2nd International Conference on

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Posters

Alaa Elaraby, J Oral Hyg Health 2017, 5:1 (Suppl)
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The effect of different finish lines on marginal and internal fit of a ceramic crown fabricated by CAD/CAM system

Alaa Elaraby
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This study evaluates the marginal discrepancy of CAD/CAM ceramic coping of two different finish line preparations. Two master steel dies were prepared, one with rounded shoulder (RS), and the other with chamfer (C). CEREC 3D Sirona CAD/CAM system and Software Version 2.80 R2400 were used in this study. The optical camera was fixed in a distance of 10 cm and 90 degree to take the same optical capture for each sample. CEREC cylinder pointed bur was used to cut the Ivoclar Vivadent ProCAD Milling Blocks to fit on the dies. Twenty copings were prepared, ten CAD/CAM ceramic coping from each finish line preparation. Each coping with its corresponding die was sectioned longitudinally using ISOMET 2000 PRECISION SAW. The marginal discrepancy was then evaluated in Travelling Microscope. The data of marginal discrepancy in micrometer (μ) were subjected to two way analysis of variance using SPSS version 15. The mean value of marginal discrepancy was 135.48 μm and 85.7 μm for chamfer group (C) and rounded shoulder group (R) respectively. Furthermore, there was a significant difference in the axial fitting on the occlusal side (occlusal adaptation) of the crowns between the chamfer and shoulder groups ($p<0.05$). Shoulder group showed the lowest mean value of 95.84 μ ± 15.02, while chamfer recorded the highest value of 137 μ ±13.09. The results showed that there was a significant difference between the two groups. It was concluded that marginal fit of CAD/CAM all-ceramic crowns with rounded shoulder finish line had better adaptation than chamfer finish line. The adaptation of CAD/CAM crowns obtained with chamfer finish line was not clinically accepted.

Biography

Alaa Elaraby has completed his Bachelor of Dental Surgery from Alexandria University, Faculty of Dentistry, PhD from Nagasaki University, and Postdoctoral studies from Nagasaki University, School of Dentistry. He created the phase diagram of Gold–Copper Pseudo-binary system at Nagasaki University, Japan. He established and created the curriculum of the Doctorate program in Dental Materials at College of Dentistry, King Saud University. He was the Director of Dental Biomaterials courses for undergraduate and postgraduate students at University of Alexandria and King Saud University. He has published more than 30 papers in local and international peer reviewed dental journals and has been serving as an Editorial Board Member of the *Saudi Dental Journal* (Section Editor in Restorative Dentistry).

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Qian Yajie, J Oral Hyg Health 2017, 5:1 (Suppl)
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Effects of NF-κB inhibitor on the regulation function of cigarette smoke extract to human β defensins in the immortalized human oral mucosal epithelial cell line

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Cigarette smoke increases the susceptibility to oral mucosal infection and is a risk factor for malignant transformation. Cigarette smoke is a mixture of thousands of toxic components generated upon the burning or heating of tobacco leaves. The toxic components first interface with the immune system at the oral mucosal surfaces. NF-κB is a new member of the family of transcription factors, which positively regulate the expression of many genes involved in inflammatory and other responses, including human β defensins (hBDs). The hBD family is one type of cationic antimicrobial peptides that can be secreted by epithelial cells. Among hBD family, hBD-1, -2 and -3 are critical members of the defense system of oral mucosal epithelium. We treated immortalized human oral mucosal epithelial (Leuk-1) cells with various concentrations of cigarette smoke extract (CSE) for 24 h. Western blotting and immunofluorescence assays were performed to study CSE-induced alteration of NF-κB, and P-NF-κB protein expression. The change of hBDs expression were tested using qPCR and ELISA. And then we adopted BAY 11-7082, a specific inhibitors of NF-kB, to inhibit the activation of NF-kB signalling. Different concentrations of NF-κB inhibitor NF BAY 11-7082 were treated to Leuk-1. Then 10 μM BAY 11-7082 was added to the cell culture 24 h before the addition of 4% CSE for 24 h. Leuk-1 cells were treated with 0.5% DMSO as a mock-treated control. Real-time PCR and ELISA were performed to detect the mRNA levels and secretion of hBD-1, -2, and -3, respectively. In this research, we found CSE treatment suppressed NF-κB expression and activated P-NF-κB expression in Leuk-1 cells. The mRNA and secretory levels of hBD-1 and -3 were down-regulated by CSE, while the mRNA and secretory level of hBD-2 were up-regulated by CSE. The BAY 11-7082 treatment significantly abrogated the inhibitory effect of CSE on hBD-1 mRNA expression and release, BAY 11-7082 treatment remarkably reversed the induced effect of CSE on hBD-2 mRNA level and release, while BAY 11-7082 treatment clearly removed the inhibitory effect of CSE on hBD-3 mRNA level and release. The present study indicated that CSE regulated the expression levels of hBDs via down-regulated NF-κB in oral mucosal epithelial cells.

Biography

Qian Yajie completed her Master's degree from Nanjing University. She is now a Clinical Doctor at Nanjing Stomatological Hospital Medical School of Nanjing University. Since the beginning of the graduate student stage, she has been engaged in Oral Medicine research. So far, she has published a paper as the first author, in *Cellular Physiology and Biochemistry*. She contributed in the other three papers, which were all included in SCI. In recent years, she has participated in several research projects, and won a number of awards, including "New Technological Introduction Award" from the Health Department of Jiangsu Province in 2014.

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Cigarette smoke regulates the expression of human β defensins via NOD1/RIP2 signal pathway in human oral mucosa

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Smoking is a well recognized risk for periodontitis, oral candidiasis, oral leukoplakia and oral cancer. Cigarette smoke has been confirmed to dampen innate immune in some human tissues, such as oral mucosa. The epithelium of oral mucosa acts as a defense shield against microorganisms and other harmful stimulating factors such as smoking. Nucleotide binding oligomerization domain 1 (NOD1) signal pathway and human β defensins (hBDs) play crucial roles in innate immune. So far there is very little study about the effect of smoking on local innate immune response of oral mucosa. Therefore, the aim of this study was to evaluate potential effects of smoking on NOD1 signaling expression in oral mucosa. Tissue specimens of normal oral mucosa were collected from donors undergoing routine surgical treatment. All 20 participants were classified equally as two groups: Non-smokers and smokers. By using Western blotting and immunohistochemistry, we investigated differential expression of NOD1 and RIP2, using immunohistochemistry to detect hBD-1, -2, and -3 in oral mucosa tissues between non-smokers and smokers. Immortalized human oral mucosal epithelial (Leuk-1) cells were treated with various concentrations of cigarette smoke extract (CSE) for 24 h. Western blotting and immunofluorescence assays were performed to study CSE-induced alteration of NOD1 and RIP2 protein expression. The change of hBDs expression were tested using immunofluorescence, qPCR, and ELISA. Leuk-1 cells were treated with 4% CSE, iE-DAP (NOD1 agonist), CSE + iE-DAP. And then Real-time PCR and ELISA were performed to detect the mRNA levels and secretion of hBD-1, -2, and -3, respectively. The results showed that the levels of NOD1, hBD-1 and hBD-3 were significantly reduced in oral mucosa tissues of smokers compared with non-smokers. The levels of RIP2 and hBD-2 were remarkably enhanced in oral mucosa tissues of smokers. CSE treatment suppressed NOD1 expression and activated RIP2 expression in Leuk-1 cells. The mRNA and secretory levels of hBD-1 and -3 were down-regulated by CSE, while the mRNA and secretory level of hBD-2 were up-regulated by CSE. The iE-DAP treatment reversed the regulatory effects of CSE. The present study indicated that cigarette smoke could potentially modulate the expression of crucial molecules of NOD1 signal pathway and hBDs in human oral mucosal epithelium. NOD1 signal pathway played an important role in the regulatory effects of CSE on hBDs levels in oral mucosal epithelial cells.

Biography

Wang Wenmei is a Professor, and Deputy-Dean of Nanjing Stomatological Hospital, Medical School of Nanjing University, a well-known specialized subject hospital in China. In recent years, she has participated in more than 9 research projects, presided over 2 National Natural Scientific Funding of China. She has published more than 100 papers, of which 16 were included by SCI. She has been serving as an Editorial Board Member of the *Clinics in Oncology, Journal of Dentistry and Oral Biology, SM Journal of Public Health & Epidemiology, International Journal of Oral and Craniofacial Science, SM Dentistry Journal*, etc. And she has been serving as a Reviewer of the N*eurotoxicity Research, Journal of Cellular Physiology,* and *Cancer Research Frontiers*. She has won a number of honors and awards, including "Scientific and Technological Progress Award" of Jiangsu Province, "Medical Scientific and Technological Award of Jiangsu Province", "Scientific and Technological Progress Award" of Nanjing City, "New Technological introduction Award" from the Health Department of Jiangsu Province, etc.

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Strategies to achieve fitness in prosthodontics, effect of spark erosion

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Introduction: Spark erosion technology is a highly advanced system for producing the ultimate in precision fit of the prostheses frameworks. In this process metal is altered in a form using short-circuit impulses created within a dielectric medium similar to light oil. This process became more popular in the early 1940s in the tool and die industry. Since then, the dental profession has adapted its uses for fabricating precision-removable partial dentures, titanium crowns, and implant-retained over dentures.

Methods & Materials: In removable partial dentures, this technology uses a tool system that permits repositioning of the casting with great accuracy and an electric discharge machine that is programmed to erode minute metal particles through periodic spark intervals. In implant dentistry, achieving a passive fit between the implants with the infrastructure and the superstructure is imperative for long-term osseointegration. Mechanical failures from a non-passive fit may cause mechanical failures of the implants and/or the prosthesis or may adversely affect the surrounding gingiva.

Result & Conclusion: Using spark erosion technique, the resultant prostheses were retentive and provided a number of benefits offered by both conventional overdenture and fixed prosthetic designs. This article explains why the spark erosion machining has a significant impact on today's dentistry.

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The effect of different finish lines on marginal and internal fit of a ceramic crown fabricated by CAD/CAM system

Alaa Elaraby
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A cone beam computed tomography study on the incidence of additional canals of the permanent maxillary and mandibular molars

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Objective: This retrospective study was carried out to assess the impact of gender and side distribution of the incidence of additional canals of the permanent maxillary and mandibular molars using cone beam computed tomography.

Patient & Method: In this clinical study, CBCT images of 160 patients, (90) male and (70) female aged 18-70 years were examined. The number of root canals was investigated according to gender and side. The data were analysed using Pearson's Chi-square test.

Results: The prevalence of the extra four canals of the maxillary first molar male patient for the right side was significantly higher than left side and female patient for both side ($P<0.05$) while the incidence of three canals was more than four canals of mandibular first molar with significant relationship between female patient right side than left side and male for both side ($P<0.05$). Both maxillary and mandibular second molars having three canals were more prevalent than two canals and four canals with no gender and side significance.

Conclusion: The frequency of the four root canals in the maxillary first molars was higher than maxillary second molars and mandibular molars assessed by cone beam computed tomography.

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Maxillofacial infection in Libya

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Aim: The aim of the review medical records from patients who had maxillofacial infections between January 2008 and January 2016.

Methods: Retrospective analysis of 91 patients: 51 males (56%) and 40 females (44%) admitted to Ali Omar Askar (AOA) University hospital for Neurosurgery, Oral & Maxillofacial Surgery department, Esbea, Tripoli Libya was carried out. Epidemiology, type, causes of infection treatment carried out and complications were discussed.

Results: A total of 91 patients with maxillofacial infection of which 51 were male (56%), 40 females (44%) were analyzed. 85 patients had odontogenic infections (93%): 45 males (52.9%) & 40 females (47.1%), and 6 had non-odontogenic infections (7%). The odontogenic infections occurred mostly at the mandible and its associated spaces: 74 cases (87%) involving the posterior teeth (82%). The main cause was dental caries: 80 cases (94%). The most commonly affected facial anatomic region was the submandibular duct in 39 cases (45.9%). Surgical treatment was required in all the cases.

Conclusions: Maxillofacial infections require proper urgent treatment, to avoid complications, which can be serious. Their management is primarily surgical (incision, drainage with extraction of offending tooth as required which require skilled anaesthetic airway management. Immediate admission, monitoring vital signs and high doses of antibiotics, with intravenous fluids for rehydration are required.

Complications: Mediastinitis and cavernous sinus thrombosis were reported in two cases.

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Advances in implant supported restorations using computer aided designing/computer aiding manufacturing (CAD/CAM) techniques

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Implant dentistry has seen rapid and remarkable progress in recent years. Several questions have been raised concerning materials as well as designs of both implants and implant abutments to achieve maximum clinical success rates. An understanding of their properties will help the clinician in selecting the ideal prosthesis for each clinical case, while promoting final esthetic outcomes. With the evolving technology and knowledge, an update of the current trends is necessary. The use of implants to replace missing teeth in the esthetic zone is challenging. The restorations are subjected to direct visual comparison with the adjacent natural teeth. Perfect three dimensional implant positioning and well-designed superstructures are therefore essential to mimic the appearance of a natural tooth and to achieve an optimal esthetic outcome. The development of computer aided design, computer aided manufacturing (CAD/CAM) technology has focused on precise and consistent manufacturing of zirconia ceramics with high strength and toughness. CAD/CAM technology relies on exact dimensional predictions to compensate for sintering shrinkage, and is an economical and highly reproducible method for manufacturing complex and individual geometrics from a green or presintered ceramic material. Zirconia has become one of the dominant types of ceramic used for a variety of CAD/CAM restoration classes, including framework/hand veneer, framework/pressed veneer, framework milled/veneer, full contour fixed prosthodontics, implant abutments, and large implant supported substructures. Although zirconia is currently the strongest dental ceramic material available, fabrication variations and finishing procedures can affect the longevity of this material as well as the veneer porcelain. Having a good working relationship with a dental laboratory is strongly recommended. Of all-ceramic restorations produced in 2010, zirconia based units represented approximately 50% of that total. The introduction of CAD/CAM has facilitated the use of superior dental ceramic, to enhance the fabrication of consistent and predictable restorations in terms of strength, marginal fit and esthetics. CAD/CAM technology in combination with zirconia ceramic has increasingly gained popularity in implant dentistry. Marginal accuracy, retention and color matching of esthetic implant supported crown are critical determinant in the over all success of implant therapy and yet it remains challenge. Especially with the innovative revolution of CAD/CAM systems designs and materials which has improved and refined endlessly. So on understanding of their properties is a demand for helping the clinician in selecting the ideal prosthesis for each clinical case while promoting final esthetic outcomes. In this lecture we will spot light in a comparative way between different CAD/CAM techniques [Full contour CAD/CAM technique, Anatomical core CAD/CAM technique, over press CAD/CAM technique]. We will show their marginal accuracy, color matching and retention when used as a cemented versus screw retained esthetic implant supported crowns. Digital implant dentistry is the "here and now" for dental implant practitioners. From digital treatment planning and delivery to patient communication, new technologies are changing the way dentists practice implant dentistry. The digital advancements in dentistry are growing at an incredible speed.

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Epidemiology of oral Candida albicans in diabetic and non-diabetic patients: Gender based study in rural and urban hospitals of Faisalabad

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Candida albicans is diamorphic yeast that causes many non-healing lesions of oral cavity like angular cheilitis, leucoplakia and thrush being most common. Candidiasis commonly occurs in diabetic, acquired immunodeficiency syndrome (AIDS) and cancer patients as well as in patients under chemo and radiotherapies. C. albicans are also found in the oral cavities of infants. However till now there is no comparative data available regarding epidemiology and frequency of Candida albicans in rural or urban population in Pakistan. The study was conducted to evidence the epidemiology and prevalence of the fungus in the oral cavities of diabetic males and females in four hospitals (two village and two city hospitals) of Faisalabad. Swab and calculus samples were taken both from healthy and diabetic patients covering both genders. Antifungal susceptibility of Candida albicans was also evidenced using three antifungal agents (Fluconazole, Ketokonazole and Amphotericin B). Results showed that among city and village hospitals, occurrence of Candida albicans was found significantly higher in patients in village hospitals. Moreover, irrespective of city or village, the occurrence was significantly higher in diabetic patients with female diabetic patients more susceptible to Candida albicans fungus. However, the results were different in non-diabetic patients where male patients were significantly more infested than female patients. Finally, antifungal susceptibility showed that Candida albicans was responding better to Fluconazole followed by Ketokonazole and Amphotericin B respectively. Therefore, it can be concluded that diabetic patients in general and female diabetic patients in particular are more susceptible to Candida albicans fungus and Fluconazole can be used to restrict the oral proliferation.

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Block grafting: A novel approach for implant site development

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A major contraindication to the placement of dental implants is inadequate volume and integrity of bone at the chosen site. Patients with inadequate bone height and width or poor quality of bone in the mandible or maxilla require augmentative bone grafts prior to placement of dental implants. These secondary procedures often involve the use of alloplastic bone substitutes or the harvesting of autogenous bone from a secondary site within the oral cavity. The main criteria to consider when choosing the procedure are the residual bone volume needed to allow correct implant positioning, the bone density needed to achieve primary implant stability, and the morphology of the peri-implant bone defect. In the esthetic zone, additional factors must be taken into account, such as the gingival biotype and the level of the lip line. A variety of surgical techniques have been described to enhance the bone volume of deficient implant-recipient sites, such as the use of onlay or veneer grafts, ridge splitting, or bone condensation. This poster presents a series of four cases where different augmentative procedures and techniques have been used in the maxilla or mandible for increasing the width of bone followed by implant placement.

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Achieving the desired esthetic with current CAD-CAM ceramics

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The demand for tooth-colored restoration has grown considerably during the last decade. The restoration of anterior teeth is a difficult task, even for an experienced operator. Color is the most important determinant of esthetics. The esthetic appearance of a restoration should match the surrounding dental tissue. This requires that the optical properties of the restorative material be similar to that of the natural teeth. Thus, for an acceptable esthetic result, favorable shade matching of the all-ceramic restoration should be achieved by controlling absorption, reflection and transmission of dental ceramic material. Currently there are many different ceramic systems that can be used to achieve highly esthetic results. These include metal-ceramics with porcelain margins, In-Ceram, Hi-Ceram, IPS-Empress, Optec, and CAD/CAM ceramics. All ceramic systems have different composition, microstructure, crystalline content and phases. Direct transmittance, translucency, opacity and opalescence, all influence the optical properties of the ceramic restoration. Other factors include the thickness of ceramic, number of firing, glazing, powder/liquid ratio, surface texture and even the resin shade. This article focuses on controlling these variables to achieve the best possible esthetic result with an all ceramic system with the emphasis on CAD CAM systems.

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Periodontal bone substitutes: Application techniques

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Bioactive materials have been used since decades; but the researches on these materials are still continuing in phase. This material got extraordinary attention by the scientists and researchers. Bioactive material has the ability to bind itself chemically with natural bone tissues. Bioactive materials bring revolution in the field of bone repair and implantology. Bioactive materials also have the ability to affect gene activation of osteoblastic cells that enhance proliferation, resulting in rapid bone formation. At last, the techniques through which bioactive materials are used to deposit on the implant, and to create bond between implants and the bone. Cost evaluation is a very essential part that classifies the use of material commercially.

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Substrate analogue targeting glutamate racemase (MurI) alters cellular morphogenesis and inhibits biofilm formation in Streptococcus mutans

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D-Glutamate (D-Glu) is an essential biosynthetic building block of the peptidoglycans that encapsulate the bacterial cell wall. Glutamate racemase (MurI) catalyses the reversible formation of D-glutamate from L-glutamate and, hence, the enzyme is a potential therapeutic target. The current study was designed to identify novel molecules that target glutamate racemase, thereby mitigating *S. mutans* cariogenic capacities, inhibiting biofilm formation and having the potential to prevent dental caries. High throughput screening of approximately 250 commercially available compounds against the recombinant *S. mutans* glutamate racemase resulted in the identification of a substrate-product analogue, D-glutamine, as a modest competitive inhibitor of glutamate racemase. *In vitro* assays, the addition of D-glutamine blocked the D-Glu metabolic way in S. mutans, leading to malformations in bacterial cell wall, inhibition of biofilm formation, and reductions in extracellular polysaccharide (EPS) synthesis without necessarily killing this bacterium directly. The exogenous addition of D-Glu could partially reverse the inhibitory effect of D-glutamine. In conclusion, these findings suggest that the substrate analogue of glutamate racemase represents a promising anti-cariogenic agent in that it suppresses virulence properties of *S. mutans* by affecting D-Glu metabolism.

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The effect of salivary 8-hydroxyguanosine levels in smokers and non-smokers with chronic periodontitis: A case control study

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Aim: The aim of this case-control study was to estimate the effect of initial periodontal treatment on salivary 8-hydroxydeoxy guanosine (OHdG) levels in smokers and non-smokers with and without chronic periodontitis.

Methods: A total of 40 subjects were divided into 4 groups. Group 1-10: Smokers with chronic periodontitis, group 2-10 consists of non-smokers diagnosed with chronic periodontitis, group 3-10 consists of clinically healthy subjects, and group 4-10: Periodontal healthy smokers. Initial examination include collection of saliva for the estimation of 8-OHdG following which, clinical parameters i.e. gingival and plaque index along with pocket probing depth and clinical attachment levels were measured. All groups received initial periodontal therapy except clinically healthy subjects. On the 15th day recall visit, similar parameters were recorded.

Results: The results demonstrated that the smokers category with and without chronic periodontitis had higher levels of salivary 8 OHdG compared to other groups which were of statistical significance ($p<0.05$). Initial periodontal therapy did not exhibit significant alterations in the values.

Conclusion: 8-OHdG levels could be considered as a diagnostic biomarker for periodontal diseases associated with risk factors.

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Periodontitis and cancer: Does a link exist?

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The purpose of this presentation is to carefully analyse the research findings to date regarding a potential link between periodontitis and carcinogenesis; to evaluate, critically review and explore the variety of potential study confounders and study criteria differences which suppress the accuracy and validity of the relationship claims being made; gain an appreciation of the biological plausibility of mechanisms which could be underpinning the relationship between the two diseases; and finally to conclude whether the current level, findings and quality of research is accurate in supporting the existence of the periodontitis-cancer link. The author will assess the potential link between periodontitis and several cancerous tumour types, and analyse the evidence regarding the biological plausibility for the potential association between periodontitis and cancer. The strongest association is present between periodontitis and oral cancer since each of the three studies looked into show a statistical link between both diseases. The international burden of cancer has risen every year, a trend that has been paralleled by the increase in periodontitis cases. Research undertaken by GLOBOCAN (2012), states there were 7.6 million global cancer cases in 2008, and in 2012 there were 14.1 million global cancer cases, an increase of 84%. Although there is a lack of recent statistical data related to periodontitis cases, between the years 1997 and 2005, there was an increase of 27% of adults aged between 35 and 44 who had periodontal pocket depths greater or equal to 4 millimeters.

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Management and healing of oral wounds using plasma rich fibrin

Kristina Rebić and **Bojan Gačić**
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Oral wounds occur most commonly after teeth extraction, surgical procedures or as a result of injuries. Wounds resulting from surgical interventions are primary closed. Open wounds are more often and they heal per secundam intentionem. Specificity of oral wounds is their exposure in oral cavity and absence of scab, good vascular and innervation network, where many local factors (saliva, bacteria, smoking, immunodeficiency, etc.) can slow the healing process. Wound healing is very complex and has four phases where various growth factors and proteins are included. Healing of these wounds is slow, and during that period some complications can occur (alveolitis, infections, etc.). Plasma rich fibrin is biological, autologous material gained from patient's blood. It consists of dense fibrin mesh infiltrated with white blood cells, platelets and growth factors. Growth factors have angiotrophic and osseoconductive role, and also influence on differentiating mesenchyme cells. In degranulation process, platelets release cytokines that have multiple mechanism of improving healing by stimulating reparation and production of collagen. Also cytokines have a key role in regulation of cell apoptosis and cicatrisation. In comparison to any other material, biological response to platelet rich fibrin is superior. Placing this material in extraction sockets or oral wounds, accelerates healing process, prevents and diminishes the occurrence of complications and modifies soft tissue management where is necessary.

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Comparison of dimensional accuracy of conventionally and digitally manufactured intra-coronal restorations

Leila Nasiry Khanlar and **Reza Eftekhar Ashtiani**
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Purpose: This study sought to compare the dimensional accuracy of intra-coronal restorations fabricated using digital and conventional techniques.

Materials & Methods: A sound mandibular molar tooth received standard onlay preparation. In group A, the onlays were made after conventional impression and conventional fabrication of resin pattern. In group E, the onlays were made after conventional impression and 3D printing of pattern. In group O, the onlays were made after intraoral scanning by Trios (3 Shape) and the resin pattern was produced by 3D printing. Ten specimens were in each group and totally 30 specimens were evaluated. Glass ceramic restorations (e.max Press, Ivoclar) were fabricated using the press technique. The replica technique was used to assess the marginal fit. Each replica was assessed in eight points. One-way ANOVA was used to compare the marginal gap among the three groups. Tukey's HSD test was applied for pairwise comparisons of the groups. $P \leq 0.05$ was considered statistically significant.

Results: No significant difference was noted in the marginal gap at the gingival margin among the three groups (P=0.342), but significant differences were noted among the three groups in the pulpal (P=0.025) and buccal (P=0.0031) areas. Comparison of the absolute gap among the three groups revealed that only groups A and E were significantly different (P=0.020).

Conclusions: Within the limitations of this study, it appears that restorations fabricated with the three techniques have dimensional accuracy within the clinically acceptable range. However, the conventional method yielded more accurate results.

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The bone renaissance

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In a relentless pursuance of perfection and a definitive solution for long term stability of tissues around implants, the author will present an exceptional concept - the 'Bone Renaissance', a unique philosophy encompassing the sequential and codified reversal of the bone back to its original 3-D Engineered Divine Osseo-architecture by incorporating the 5 in 1 modus operandi: 'SABIRIN', Stable Alveolar Bone Implant Reconstructive Integration Naturally, a major paradigm shift in re-establishing the natural spiritual union of the form and function. The SABIRIN components resurrect the lost contours of the hard and soft tissues with a long-term, esthetic predictability. The refurbishment of patients to innate curve, contour, aesthetics and function is achieved by using SABIRIN components: Bone Renaissance Implant placement with specially designed osteotomes (rotary & manual), growth factors and soft tissue manipulation. Vascularized osteotomies, sinus grafts, and on lay grafts. Based on the 25 years of experience, the presenter thoroughly discusses the rationale, gives practical guidelines and presents surgical maneuvers to rectify hard and soft tissue deficiencies.

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Implant dentistry: The way to prevent bone loss

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Bone loss is a consequence of loss of teeth and chronic periodontitis. Causes of bone loss include extension of inflammation, trauma from occlusion, and other systemic diseases. Furthermore, dentures can accelerate bone loss by wearing away at the ridges of bone they are placed on. Primary aim of dental implant therapy is the preservation and prevention of alveolar bone atrophy. Over the last 2 decades, several clinical studies have shown that alveolar bone resorption is permanently prevented if dental implants are placed immediately or soon after tooth loss. Extraction of teeth always leads towards the shrinkage of jawbone at the extraction site with a 40-60% bone loss in height and width over a period of 2-4 years and this phenomenon continues throughout life at a rate of 0.5-1% annually. Unaesthetic facial lines, increase in size of the maxillary sinus, poor retention of dentures, over closure, shifting of remaining teeth and general discomfort are among the problems that are generated by loss of bone causing functional, anatomical and cosmetic problems. Implant therapy not only provides possibility of the reconstruction of lost dental tissues but most significantly also enables the preservation of alveolar bone.

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Comparison of the internal and marginal adaptation of metal substructures fabricated by different manufacturing techniques

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Using computer aided methods, a final object can be manufactured either by milling from a block or additive manufacturing which allows standard object production with low cost and decreased manufacturing time. The aim of the study was to compare the internal and marginal fit of crowns fabricated using conventional casting, laser sintering and soft-metal milling. A first maxillary molar die made of metal was fabricated. Metal substructures with standardized sizes were manufactured using conventional casting, laser sintering and soft-metal milling (N=15/group). Internal-fit and marginal-fit of metal substructures were evaluated. The metal substructures were seated on the metal die using light body silicone material. Excess silicone was cleaned. Following the setting, crowns were removed and silicone was weighed to evaluate the 3D internal cement gap. Same specimens were used for marginal gap measurements under a light microscope. Statistical analysis was performed using one-way ANOVA followed by Tukey HSD test (α=.05). A statistically significant difference was observed for both internal and marginal fit among compared groups ($p<0.05$). The highest mean silicone weight (standard error) was observed in casting group (36.8±1.9 mg) followed by laser sintering (26.6±1.5 mg) and soft-metal milling (20.7±1.4 mg) groups. The lowest mean marginal gap (standard error) was observed in laser sintering group (4.2±1.2 μm) followed by casting (8.7±1.2 μm) and soft-metal milling (22.3±1.2 μm) groups. Although statistically significant differences were observed among all compared groups, a clinically significant difference can't be mentioned.

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Comparison of the biocompatibility of ProRoot MTA, MTA Plus and Retro MTA using an MTT assay study

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The purpose of this *in vitro* study is to evaluate and compare the cytotoxicity of three commercially available root-ending materials, MTA Plus, Pro root MTA and Retro MTA, at different storage times after mixing on human periodontal fibroblast using a MTT assay method. Varied concentrations (3, 6, 12, 25, 50 mg/ml) of the fresh and set root-ending materials (ProRoot MTA, MTA Plus and Retro MTA) were placed in adjacent flasks of human periodontal fibroblast in DMEM medium within 96-well plates. Cellular viability was evaluated using a MTT assay after 24, 48, and 72 h of initial mixing. The results were analyzed with 1-way ANOVA. The results showed that there was no significant difference between the biocompatibility of MTA Plus, and that of Pro root MTA or Retro MTA (P>0.05). Furthermore, no significant difference was observed between different time intervals for each group (P>0.05). The current in vitro study showed almost similar biocompatibility for ProRoot MTA and MTA Plus and Retro MTA.

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Fibula flap as a saviour to avert disability - From mandibular reconstruction to prosthetic rehabilitation

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Prosthetic management after resection of mandible creating mandibular discontinuity is very complicated due to muscular imbalance on the residual portion of the mandible. The treatment result and prognosis of prosthetic rehabilitation of these patients is extremely poor. Disfigured face is the principal concern of the patient due to worsened cosmetic appearance. Such kind of imbalanced forces create masticatory difficulty. Thus the overall physical condition leads to deprived quality of life of the patients. The composite fibular flap is the preferred donor site for most complex orofacial-mandibular defects as an ideal choice for rehabilitation of mandibular discontinuity defects. The addition of a skin island with the fibula flap allows for absolute tension-free intraoral closure that enhances tongue mobility. The fibula osteomyocutaneous flap is basically recommended for reconstruction of lateral and symphyseal composite defects that include extensive amounts of intraoral mucosa, tongue, and external skin. After reconstruction with free fibula graft, prosthodontic rehabilitation can be planned in a range of ways. This paper flings light on different clinical considerations and treatment alternatives to rehabilitate the patient who have undergone mandibular resection and reconstruction with free fibula flap.

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Surface roughness of direct and indirect resin composites: Effect of tooth brushing and soft drinks

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Background: Surface roughness of composite restorations in different storage media over time is a common problem in esthetic dentistry, causing the need to replace the restoration, and spending a great deal of cost and time to patients. The indirect techniques of dental resin composites reveal an increased important of the physical and mechanical properties of the restorations, including surface roughness.

Aim: The purpose of the current study was to evaluate the effect of tooth brushing and soft drinks on surface roughness of direct and indirect resin composites.

Materials & Methods: A total of 360 standard resin composite disc shape specimens (A3 shade) were constructed, using split teflon mold with diameter of 10 mm and thickness of 2 mm. The disc shape samples were constructed from three brand of resin composites namely: Group 1: Direct microfill resin composite (Helimolar from IvoclarVivadent), Group 2: Direct nanofill resin composite (Z350 XT from 3M) and Group 3: Indirect microfill resin composite (SR NEXCO from IvoclarVivadent) equally (n=120). For all the three groups, the specimens were caused for 20 seconds from each side through the glass slaps, then cured additional 20 seconds for each side after removal of the glass slaps by using light emitting diode curing unit LED (900 MW/cm2), then, for the indirect resin composite (Group 3), curing was performed using a special oven for 10 minutes. All the groups were divided into two subgroups, subgroup 1 with brushing by medium type electrical tooth brushing (oral-B) and subgroup 2 without brushing. Each subgroup was further subdivided into three divisions, immediate, after 4 weeks and after 8 weeks. The specimens were stored in three different storage media: Red bull, sprite and artificial saliva. The surface roughness tests by Talysurf instrument were carried out often for each storage period according to the study design.

Results: Regarding the surface roughness in microfill direct resin composite with brushing and non-brushing, there was in general a significant difference between the three types of storage media at fourth and eighth weeks. Regarding the surface roughness in microfill indirect resin composite with brushing and non-brushing, there was in general a significant difference between the three types of storage media at fourth and eighth weeks. Regarding the surface roughness in nanofill direct resin composite with brushing and non-brushing, there was in general a significant difference between the three types of storage media at fourth and eighth weeks.

Conclusions: With surface roughness increase and the roughness with time in all groups, there was significant difference between baseline and 4 weeks and between baseline and 8 weeks, there was no significant difference between 4 weeks and 8 weeks and there was no significant difference between brushing and non-brushing at indirect microfill resin composite.

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CT scan: From a scan to a crown

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Many dentists nowadays, are willing to place implants. The guess work is eliminated by conducing and educating calculated guess through obtaining a CT scan and deal with it professionally through a well thought digital flow software. In this presentation, a discussion of 3D imaging background and application will be included along with a clinical implication of how to handle a CT scan and treat and plan a case, and be able to even fabricate/mill a future definitive crown before placing a dental implant.

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The effect of green tea extract in the treatment of denture stomatitis

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Background: Denture stomatitis is a very common oral mucosal lesion, affecting approximately 50% of denture wearers in some populations. More recently there is an increased interest to use natural antimicrobial compounds, like plant extracts of medicinal plants.

Aim: The aim of the present study was to evaluate the efficacy of green tea extract in the treatment of denture stomatitis.

Patients & Methods: This was a clinical trial study with 30 patients in two parallel groups, 15 patients received nystatin drop and the other ones green tea extract. The patients in two weeks were recommended to use mouthwash 4 times a day each time 15-20 drops for 2-3 minutes and after that they should avoid eating and drinking for 30 minutes; patients in the two groups were suggested to use the drug at a specific time. Amount of inflammation and erythema were recorded in each session and measured with a graded blade and recorded according to a 6-point scale. At each visit, mycological samples were taken from the palatal mucosa for culture.

Results: Age and sex differences between the groups were not significant. The erythema surface of the palatal was significantly reduced in the both groups at follow-up visits compared with the pretreatment condition. No significant difference was seen between the two groups at the same visits in erythema surface and colony counts of the palatal mucosa ($P>0.05$).

Conclusions: This study indicated that green tea extract can be effective in reducing the number of *Candida* colonies and erythematic area comparable to nystatin drop in the management of denture stomatitis.

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Surface properties of different heat treated titanium alloy dental implants

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Background: Titanium alloy surface properties have an essential role in the interaction of dental implants with bone and alteration of the surface of the implant could improve osseointegration. This study was designed to investigate the effect of different heat treatment temperatures on titanium alloy surface properties for dental implants.

Materials & Methods: The effect of different temperatures of heat treatment (750°C, 850°C, 950°C and 1050°C) were investigated on the surface topography, surface chemistry, titanium oxide layer thickness of the (Ti-6Al-4V) alloy, blood contact angle, and blood drop diameter of titanium alloy samples. 20 disks were prepared from the (Ti-6Al-4V) alloy, the sample was divided into four test groups depending on the effect of different temperatures of heat treatment.

Results: The heat treatment at 1050°C for 30 minutes of titanium alloy significantly enhanced the titanium surface characteristics; surface topography, titanium oxide layer thickness, surface chemistry, blood contact angle and blood drop diameter.

Conclusions: The heat treatment of titanium alloy at 1050°C for 30 minutes enhanced the titanium surface characteristics; surface topography, titanium oxide layer thickness, surface chemistry, blood contact angle and blood drop diameter, which may result in faster and stronger bone formation around dental implant.

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Evaluation of smearOFF, a novel endodontic irrigant on removal of canal wall smear layer

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Aim: The aim of the present *in vitro* study was to evaluate the canal wall smear layer removal ability of SmearOFF, 7% maleic acid (MA) and 18% ethylenediaminetetraacetic acid (EDTA).

Methods: Forty single-rooted human teeth were subjected to root canal instrumentation and were irrigated with 2.5% sodium hypochlorite (NaOCl) between each instrument change. Samples were then divided into four groups based on final irrigation regimen: [1] SmearOFF + 2.5% NaOCl, [2] 7% MA + 2.5% NaOCl, [3] 18% EDTA + 2.5% NaOCl, and [4] 0.9% saline (negative control). After irrigation, the teeth were split longitudinally and examined by scanning electron microscopy (SEM). SEM images were then captured and subjected to Image J software analysis to quantify the smear layer removal via measuring the amount of open dentinal tubules. The open tubule percentage (OTP) was then calculated among the experimental irrigants.

Results: EDTA removed smear layer less efficiently when compared to SmearOFF and MA in all the thirds of the root canal system ($p<0.02$). There was no significant difference between SmearOFF and MA in removal of smear layer from the coronal, middle and apical thirds ($p>0.06$). In the negative control group (saline), all specimens were heavily smeared in the coronal, middle and apical thirds of the root canal system. However, no statistical significance difference was observed when comparing EDTA and saline ($p>0.06$).

Conclusion: SmearOFF and 7% MA had better canal wall smear layer removal capability when compared to 18% EDTA. There was no difference between 18% EDTA and saline.

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Evaluation of the effect of low level laser therapy after gingivectomy on wound healing

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Despite the use of lasers in dentistry from the 1980s until today, the use of low level laser therapy (laser bio-stimülation) is not very common in periodontology. The aim of this study is to evaluate the effect of low power 980 nm diode laser therapy after gingivectomy and in comparison to the non-surgical periodontal treatment in bone healing. Twenty systemically healthy patients with gingival hyperplasia due to chronic inflamation in the maxilla or mandibular anterior region at least in six teeth symmetrically were included. Bleeding on probing, gingival index, plaque index, clinical attachment level were recorded at the beginning and one month after treatment. The patients underwent scaling and root planning treatment after one week of periodontal diagnosis. The curvicure of the ginigiva of patients were evaluated for the need of gingivectomy and gingivoplasty and were done for the patients those who need this operation. The sides that applied laser therapy were determined by using coin toss and the other sides were protected from irradiation by putting at least 5 mm thickness of silicon made appliance. The laser of power 4 J/cm (980 nm) were applied on 0, 1, 3 and 7 days and the surgical area of all the patients on 0, 3, 7 and 15 days were painted with paint mira-2-tone and the photographes taken by ImageJ program were evaluated. Clinically, Kolmogorov-Smirnov test was used for checking the normal distribution of wound healing and VAS results. Willcoxan test and Friedman test were used to compare the dependent two groups or multiple groups subsequently. The results showed that there were no significant differences between groups in SD, KAS, PI, GI, VAS and wound healing, but there was a decrease in VAS values at third and seventh days. The area that applied DDL showed a decrease in pain. After this study, 980 nm low level therapy upon the clinical parameters could have a positive effects when applied after gingivectomy and gingivoplasty.

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