixed partial denture with tooth #3 as pontic and implants at # 4 and # 5 as abutments. The clinical, radiographic, microscopic, therapeutic aspects of the lesion as well as literature review are presented.

52. Modified Cast RPD as Transitional Prosthesis for Implant Placement

Tanya Somohana, D.M.D.
Second Year Prosthodontic Resident
New York University College of Dentistry

Traditionally cast Removable Partial Dentures were preferred over all acrylic RPDs because the metal framework provided advantages of predictable tooth-prosthesis interface, more favorable load distribution and strength. Furthermore all acrylic RPDs were used as transitional prosthesis due to simplicity of modification after implant surgery. Presented is a framework modification for cast transitional RPD that will simplify post operative adjustments.

53. Accuracy of Using the Nasion versus the Orbitale as the Third Point of Reference
in Facebow Transfers.

Tiffany Danyal, B.S.
Fourth Year Dental Student
University of Detroit

Purpose:

The purpose of this study was to compare the accuracy of nasion versus the orbitale as the third point of reference.

Materials and Methods:

Twenty dental students made facebow records for the Whip-Mix articulator and the Hanau articulator on the same patient using identical casts. The distance between a fixed point on the cast and a fixed point on the articulator was measured for each mounting.

Results:

Standard deviation and coefficient of variation on measurements from both articulators was very similar.

Conclusion: There is no difference between the reproducibility of the nasion and the orbitale as third point of reference for facebow transfer.

54. Fracture strength of CAD/CAM all-ceramic core crowns having different preparation modalities

Adrian Lobono D.D.S.

Third Year Prosthodontic Resident

Ft Gordon GA

Premolar endodontically treated crown are less successful than molar endodontically treated crown. Resistance form and increased surface area may account for higher success rates of restored endodontically treated crown treated molar teeth when compared to premolars. Therefore, increasing the surface area and the resistance form may increase the success rates for premolar endodontically treated crown. The purpose of this project was to evaluate what effect different preparation modalities would have on the fracture strength of endodontically treated crown. The findings of this study support a design with a core engaging the pulp chamber and having at least one remaining wall.

55. A Pour Technique for the Fabrication of an Occlusal Device

Olga Gil D.M.D.

Second Year Prosthodontic Resident

University of Texas at Houston School of Dentistry

Occlusal devices are used for diagnosis, therapy, and protection of teeth and dental implants. Many techniques have been described in the literature. This table clinic describes a technique to fabricate a hard occlusal device using autopolymerizing acrylic resin. This technique eliminates the traditional flasking method by the use of reversible hydrocolloid material. The advantages of this technique are: easy retrieval of the cast, re-articulation and laboratory adjustment prior to delivery. This technique allows the clinician or auxiliary personnel to process an occlusal device in-office with a reduced processing time and cost.

56. Exploring Cementation Accuracy of Esthetic Posts via Micro-CT technology.

Fabio Lorenzoni, D.D.S., MS

Juliana Delben, D.D.S., M.S.

Ph.D Student

New York University

Novel methods to non-destructively evaluate post cementation accuracy are necessary. This study discussed the potential of using the micro-CT technology to assess *in vivo/in vitro* post cementation accuracy. A fiberglass post was cemented in a condemned maxillary lateral incisor. A micro-CT scanning was performed to the extracted tooth creating a 3-D model. Image reconstruction was compared to light polarized and SEM inspections. The 3D relationship among structures was accurately reconstructed showing 28.83% of voids in the cement layer. Micro-CT technology seemed an accurate method to non-destructively inspect and analyze prosthetic post cementation.

57. CAD/CAM Rehabilitation of an edentulous maxilla with an implant-supported screw retained porcelain/titanium prosthesis: a case report

Abdulmonem Alshihri D.D.S.

Third Year Prosthodontic Resident

Harvard School of Dental Medicine

Treatment of an edentulous maxilla with a complete implant-borne rehabilitation using Computeraided design computer-aided manufacturing CAD/CAM will be presented. This included CTbased computerized planning translated into a Steriolithographic surgical template for flapless placement of implants that were immediately loaded with a pre-fabricated provisional fixed prosthesis. After 6 months of healing, a definitive CAD/CAM milled titanium framework retaining individual screw-retained porcelain-fused to metal bridges were placed with Pink composite resin replicated the lost gingival tissues. The prosthesis is retrievable as, the framework and bridges are retained with screws that maintain the restorations while eliminating occlusal access holes and providing occlusal integrity, functionality and esthetics.

58. Functionally Generated Path Technique for a Pressed Ceramic Implant Supported Retained Prosthesis

David Ruthoven D.m.D.

Third Year Prosthodontic Resident

Naval Postgraduate dental School

Patients with a single edentulous site are often restored with implant supported and retained restorations. The functionally generated path technique is one treatment option when group function articulation is the preferred occlusal scheme. The advent of pressed lithium disilicate ceramic materials by means of the lost wax technique has allowed practitioners to efficiently fabricate highly esthetic restorations with precise occlusion and excellent wear characteristics when opposing natural dentition. This poster will describe a technique to restore an edentulous space with a single unit implant supported and retained prosthesis that is both esthetically and functionally harmonious with the patient's existing dentition.

59. Fabrication of custom abutments correcting implants angled beyond the extended range of the Locator[®] system

Eric Villarreal D.M.D.

Third Year Prosthodontic Resident

Naval Postgraduate Dental School

Mandibular dentures retained by Locator[®] attachments provide many advantages to the patient. A problem arises when implants are surgically placed at an angle that is not correctable with the extended range Locator[®] system. A technique is presented describing the creation of a tapped custom abutment into which a threaded Locator[®] female is placed, providing an acceptable path of insertion for prosthesis.

60. Effect of non-thermal plasma on *Candida albicans* adhesion

Juliana Delben D.D.S. M.S.c

Ph.D Student

New York University

Adhesion of *C. albicans* to prosthetic materials has been a concern. This study evaluated the effect of non-thermal plasma (NTP) on hydrophilicity of saliva-coated acrylic resin and *C. albicans* adhesion. Contact angle readings were obtained on acrylic resin discs subjected to NTP treatment before and after formation of salivary pellicle. The *C. albicans* adhesion was evaluated on NTP-treated and non-treated discs after 2 hours of contact with the inoculum. The discs submitted to NTP treatment before formation of salivary pellicle exhibited a more hydrophilic surface ($P < 0.05$). Images revealed patterns of *C. albicans* adhesion on NTP-treated and non-treated discs.

61. Multidisciplinary Management of Non-Syndromic Oligodontia

Andrea Jordon D.D.S

Third Year Prosthodontic Resident

New York University

A 23-year-old female presented to NYU with non-syndromic oligodontia, several planes of occlusion, and jaw asymmetry. A high smile line further complicated establishment of an esthetic occlusal plane through several phases of surgical therapy. Using a collaborative effort between the disciplines of prosthodontics, periodontics, and orthodontics a treatment plan was developed to overcome these challenges and create a more ideal occlusal and esthetic result. A significant part of the planning phase was modeled through alteration of articulated casts to simulate surgical outcomes.

62. Maximizing CAD/CAM Abutment Design using a Custom Made Removable Diagnostic Wax-Up

Alejandro Sosa D.M.D., M.S.

Fellow

MD Anderson Cancer Center

Prosthetic challenges often arise after poor implant planning and placement. Ideal implant placement can be compromised by deficient osseous height, width and ridge anatomy. When faced with such scenarios the use of custom abutments or pre-angled stock abutments is needed. Unfortunately pre-angled abutments have a limited selection of collar heights and angulations which ultimately can compromise the final restoration outcome. This technique is helpful when restoring multiple implants where fixed references such as adjacent and opposing teeth are not enough to provide a satisfactory custom abutment. The purpose is to demonstrate a laboratory technique in which a custom abutment is fabricated based on a removable wax-up that simulates the final crown anatomy.

63. Total Occlusal Convergence of Crown Preparation Prepared by Dental Students and Prosthodontic Residents.

Suksong Yoon B.A.

Third Year Dental Student

Harvard School of Dentistry

Total Occlusal Convergence (TOC), the angle formed by the two opposing axial walls of a crown-prepared tooth, is one of the most important factors that determine the retention

of a crown. In our comparison study, we use dSLR and protractor software to accurately measure the TOCs between different regions in the mouth, between different stages of training in dental school, between dental students and residents, and lastly between pre-clinic and clinic setting. Initial data has shown that the TOCs of dental students' work in early stage of their training are greater than the ideal TOC values determined by previous studies.

64. A procedure for fabricating a removable dental prosthesis to an existing fixed dental prosthesis

Nakul Rathi B.D.S., B.A.

First Year Prosthodontic Resident

Ohio State University

Patients may misplace their prefabricated attachment removable denture prostheses (PA-RDP). It is generally necessary to fabricate new fixed dental prostheses (FDPs) for making new PA-RDP.

This case report describes the fabrication of a PA-RDP on an existing FDP with attachment.

This technique involves making preliminary and definitive impressions. Fill the precision attachment and abutment crown spaces with acrylic resin. Once the acrylic resin sets, pour the definitive cast in Type IV dental stone. Place the laboratory caps on the patrix of the extra-coronal vertical ball attachments.

Duplicate the master cast, wax, cast and finish the framework with conventional laboratory procedures.

65. A bi-phasic approach in maintaining an edentulous patient in an implant retained provisional

Tzur Gabi D.M.D.

Jack Goldberg D.D.S.

University of Southern California

The advantages of a fixed provisional prosthesis are patient comfort and esthetics. This report describes how to keep an edentulous patient in a fixed provisional throughout the treatment. Clinical and laboratory steps detailing the conversion of a complete denture to screw-retained implant supported provisional will be reviewed. Additionally, a unique pontic design is illustrated by applying pressure during insertion of the pontic to achieve proper tissue displacement, which fulfills anatomic, biologic, and esthetic requirements.

66. Tooth Loss, Prosthodontics, and Coronary Artery Remodeling in Coronary Heart Disease: Initial Data

Harrison Mackler

First Year Dental Student

Harvard University

This study evaluated the contribution of tooth loss as an inflammatory risk factor for coronary heart disease. A cross-sectional study was conducted based on 100 adults aged 48-72 years. CT angiography measured coronary artery plaque, while a dental exam assessed the status and periodontal disease extent of each tooth. Samples of GCF, plaque, saliva, and serum were obtained. Although CT angiographic results are in the

final stage of analysis, initial data suggests that we will observe significant associations between the extent of tooth loss and CHD prevalence.

67. Effect of a Modified Stepped Osteotomy on the Primary Stability of Dental Implants in Class D4 Bone: A Cadaver Study

Chad Boustany D.D.S., M.S.

Recent Graduate from Residency

West Virginia University

Objectives: The aim of this study was to examine the effect of an alternative surgical technique on endosseous dental implant stability parameters in Class D4 Bone.

Materials and Methods: CT scans were taken on sixteen cadaver heads to determine implant sites and Hounsfield units (HU). A total of 22 implants were placed in maxillary bone sites with Misch Class D4 bone. The control group received 11 conventional osteotomies and the test group 11 modified stepped osteotomies. The maximum insertion torques (IT) were recorded with the Zimmer™ implant motor and confirmed with the Thommen™ torque driver. The implant stability quotients (ISQ) were measured with the Osstell Mentor™. Significant differences were analyzed with a Wilcoxon Signed Rank Test and correlations were analyzed with the Pearson Correlation Test.

Results: Maxillary cadaver bone utilized in this study ranged from 173.4 – 312.1 HU. The mean insertion torque in the conventional osteotomy group was 15.91 Ncm and in the modified stepped osteotomy group 26.82 Ncm. A Wilcoxon Signed Rank test demonstrated that the modified stepped osteotomy had a significantly greater mean insertion torque than the conventional osteotomy ($S = 33.00$ $p = 0.0010$). A Wilcoxon Signed Rank test showed no significant difference between ISQ in the control and test group ($S = 17.00$, $p = 0.01475$). Pearson correlations showed a significant positive correlation between the insertion torques in the control group and test group ($r = 0.817$, $p = 0.0021$). Significant correlation between the ISQ in the test group and HU were found ($r = 0.7099$, $p = 0.0144$). No other significant correlations between HU, IT and ISQ were found.

Conclusion: Within the limits of the study, the following conclusion can be drawn: The modified stepped osteotomy resulted in significantly greater implant stability in terms of insertion torque (IT) than the conventional osteotomy in Misch Class D4 bone.

Significant correlations were found between the insertion torque (IT) produced in the modified stepped osteotomy and bone density (HU). No significant correlations were found between insertion torque (IT) and implant stability quotient (ISQ).

68. Use of Encode Healing Abutments with Lava Intraoral scanner for esthetic cases

Namrata Nayyar, B.D.S, M.S.

1st year Implant Fellow

Ohio State University

Accuracy of conventional impression materials and stone dies has always been a challenge for clinicians. Intraoral scanning technology has the potential to solve this problem. This table clinic describes the step-by-step technique necessary to scan an Encode Healing abutment (Biomet 3i, West Palm Beach, FL) using Lava COS Scanner (3M, Minneapolis, MN) and generate an implant abutment and crown without the use of impression material, dental stone or additional implant impression copings or analogs.

Clinical examples and the advantages and disadvantages of this technology will be described.

69. Clinical outcomes of immediate placement and loading of dental Implants replacing a tooth with a periapical radiolucency without using antibiotics

Colin Barbaro B.S.
Third Year Dental Student
University of North Carolina Chapel Hill

It has been conventional protocol to treat patients who have periapical radiolucencies with antibiotics before placing an implant into the site after the infected endodontically treated tooth is extracted. Although most surgeons continue to follow this protocol, recent literature and current clinical trials suggests that this antibiotic regimen may not be necessary to the success of the implant. This presentation will show pre-operative and post-operative peri-implant bone measurements from CBCT scans as well as soft tissue measurements from diagnostic casts in order to demonstrate the success of immediately placed and loaded implants without the use of antibiotics.

70. Case Report: Resin-bonded Metal Ceramic Fixed Partial Denture

Andrew Kung
Fourth Year Dental Student
New York University College of Dentistry

A 27-year-old female presented to the NYUCD undergraduate clinic for replacement of missing maxillary bicuspids. After presenting different treatment options, the patient chose the treatment option of resin bonded fix partial denture with minimal preparation for both 3-x-5 and 12-x-14. Much consideration was placed on patient's age and location of restoration. Minimal preparations were completed. The framework design included lingual guide planes, mini chamfer margin, and mesial and distal occlusal rests. Aspects of treatment incorporating a literature review will be presented.

