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ABSTRACTS ARTICLES FOR FACULTY MEMBERS IN COLLEGE OF DENTISTRY 2018

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Vice Deanship For Postgraduate
Studies & Scientific Research

BDS

Personal Qualities of Brilliant Surgeons: A Myth or Reality

Haroon Sabir Khan, Rehan Ahmed Khan, **Joharia Azhar**

Objective:

To explore the qualities of brilliant surgeons that makes them distinctive.

Study Design:

A qualitative exploratory study. Place and Duration of Study: The study was conducted in Armed Forces Hospitals, Rawalpindi, from Jan to Jul 2017.

Material and Methods:

A purposive sampling technique was applied for in-depth, semi-structured interviews of 19 members (ten surgeons, six anesthesiologists and three operation room assistants) having experience of surgical environment for more than 20 years in different institutions. Computer Assisted Qualitative Data Analysis Software (CAQDAS) was employed for thematic data analysis using software NVIVO 11 Pro.

Results:

Study participants reported observation of distinctive personality characteristics of a few surgeons hitherto termed as “brilliant”. Multifaceted aspects of their personality were identified and categorized into five major themes: mental, psychological and emotional, social, mechanical, and structural strength. The first three themes were found to be common among brilliant achievers in all other professions as well, however, the mechanical and structural strength domains were considered to have unique and substantial bearing on the achievement of brilliance in surgery.

Conclusion:

A category amongst the surgeon has been identified and termed as “brilliant”. These brilliant surgeons were gifted in five domains of their personality with a distinct set of qualities which made them outclass their contemporaries

Khan HS., Khan AR., **Azhar J.** Personal Qualties of Brilliant Surgeons: A Myth or Reality. Pak Armed Forces Med J 2018; 68 (5): 1126-32

Diagnostic challenges of an unusually large schwannoma of the mandible: Report of a case

Alsheddi M, Alkindi M, Badwelan M, Alotaibi N, Ramalingam S.

Schwannomas are slow-growing, benign neoplasms arising from the Schwann cells and are commonly reported as peripheral tumors in the head and neck region. Central intramandibular schwannomas are extremely rare lesions. We report a case of intramandibular schwannoma in a 70 year old male patient. Panoramic radiography revealed a large, multilocular radiolucent lesion with distinct borders involving the right mandibular body and ramus. A complete excision was achieved by removing the tumor followed by reconstruction of the mandible. The clinical, radiological, and histopathological features are discussed within the context of this case.

Alsheddi M, Alkindi M, Badwelan M, Alotaibi N, Ramalingam S. Diagnostic challenges of an unusually large schwannoma of the mandible: Report of a case. *Saudi Dent J*. 2018;30(4):373-378. doi: 10.1016/j.sdentj.2018.06.004.

Prevalence of Epstein–Barr Virus Genotypes in Pakistani Lymphoma Patients

Salahuddin S, Khan J, **Azhar J**, B. Whitehurst C, Qadri I, Shackelford J, Pagano JS, Muhammad D, Richards KL.

The Epstein-Barr virus (EBV) is a herpesvirus infecting more than 90% of the human population. The tropism of EBV for B lymphocytes is evidenced in its association with many lymphoproliferative disorders. Different types of EBV (EBV-1 and EBV-2), classified on the basis of EBV nuclear antigen-2 (EBNA-2) genotyping, have been reported in benign and malignant pathologies, but there is almost no information about their frequency in the Pakistani population. The aim of this study was to determine the frequency and distribution of EBNA-2-based EBV genotypes in lymphoma patients. Genomic DNA was extracted from formalin-fixed paraffin embedded (FFPE) tissue samples obtained from 73 EBV-DNA-positive lymphoma patients. The β-globin gene was amplified to assess the presence and quality of cellular DNA from all samples. EBER-1 DNA was detected by PCR to confirm EBV presence in tissue samples. EBNA-1 mRNA relative quantification done by quantitative PCR substantiated EBNA-1 mRNA overexpression in 43.8% of EBV-positive cases in comparison to EBV-positive control cell line. EBNA-2 genotyping was done by nested PCR. Among typable samples, EBV-1 was found in 90.7% of samples while EBV-2 was present in 9.3% cases. These results show that EBV-1 was the most prevalent type in the lymphoma population of Pakistan. This epidemiology of EBV in Pakistani lymphoma patients represents an important first step in using EBV for prognosis and monitoring treatment response.

Salahuddin S, Khan J, **Azhar J**, B. Whitehurst C, Qadri I, Shackelford J, Pagano JS, Muhammad D, Richards KL. Prevalence of Epstein–Barr Virus Genotypes in Pakistani Lymphoma Patients. *Asian Pac J Cancer Prev*. 2018;19(11):3153-3159.

Effectiveness of PBL methodology in a hybrid dentistry program to enhance students' knowledge and confidence. (a pilot study)

Ebtissam M. Al-Madi , **Sree Lalita Celur** and Mamoona Nasim

Background:

Knowledge and self-confidence are two critical determinants of future success of dental students. The present pilot study was conducted with an objective to simultaneously assess both knowledge and confidence gained by dental undergraduate students in the Head and Neck Anatomy course by employing didactic lecturebased and problem-based learning methods.

Methods:

A paper-based assessment tool comprising of 30 Multiple choice questions to assess knowledge, followed by a Likert's scale to assess students' confidence to answer the given knowledge question was designed. This tool was used in a cohort of first year dental students before the commencement of Head and Neck Anatomy course (Pre-course), immediately after the completion of Head and Neck Anatomy course (Post-course), and again in third year before the same cohort entered their clinical courses (Pre-clinics). The difference in students' knowledge and confidence through both pedagogies was evaluated by Paired 't' test. Pearson correlation analysis was done to determine the correlation between knowledge scores and self-reported confidence.

Results:

A statistically significant increase ($p < 0.05$) was noted in the mean knowledge and confidence scores in the post-course evaluation, through both didactic lecture-based and problem-based learning methods. On the other hand, a significant decrease ($p < 0.05$) in the mean knowledge and confidence scores of didactic lecture-based items in comparison to problem-based items was noted in the pre-clinics evaluation.. The post-course evaluation results yielded a Pearson correlation coefficient of $r = 0.514$, $p = 0.002$ for lecture-based items and $r = 0.495$, $p = 0.003$ for problembased items, denoting a positive moderate correlation between the knowledge and confidence scores for both lecture-based and problem-based methods.

Conclusion:

A significant improvement in both knowledge and self-reported confidence demonstrated at the end of Head and Neck Anatomy course proves both didactic lectures and problem-based learning methods to be equally effective in a hybrid dentistry program in the short term. However, the non-significant reduction in the pre-clinics knowledge and confidence scores among the PBL lessons proves it to be a potent learning tool for long term retention of knowledge, and sustainability of confidence.

Al-Madi EM, **Celur SL.,** Nasim M. Effectiveness of PBL methodology in a hybrid dentistry program to enhance students' knowledge and confidence. (a pilot study). *BMC Medical Education* (2018) 18:270 https://doi.org/10.1186/s12909-018-1392-y

The Role of Human Papilloma Virus in the Development of Oral Squamous Cell Carcinoma in Pakistani Population

Joharia Azhar, Sadia Salahuddin and Ishtiaq Qadri

Oral cancer is one of the most prevalent cancers in Pakistan and the Pakistani population seems to be especially susceptible to the development of oral cancer. Human Papilloma virus has already been implicated in the etiology of cervical cancer, and strong evidence suggests its close association with the oral cancer. The aim of our study was to define the role of Human Papilloma virus in the development of oral squamous cell carcinoma patients in Pakistani population. Ninety-five patients with oral squamous cell carcinoma samples were recruited for this study. HPV infectivity was determined histopathological by observing Koilocytosis and molecularly by conducting PCR using HPV consensus primers. HPV genotyping was then carried out using the HPV genotyping PCR assay technique. The results of HPV prevalence and genotyping were evaluated in relation to various clinico-pathalogical parameters Statistical Package for the utilizing social sciences version 12.0 for windows (SPSS Inc, Chicago, IL). HPV was detected in 78% cases, out of whom 74% were associated with HPV16, 4% with HPV 18, 15% were co infected with HPV 16 and 18, and 7% were positive for HPV by the general primer and could not be type specified. This study finds a significant association between type 16 HPV prevalence and oral squamous cell carcinoma with male patients showing high co-relations.

Azhar J., Salahuddin S., Qadri I. The Role of Human Papilloma Virus in the Development of Oral Squamous Cell Carcinoma in Pakistani Population. Adv Dent & Oral Health 2018; 10(1): DOI: 10.19080/ADOH.2018.10.555778

Melanotic neuroectodermal tumour of infancy: A report of two cases.

Moussa SA, ElSayed M, **Mansour S**, Mobarak FA.

INTRODUCTION:

Melanotic neuroectodermal tumour of infancy (MNTI) is a benign tumour of infancy, most commonly affecting the head and neck region. First described in 1918, less than 500 cases have been reported in the literature. MNTI is aggressive in nature & has a high rate of recurrence.

PRESENTATION OF CASES:

In this retrospective case series, we report two cases of MNTI that presented at our unit; both cases were managed by wide excision and have been followed up uneventfully for over two years.

DISCUSSION:

MNTI has a recurrence rate of up to 20%. Patient's age can play a significant role in recurrence rate. Although this neural crest tumour is somewhat rare in the literature, there is a consensus with regards to surgical management; the gold standard remains to be wide excision with safety margin. Select cases may benefit from adjuvant and neoadjuvant therapy.

CONCLUSION:

Owing to its locally aggressive nature and high recurrence rate, prompt diagnosis and surgical intervention is advised in cases of MNTI. Further understanding of this tumour is needed on a microscopic level in order to determine clear prognostic factors.

Moussa SA, ElSayed M, Mansour S, Mobarak FA. Melanotic neuroectodermal tumour of infancy: A report of two cases. Int J Surg Case Rep. 2018;53:337-344. doi: 10.1016/j.ijscr.2018.11.004. Epub 2018 Nov 15.

PDS

Correlation between skeletal maturation and developmental stages of canines and third molars among Saudi subjects

Hana O.Al-Balbeesi, Nadia W.Al-Nahas, Laila F.Baidas, , **Roa'a Alhaidari**,

Ghadeer Alwadai

Aims

The present study was designed to evaluate the efficacy of using the developmental stages of the canines and third molars to predict the timing of skeletal maturity in the Saudi population.

Material and methods

The lateral cephalometric radiographs and orthopantograms of 239 Saudi patients, 106 males and 133 females, aged 9 to 21 years, were collected from several dental centers. Orthopantograms were used to assess the developmental stages of the upper and lower canine teeth and third molars using two popular methods: that of Nolla and that of Demirjian. Cervical vertebral maturation (CVM) stage was assessed on the lateral cephalometric images according to the method of Baccetti et al. Trained observers with no knowledge of patient age or gender performed assessments. Data were analyzed with Spearman's rank correlation coefficient at a significance level of $P \leq .05$.

Result

Skeletal CVM stages III and IV had a stronger correlation with mandibular left canine developmental stage than with maxillary canine developmental stage in the two methods used (correlation with Nolla stage 10 and Demirjian stage H: root completely formed with apex closed), especially for male patients ($r = 0.700$, $P < .001$). In contrast, the maxillary third molars at Nolla stages 5 and 7 (crown completed to 1/3 of the root formed) showed an association with CVM stages III and IV ($r = 0.540$ for females and $r = 0.639$ for males, $P \leq .001$ for both)and with Demirjian stages D, E, and F. Males had slightly higher correlation values than females ($r = 0.578$ and 0.5010, respectively; $P \leq .001$) at CVM stages III and IV. Interestingly, canine teeth showed a stronger correlation than third molars with skeletal maturation in Saudi children.

Conclusion

Dental developmental stages were highly correlated with CVM stages III and IV among Saudi subjects.

Al-Balbeesi HO., Al-Nahas NW., Baidas L, , **Alhaidari R**, Alwadai G. Correlation between skeletal maturation and developmental stages of canines and third molars among Saudi subjects. *SDJ* 2018; 30:74-84

Microbiological Evaluation of Ozone on Dentinal Lesions in Young Permanent Molars using the

Stepwise Excavation

Safwat O, **Elkateb M**, Dowidar K, Salam HA, El Meligy O.

AIM:
To assess the microbial effect of ozone gas on dentinal lesions in young permanent molars

using the stepwise excavation.

STUDY DESIGN:
An experimental, controlled clinical trial was performed. The sample included 80 immature first permanent molars, showing deep occlusal carious cavities that were indicated for stepwise excavation. Following first step of dentin excavation, the sample was divided into test (ozone gas) and control (calcium hydroxide ($Ca(OH)_2$) base material) groups. One half of the cases in each group were evaluated for microbiological changes after 6 months, and the other half after 12 months.

RESULTS:
Mutans streptococci (MS), Lactobacilli, and Candida counts were significantly reduced immediately after ozone application in the test group ($P \leq 0.05$). At the final assessment period, MS and Lactobacilli were significantly reduced in the test group ($P \leq 0.05$). Meanwhile, the Candida counts were significantly reduced only in the test group of the 6 and 12 month-cases ($P \leq 0.05$). Regarding the control group, the significant reduction in microbial count was observed with MS after 6 and 12 months ($P \leq 0.05$). No significant differences were observed between test and control groups at different evaluation periods ($P > 0.05$).

CONCLUSIONS:
Ozone gas had a significant antimicrobial effect in deep class I carious lesions.

Safwat O, **Elkateb M**, Dowidar K, Salam HA, El Meligy O., Microbiological Evaluation of Ozone on Dentinal Lesions in Young Permanent Molars using the Stepwise Excavation. *J Clin Pediatr Dent.* 2018;42(1):11-20. doi: 10.17796/1053-4628-42.1.3.

Comparison of peri-implant clinical and radiographic inflammatory parameters among cigarette and waterpipe (narghile) smokers and never-smokers

ALHarthi SS, **BinShabaib MS**, Ahmed HB, Mehmood A, Khan J, Javed F

OBJECTIVE:
We hypothesized that peri-implant clinical and radiographic inflammatory parameters are worse in waterpipe-smokers (WS) and cigarette-smokers (CS) compared with never-smokers (NS). The aim of the present retrospective study was to compare the peri-implant clinical and radiographic inflammatory parameters among WS, CS and NS.

METHODS:
Forty-four CS (Group-1), 41 WS (Group-2) and 43 NS (Group-3) were included. Demographic data was collected using a questionnaire. Peri-implant plaque index (PI), bleeding on probing (BOP) and probing depth (PD) were measured and crestal bone loss (CBL) was assessed on standardized digital radiographs. Sample-size was estimated and statistical analysis were performed using the Kruskal-Wallis and Wilcoxon rank-sum tests. For multiple comparisons, the Bonferroni post-hoc test was performed. P-values less than 0.05 were considered statistically significant.

RESULTS:
Peri-implant PI and PD were higher in groups 1 ($P<0.05$) and 2 ($P<0.05$) compared with Group-3. Peri-implant BOP was significantly higher in Group-3 compared with individuals in groups 1 ($P<0.01$) and 2 ($P<0.01$). Peri-implant total MBL was significantly higher in groups 1 ($P<0.05$) and 2 ($P<0.05$) compared with Group-3. There was difference in PI, BOP, PD and CBL among participants in groups 1 and 2.

CONCLUSION:
Peri-implant soft tissue inflammatory parameters and crestal bone loss are worse in CS and WS smokers compared with NS. There is no difference in these parameters among CS and WS.

ALHarthi SS, **BinShabaib MS**, Ahmed HB, Mehmood A, Khan J, Javed F. Comparison of peri-implant clinical and radiographic inflammatory parameters among cigarette and waterpipe (narghile) smokers and never-smokers. J Periodontol. 2017 Aug 4:1-10. doi: 10.1902/jop.2017.170358

Risk factors contributing to gingival recession among patients undergoing different orthodontic treatment modalities

Nozha Mahmoud Sawan, Ahmed Ghoneima, Kelton Stewart, and Sean Liu

Objective

The aim of this study was to investigate the risk factors contributing to gingival recession among patients undergoing orthodontic treatment.

Methods

Records of 100 Caucasian patients who completed orthodontic treatment were evaluated before and after treatment. Intercanine and molar widths, arch perimeter, arch depth, and keratinized gingival height were measured for both arches. The association of orthodontic treatment strategy (changing incisal inclination, expansion, and extraction), keratinized gingival height, and various other measurements with gingival recession was evaluated by using generalized linear mixed models with logistic regression analysis.

Results

For each 1 mm increase in pre- and post-treatment keratinized gingival height, there was 0.77 and 0.51 times lower odds of gingival recession. For each 1 mm increase in post-treatment intercanine width, there was 0.80 times lower odds of gingival recession. And for each 1 mm increase in change in the arch depth, there was 1.16 times higher odds of gingival recession. For each 1 mm increase in pre- and post-treatment mandibular symphysis width, there was 0.47 and 0.39 times lower odds of gingival recession.

Conclusion

Regardless of the type of orthodontic treatment, increased keratinized gingival height, mandibular symphysis width, and post-treatment intercanine width lower the risk of gingival recession.

Sawan NM., Ghoneima A., Stewart K., and Liu S.. Risk factors contributing to gingival recession among patients undergoing different orthodontic treatment modalities. *Interv Med Appl Sci.* 2018 Mar; 10(1): 19–26.

Comparison of microleakage between bulk-fill flowable and nanofilled resin-based composites

AlSagob EI, Bardwell DN, Ali AO, Khayat SG, Stark PC.

AIM:
The objective was to compare the marginal leakage (silver nitrate uptake) of nanohybrid resin-based composite (RBC) and two bulk-fill flowable RBCs with specific clinical protocols.

METHODS:
Four experimental groups of RBC were investigated including conventional composite Filtek™ Supreme in 2 mm increment (FS2), Filtek™ Supreme in 4 mm increment (FS4), Filtek™ Supreme Flowable (BFF), and SureFil® SDR® flow (SDR). Class II box preparation (4 × 4 × 3 mm) in extracted intact human molars was carried out and restored using the experimental groups, all according to the manufacturers' recommendations except FS4. Samples were aged by thermocycling (2,000 cycles). Microleakage was calculated by measuring dye penetration in sectioned teeth using a stereomicroscope. Level of significance was set at $P < 0.05$.

RESULTS:
BFF and FS2 exhibited the least dye penetration and microleakage measurement with no significant difference between the two groups, followed by SDR. FS4 showed the highest microleakage with significant difference in comparison with BFF and FS2. Gingival microleakage was found to be significantly higher than occlusal microleakage.

CONCLUSION:
The microleakage of the bulk-fill composites BFF and SDR are comparable with conventional composite FS2; however, it is more predictable to use FS2.

AlSagob EI, Bardwell DN, Ali AO, Khayat SG, Stark PC. Comparison of microleakage between bulk-fill flowable and nanofilled resin-based composites. Interv Med Appl Sci. 2018 Jun;10(2):102-109. doi: 10.1556/1646.10.2018.07.

Peri-implant clinical and radiographic status and whole salivary cotinine levels among cigarette and waterpipe smokers and never-smokers

BinShabaib MS, Mehmood A, Akram Z, **ALHarthi SS**.

The aim was to compare the peri-implant clinical and radiographic inflammatory parameters and whole salivary cotinine levels among cigarette smokers (CS), waterpipe smokers (WS) and never-smokers (NS). Thirty-four CS (Group 1), 33 WS (Group 2), and 31 NS (Group 3) were included. Peri-implant plaque index (PI), bleeding-on-probing (BOP), and probing depth (PD) were measured, and crestal bone loss (CBL) was assessed on standardized digital radiographs. Unstimulated whole saliva samples were collected and whole salivary cotinine levels were measured. Peri-implant PI and PD were higher in Groups 1 ($P < 0.05$) and 2 ($P < 0.05$) than in Group 3. Peri-implant BOP was significantly higher in Group 3 than in Groups 1 ($P < 0.01$) and 2 ($P < 0.01$). Peri-implant MBL was significantly higher in Groups 1 ($P < 0.05$) and 2 ($P < 0.05$) than in Group 3. There were significant differences in PI, BOP, PD, and CBL between Groups 1 and 2. There was no significant difference in the whole salivary cotinine levels in Groups 1 and 2. Peri-implant sites with plaque accumulation, PD, CBL, and whole salivary cotinine levels were higher in CS and WS than in NS, but did not differ between CS and WS.

BinShabaib MS, Mehmood A, Akram Z, **ALHarthi SS**. Peri-implant clinical and radiographic status and whole salivary cotinine levels among cigarette and waterpipe smokers and never-smokers. *J Oral Sci.* 2018; 60 (2):247-252. doi: 10.2334/josnusd.17-0221.

Orthodontic pain: The use of non-pharmacological adjuncts and its effect on compliance

Padhraig S. Fleming**, D. Al-Moghrabi**, P. Fudalej, N. Pandis

Non-pharmacological approaches for alleviation of pain during orthodontics have been developed as pharmacological interventions may have negative side effects and patients may be reluctant to use them. The more popular non-pharmacological techniques include the use of lasers, vibratory and masticatory adjuncts, and use of psychological and communication-based approaches. The relative merits of these are discussed in the light of contemporary evidence. The effect of pain on compliance is difficult to pinpoint; however, the further refinement of approaches to control orthodontic pain will likely have a positive influence on patient experiences, compliance and ultimately therefore on our treatment outcomes.

Fleming PS.**, Al-Moghrabi D.**, Fudalej P., Pandis N. Orthodontic pain: The use of non-pharmacological adjuncts and its effect on compliance. Seminars in Orthodontics 2018;24(2):248-58

Collaboration in orthodontic clinical trials: prevalence and association with sample size and funding

D. Al-Moghrabi, A. Tsichlaki, N. Pandis, and P. S. Fleming

Background

To assess patterns of research collaboration in orthodontics and possible relationships with sample size and funding status.

Methods

Orthodontic randomised and non-randomised controlled clinical trials published between 2013 and 2017 were identified through electronic searching. The nature of collaboration, author institutions, study setting, sample size, and funding status were assessed. Linear and logistic regression analyses were applied.

Results

Of 1153 studies, 217 met the selection criteria. The majority of studies were authored by university academics (86%), were conducted in a single centre (71.9%) and in at least one university hospital (68.2%). The number of practice-based trials (10.1%), as well as the involvement of specialist practitioners (5.2%) in co-authorship, was limited. Multi-centred studies within a single country were associated with a significantly larger sample size compared to single-centred trials ($P = 0.00$; 95% confidence interval [CI] 33.59, 106.93). However, authorship collaboration either nationally (odds ratio [OR] 2.37; 95% CI 0.85, 6.57) or internationally across different continents (OR 5.54; 95% CI 0.62, 49.52) did not translate into increased funding.

Conclusions

Most orthodontic studies were undertaken in university hospital settings within a single country. Collaboration is common in orthodontics but involvement of practice settings remains limited, suggesting a need for stimulation of practice-based research and research partnerships.

Al-Moghrabi D., Tsichlaki A., Pandis N., Fleming PS.. Collaboration in orthodontic clinical trials: prevalence and association with sample size and funding. *Prog Orthod*. 2018; 19: 16.

Guided implant surgery and immediate implant placement in esthetic zone

Afsheen Tabassum

With the introduction of digital imaging techniques such as computerized tomography (CT) and lately cone beam computed tomography (CBCT), anatomical structures of the oral and maxillofacial region can be appreciated in three dimensions. The aim of this article is to familiarize clinicians with a workflow for guided implant surgery based on the use of CBCT and intraoral scanner in case of immediate implant placement. A CBCT was recorded for the patient and a digital impression was registered using an intraoral scanner (Lava COS). Codiagnostix® software was used for the coupling of cone beam computed tomography (CBCT) and intraoral scan data and virtual treatment planning. Ideal implant position and suprastructure were planned by digitally integrating the anatomic situations and future prosthetic demands. In the present case, digital planning software and fabricated surgical guide were beneficial in accurate immediate implant placement in the esthetic zone. The positioning of implants is more precise with guided implant surgery which will help clinicians to achieve prosthetically driven implant placement as it offers many advantages in terms of favorable esthetic, desirable occlusion, phonetics, and long-term peri-implant hard and soft tissues stability.

Tabassum A,, Guided implant surgery and immediate implant placement in esthetic zone. *International Journal of Medical and Dental Case Reports* 2018; doi: 10.15713/ins.ijmdcr.92

Effects of fixed vs removable orthodontic retainers on stability and periodontal health: 4-year follow-up of a randomized controlled trial

Al-Moghrabi D, Johal A, O'Rourke N, Donos N, Pandis N, Gonzales-Marin C, Fleming PS.

INTRODUCTION:
Our objectives were to compare the stability of treatment and periodontal health with fixed vs removable orthodontic retainers over a 4-year period.

METHODS:
A 4-year follow-up of participants randomly assigned to either mandibular fixed retainers from canine to canine or removable vacuum-formed retainers was undertaken. Irregularity of the mandibular anterior segment, mandibular intercanine and intermolar widths, arch length, and extraction space opening were recorded. Gingival inflammation, calculus and plaque levels, clinical attachment level, and bleeding on probing were assessed. The outcome assessor was blinded when possible.

RESULTS:
Forty-two participants were included in the analysis, 21 per group. Some relapse occurred in both treatment groups at the 4-year follow-up; however, after adjusting for confounders, the median between-groups difference was 1.64 mm higher in participants wearing vacuum-formed retainers (P = 0.02; 95% confidence interval [CI], 0.30, 2.98 mm). No statistical difference was found between the treatment groups in terms of intercanine (P = 0.52; 95% CI, -1.07, 0.55) and intermolar (P = 0.55; 95% CI, -1.72, 0.93) widths, arch length (P = 0.99; 95% CI, -1.15, 1.14), and extraction space opening (P = 0.84; 95% CI, -1.54, 1.86). There was also no statistical difference in relation to periodontal outcomes between the treatment groups, with significant gingival inflammation and plaque levels common findings.

CONCLUSIONS:
This prolonged study is the first to suggest that fixed retention offers the potential benefit of improved preservation of alignment of the mandibular labial segment in the long term. However, both types of retainers were associated with gingival inflammation and elevated plaque scores.

Al-Moghrabi D, Johal A, O'Rourke N, Donos N, Pandis N, Gonzales-Marin C, Fleming PS. Effects of fixed vs removable orthodontic retainers on stability and periodontal health: 4-year follow-up of a randomized controlled trial. *Am J Orthod Dentofacial Orthop.* 2018;154(2):167-174.e1. doi: 10.1016/j.ajodo.2018.01.007.

Association between time since quitting smoking and periodontitis in former smokers in the National Health and Nutrition Examination Surveys (NHANES)

ALHarthi SSY, Natto ZS, Midle JB, Gyurko R, O'Neill R, Steffensen B.

BACKGROUND:
The aims of this study were to analyze the periodontal conditions among non-smokers, former smokers and current smokers in the two National Health and Nutrition Examination Surveys (NHANES) acquired between 2009 to 2012 and determine the association between time since quitting smoking and periodontal status.

METHODS:
Smoking status and periodontal examination data from NHANES 2009 to 2010 and 2011 to 2012 were analyzed. Respondents included in the analysis were aged ≥18 years, had undergone a complete NHANES Oral Health - Periodontal Exam with all measurements recorded as required for the periodontal classification algorithm, and had complete data from the NHANES Smoking - Cigarette Use questionnaire. Logistic regression was conducted with time since quitting as the exposure and presence of periodontitis as the outcome, and included adjustment for confounders.

RESULTS:
Smoking status was significantly associated with periodontal status (Chi-square; $P < 0.0001$). The rate of periodontitis was highest among smokers (35%), compared with former smokers (19%) and never smokers (13%). Among former smokers, after adjusting for confounders, each additional year since quitting smoking was associated with a significant reduction in the odds ratio (OR) for periodontitis by 3.9% (OR for each year 0.961, 95% confidence interval 0.948 to 0.975).

CONCLUSIONS:
Among former smokers, a longer time since quitting smoking was associated with a lower likelihood of periodontitis. Consequently, dental practitioners have a public health mandate to help their patients quit smoking. Future research should determine the best strategies for facilitating smoking cessation in dental patients.

***ALHarthi SSY**, Natto ZS, Midle JB, Gyurko R, O'Neill R, Steffensen B. Association between time since quitting smoking and periodontitis in former smokers in the National Health and Nutrition Examination Surveys (NHANES). J Periodontol. 2019 Jan;90(1):16-25. doi: 10.1002/JPER.18-0183.*

Contribution of herpesviruses in the progression of periodontal and peri-implant diseases in systemically healthy individuals

Binshabaib M, **ALHarthi SS**, Salehpoor D, Michelogiannakis D, Javed F.

The aim of this review was to assess the contribution of herpesviruses in the subgingival oral biofilm in the progression of periodontal and peri-implant diseases in systemically healthy individuals. The literature review was customized to summarize the pertinent information for the following reasons: (1) A systematic review regarding the role of herpesviruses in the etiopathogenesis of periodontal disease has recently been published; and (2) a limited number of studies have assessed the association of herpesviruses with peri-implant diseases. To date, five observational studies have assessed the presence of herpesviruses in the subgingival oral biofilm of individuals with peri-implant diseases. In these studies, dental implants were in place for up to approximately 8 years. In two studies, human cytomegalovirus (HCMV) was more often isolated from the peri-implant sulci of sites with than without peri-implantitis. In one study, a low prevalence of HCMV compared with Epstein-Barr virus (EBV) was associated with the progression of peri-implantitis. In previous studies, the presence of EBV in the subgingival oral biofilm was associated with the onset of peri-implantitis and peri-implant mucositis, respectively. Major limitations of the studies assessed were the absence of blinding and lack of power analysis for sample size estimation. In conclusion, the presence of herpesviruses in the periodontal and peri-implant subgingival oral biofilm is an indicator of periodontal and peri-implant diseases in systemically healthy individuals; however, further studies with a statistically justified sample-size are needed to understand and refine this association.

Binshabaib M, **ALHarthi SS**, Salehpoor D, Michelogiannakis D, Javed F. Contribution of herpesviruses in the progression of periodontal and peri-implant diseases in systemically healthy individuals. Rev Med Virol. 2018 Sep;28(5):e1996. doi: 10.1002/rmv.1996.

Impact of cigarette smoking and vaping on the outcome of full-mouth ultrasonic scaling among patients with gingival inflammation: a prospective study

ALHarthi SS, **BinShabaib M**, Akram Z, Rahman I, Romanos GE, Javed F.

OBJECTIVES:
There are no studies that have assessed the oral soft tissue response to full-mouth ultrasonic scaling (FMUS) among cigarette-smokers (CS) (group 1), individuals vaping electronic-cigarettes (E-cigs) (group 2), and never-smokers (NS) (group 3). The aim was to assess the impact of cigarette smoking and vaping on periodontal tissues following FMUS.

MATERIALS AND METHODS:
In a clinical prospective study, 89 male individuals were divided into three groups: CS (group 1), E-cig users (group 2), and NS (group 3). A questionnaire was used to gather demographic data and information regarding duration and daily frequency of CS and vaping. Full-mouth plaque index (PI), bleeding on probing (BOP), clinical attachment loss (AL), and probing depth (PD) were measured at baseline and 3 and 6 months after FMUS (without root surface debridement). Numbers of missing teeth (MT) were also recorded.

RESULTS:
In groups 1, 2, and 3, 30, 28, and 31 individuals, respectively were included. In group 1, there was no statistically significant difference in mean PI and PD and numbers of sites with PD ≥ 4 mm at 6 months' follow-up compared with baseline and 3 months' follow-up. In groups 2 and 3, there was no significant difference in PI, BOP, and PD at 3 months' ($P > 0.05$) and 6-months' ($P > 0.05$) follow-up. There were no pockets with PD ≥ 4 mm at 3 and 6 months' follow-up in groups 2 and 3. There was no difference in the numbers of MT and none of the individuals exhibited clinical AL in all groups.

CONCLUSION:
Following FMUS, gingival inflammation is worse in CS compared with individuals vaping E-cigs and NS.

CLINICAL RELEVANCE:
Periodontal inflammatory parameters are worse in cigarette-smokers than individuals vaping electronic cigarettes and never-smokers following FMUS. However, these findings should be interpreted with extreme caution as a number of factors may have influenced the present results.

ALHarthi SS, **BinShabaib M**, Akram Z, Rahman I, Romanos GE, Javed F. Impact of cigarette smoking and vaping on the outcome of full-mouth ultrasonic scaling among patients with gingival inflammation: a prospective study. *Clin Oral Investig.* 2018. doi: 10.1007/s00784-018-2725-2.

Does Periodontal Treatment Prevent Adverse Pregnancy Outcomes? A Literature Review

Afsheen Tabassum

Objectives:

Periodontal disease is considered responsible for adverse pregnancy outcome such as preterm birth (PTB) and low birth weight (LBW). PTB and LBW are the leading cause of death among children under 5 years of age. Therefore, the aim of this review was to investigate if periodontal treatment can prevent these adverse pregnancy outcomes.

Methods:

The search was conducted through Medline using several key words. No language or year of publication restriction was entered while searching the Medline. Last search was made in October 2018. Only systematic review that included randomized clinical trial and followed the systematic search strategy to answer clearly defined question were included.

Results:

Most of the selected articles have not observed any clear effect of periodontal therapy on reducing adverse pregnancy outcome. However, few studies concluded that periodontal treatment is effective in reducing adverse pregnancy outcome only in high risk patients with periodontitis. All studies emphasize that periodontal treatment is safe and effective for the periodontal disease and appropriate time for providing periodontal treatment is in the second trimester.

Conclusion:

There is no enough evidence to support that periodontal therapy during pregnancy have an effect in reducing adverse pregnancy outcomes such as PTB and LBW. There is only limited evidence that periodontal treatment is effective in high risk pregnant women. Further studies should be conducted with focus on the type of periodontal disease present during pregnancy and time and nature of treatment provided.

Tabassum A. Does Periodontal Treatment Prevent Adverse Pregnancy Outcomes? A Literature Review. JKCD 2018; 8(4)

CDS

Assessment of matrix metalloproteinase-8 and -9 levels in the peri-implant sulcular fluid among waterpipe (narghile) smokers and never-smokers with peri-implantitis

Zeyad H. Al-Sowygh, Meshari Kh. Aldamkh, Abdulelah M. Binmahfooz, **Khulud Abdulrahman Al-Aali**, Zohaib Akram ,Osama A. Qutub, Fawad Javed &Tariq Abduljabbar

Objectives: It is hypothesized that levels of matrix metalloproteinase (MMP)-8 and MMP-9 are significantly higher in the peri-implant sulcular fluid (PISF) of waterpipe-smokers (WS) compared with never-smokers with peri-implantitis. The aim of the present convenience sample case-control study was to compare the levels of MMP-8 and MMP-9 in the PISF of WS and never-smokers with peri-implantitis.

Material and Methods: Individuals smoking waterpipe (Group 1) and never-smokers (Group 2) were included. Demographic data was collected using a questionnaire. Peri-implant probing depth (PPD) was measured and crestal bone loss (CBL) was measured on digital bitewing radiographs. PISF samples were collected using paper strips and the collected PISF volume was determined. Levels of MMP-8 and MMP-9 were measured using enzyme-linked immunosorbent assay. Study sample-size was estimated and statistical analysis was performed. *p* values < .05 were considered statistically significant.

Results: Sixty-six individuals (33 individuals in Group 1 and 33 in Group 2) were included. In Groups 1 and 2, 41 and 44 implants, respectively were placed. The mean total PPD ($p < .001$) and peri-implant CBL ($p < .001$) was statistically significantly higher around implants affected by peri-implantitis in Group 1 compared with Group 2. The PISF volume ($p < .05$) collected and levels of MMP-8 ($p < .01$) and MMP-9 ($p < .01$) were statistically significantly higher among individuals in Group 1 compared with Group 2.

Conclusion: PISF levels of MMP-8 and MMP-9 are significantly higher among WS compared with never-smokers with peri-implantitis.

Al-Sowugh ZH., Aldamkh MK., Binmahfooz AM., Al-Aali KA., Qutub OA., Abduljabbar T. Assessment of metalloproteinase-8 and -9 levels in the peri-implant sulcular fluid among waterpipe (naghile) smokes and never-smokers with peri-implantitis. *Inhalation Toxicology* 2018;30(2): 72-7

The frequency of electric toothbrush use among a sample of Saudi adults

Naif A. Bindayel, **Fahda Algahtani**, Mohammad A. Aldosari

Aims:

This study aims to examine the frequency of using of electric toothbrushes (ETB) and investigate the associated confounding factors among Saudi adults.

Methodology:

Personal interviews of 505 randomly selected Saudi adults were held at popular middle socioeconomic destinations in Riyadh city. A single investigator has conducted all interviews that were carried out by a self-constructed questionnaire using closed format questions.

Results:

About 21.8% of the studied samples have used ETB with only 5.7% are maintaining its use. Higher level of education showed a statistical significant increased proportion of participants using ETB (P = 0.022). Neither age, sex, nor income has influenced the frequency of ETB use. Most of the samples chose the 50–250 SR price range as a reasonable price to purchase the device. Moreover, never mentioning ETB by the dentist was the most reported reason behind not using ETB (70.1%).

Conclusion:

About less than the quarter of the sample have used ETB, with only 5.7% maintaining its use. The reported low frequency would reflect the decreased attention paid by clinicians toward ETB.

Bindayel NA, Algahtani F, Aldosari MA. The frequency of electric toothbrush use among a sample of Saudi adults. J Int Oral Health 2018;10:26-31

Microtensile bond strength, 4-point bending and nanoleakage of resin-dentin interfaces:

Effects of two matrix metalloproteinase inhibitors

Moataz El Gezawi, **Rasha Haridy**, Emad Abo Elazm, Fahad Al-Harbi, Mariem Zouch, Dalia Kaisarly

Chronic degradation of hybrid layer collagen by matrix metalloproteinases (MMPs) Jeopardizes resin-dentin interfacial integrity and limits the durability of dental restorations. The 4-point bending strength (BS) is a valid but uncommon method of testing the mechanical behavior of resin-dentin interfaces. The present study aims to analyze the influence of two matrix metalloproteinase inhibitors on microtensile bond strength (μTBS), BS and nanoleakage. A total of 48 M were divided into three groups according to bonding procedure. Teeth were horizontally sectioned to produce a flat dentin surface. In the control group, etch-and-rinse Prime&Bond One (Dentsply) bonding was used; in the self-etch group, methacryloyloxydodecylpyridinium bromide (MDPB)-containing Clearfil SE Protect (Kuraray) was used; and in the benzalkonium chloride (BAC)-etch group, BAC-etchant (Bisco) was used. A Ceram.X-One (Dentsply) composite was built as three successive layers and was light-cured. Samples were sectioned to produce microrods that were randomly divided into two groups for analysis at baseline and after 6 months of water immersion (n = 32), plus one slab for nanoleakage analysis (n = 8) via scanning electron microscopy (SEM) and digital image analysis (Fiji). Data were analyzed using the Weibull distribution and a mixed-model ANOVA with a post hoc Tukey test. All groups showed deterioration of the initial bonds. The self-etch group had a worse baseline μTBS than the control but had the best BS after aging. BAC-etch did not improve bond stability of etch-and-rinse adhesive. The μTBS and BS test results after aging were moderately correlated. Mixed fractures prevailed with regard to μTBS, whereas adhesive fractures dominated with regard to BS. Nanoleakage was not eliminated in any group and increased after aging. MDPB self-etch resisted bond degradation better than etch-and-rinse adhesives, even after BAC-etching. Integrating BS in studies of μTBS and nanoleakage might provide more clinically relevant outcomes for predicting the performance of dental adhesives.

El Gezawi M., Haridy R., Abo Elazm E., Al-Harbi F., Zouch M., Kaisarly D. Microtensile bond strength, 4-point bending and nanoleakage of resin-dentin interfaces: effects of two matrix metalloproteinase inhibitor. Journal of the mechanical behavioral of biomedical material 2018;78:206-13

The implications and applications of nanotechnology in dentistry: A review

Rawan N. AlKahtani

The emerging science of nanotechnology, especially within the dental and medical fields, sparked a research interest in their potential applications and benefits in comparison to conventional materials used. Therefore, a better understanding of the science behind nanotechnology is essential to appreciate how these materials can be utilised in our daily practice. The present paper will help the reader understand nanoscience, and the benefits and limitations of nanotechnology by addressing its ethical, social, and health implications. Additionally, nano-applications in dental diagnostics, dental prevention, and in dental materials will be addressed, with examples of commercially available products and evidence on their clinical performance.

AlKahtani RN. The implications and applications of nanotechnology in dentistry: a review. *SDJ* 2018;30:107-16

Interprofessional learning experiences: Exploring the perception and attitudes of Saudi Arabian medical and dental students

Ghadeer K. Al-Shaikh, **Ebtissam M. Al-Madi**, Jazba Masood, Quratulain Shaikh, Sadiqa B. Syed, Rima S. Bader & Judy McKimm

Objective: The objective of this study is to evaluate the awareness and attitudes of medical and dental students regarding interprofessional learning (IPL).

Methods: A cross-sectional study was conducted with 278 female undergraduate Medical and Dental students from Princess Nourah bint Abdulrahman University, Riyadh. These students undertook IPL in the Foundation block, in basic science teaching, clinical skills' laboratories and in professionalism and learning skills' modules. A modified, validated RIPLS questionnaire with four subscales and 29 items was used to collect data regarding their perception and attitudes towards shared learning. A five-point Likert scale was used with a value ranging from 1 (strongly disagree) to 5 (strongly agree) for each item. Factor analysis was done using Varimox rotation. Student's *t* test was applied to detect difference between mean scores of medical and dental student's responses

Results: The mean age of respondents was 19.8 ± 1.7 years with the majority in the second year of each program. There was no difference in mean responses of the medical and dental students. The respondents favored shared learning in the areas of professional skills and patient care. They agreed that IPL helps to develop respect, trust and appreciation for other professions; however, both groups preferred to learn uni-professionally with regard to developing discrete professional identities and roles.

Conclusions: There is an overall positive response towards IPL and the value of team work; however, more attention needs to be paid to enabling students to learn about the specific roles of each profession in the healthcare team.

Al-Shaikh GK., Al-Madi EM., Masood J., Shaikh Q., Syed SB., Bader RS., McKimm J. Interprofessional learning experiences: exploring the perception and attitudes of Saudi Arabian medical and dental students. *Medical Teacher* 2018; 40 (1): S43-S45

The Effect of Superoxide Dismutase (SOD) Enzyme Inhibition on Renal Microcirculation of Spontaneously Hypertensive Stroke Prone (SHRSP) and Wistar Rats

Ahmad F. Ahmeda, Mark G. Rae, **Lamyia M. Anweigi**, Mohammed F. Al Otaibi , Abeer A. Al-Masri, and Edward J. Johns

A significant factor in the development of hypertension may be excessive vasoconstriction within the renal medulla. This study therefore investigated the role of superoxide dismutase (SOD) in the regulation of renal medullary and cortical blood perfusion (MBP and CBP respectively) in both stroke-prone spontaneously hypertensive rats (SHRSP) and normotensive Wistar rats. CBP and MBP were measured before and after intra-renal infusion of the SOD inhibitor, diethyldithio-carbamic acid (DETC). Under basal conditions, mean arterial pressure was significantly greater in SHRSP than Wistar rats, but both MBP and heart rate (HR) were significantly lower in SHRSP relative to Wistar rats ($P < 0.05$, $n=7$ in both groups). Infusion of DETC (2 mg/Kg/min) into the cortico-medullary border area of the kidney significantly decreased MBP in the SHRSPs (by 28 ± 3%, $n=7$, $P < 0.05$), indicating a greater vasoconstriction within this vascular bed. However, DETC also significantly decreased MBP in Wistar rats to a similar extent (24 ± 4%, $n=7$, $P < 0.05$). These results suggest that superoxide anions play a significant role in reducing renal vascular compliance within the renal medulla in both normotensive and hypertensive animals, although the responses are not greater in the hypertensive relative to the control animals.

Ahmeda AF., Rae MG., Anweigi LM., Alotaibi MF., Al-Masri AA., Johns EJ. The effect of superoxide dismutase (SOD) enzyme inhibition on renal microcirculation of spontaneously hypertensive stroke prone (SHRSP) and wistar rats. *Physiological Research* 2018

Endodontic and Restorative Treatment Patterns of Pulpally Involved Immature Permanent Posterior Teeth

Ebtissam M. Al-Madi, Samar A. Al Saleh, Sundus M. Bukhary, and Maha M. Al-Ghofaily

Objective:

The study aims at investigating the treatment patterns for young permanent posterior teeth with pulp involvement.

Materials and Methods:

A random sample of 1793 dental records of patients aged 6–18 years old who had received dental treatment was investigated. 663 permanent posterior treated teeth had pulp involvement. Demographic and treatment data were gathered from patients' records.

Results:

Prevalence of young permanent teeth with pulp involvement was 36.9%. Treatments received significantly increased as patients' age increased (P = 0.001). &e first mandibular molar had the most pulp involvement among all teeth (43.89%). Temporary restoration was the most received restoration (59%). The most common pulpal diagnosis, leading to treatment, was irreversible pulpitis (43.04%). Only 19.8% of treated teeth received completed root canal treatment. Conclusion. There is a high percentage of children and adolescents with immature permanent posterior teeth with pulp involvement. Similarly, a variety of treatment patterns is present, with a small percentage of completed root canal treatment. Clinical Relevance. &e study has identified the need to provide guidelines to provide high-quality root canal treatments for young permanent posterior teeth that have pulpal involvement. Only 21.8% of root canal treatments were completed, while 24% of teeth were extracted, and 59% of patients received temporary restorative treatments. This suggests that there might be several factors that might prevent completion of the dental treatment, such as patient preference, insurance coverage, or dentist capability. These factors and guidelines for patient care should be investigated and resolved.

Al-Madi EM., Al Saleh SA., Bukhary SM., Al-Ghofaily MM. Endodontic and restorative treatment patterns of pulpally involved immature permenant posterior teeth. *International Journal of Dentistry* 2018

Developing a dental curriculum for the 21st century in a New Dental School in Saudi Arabia

Ebtissam M. Al-Madi, **Manal AlShiddi**, Samar Al-Saleh and **Hoda AbdelLatif**

The aims of this study were to develop, implement, and assess a contemporary dental curriculum that would be competitive internationally and take into consideration the specific needs of the community in a newly established all-female dental school in Saudi Arabia: Princess Nourah bint AbdulRahman University College of Dentistry (PNUCD). A six-step approach to curriculum development was used. Problem identification, general needs, and target needs were identified, and goals, objectives, and educational strategies were defined. The new curriculum emphasizes producing competent dentists focused on prevention and geared toward the needs of women and children. Leadership attributes, patient-centered care, and research are emphasized in the curriculum. Contemporary educational methods are used to implement the curriculum. In the assessment part of the study, evaluations of the curriculum by students, faculty, and external stakeholders (part-time instructors, program evaluators, and patients) have been mainly positive. Overall, PNUCD provided the opportunity to develop a curriculum that reflects the explosion of scientific knowledge, based on principles of modern educational theory in a unique cultural environment.

Al-Madi EM., Alshiddi M., Al-Saleh S., AbdelLatif H., Developing of a dental curriculum for the 21th century in a new dental school in Saudi Arabia. *Journal of Dental Education* 2018; 82 (6) 591-601

Peri-implant parameters, tumor necrosis factor-alpha, and interleukin-1 beta levels in vaping individuals

Khulud A. Al-Aali, Mohammed Alrabiah, Aws S. ArRejaie, Tariq Abduljabbar, Fahim Vohra, Zohaib Akram

Background

To the author's knowledge, there has been no study that has assessed clinical, radiographic, and immunological peri-implant parameters among individuals vaping e-cigarette (e-cig).

Purpose

This pilot study aimed to compare clinical and radiographic peri-implant parameters and levels of tumor necrosis factor alpha (TNF-α) and interleukin (IL)-1β levels among individuals vaping e-cigs and never smoker (NS).

Materials and Methods

Forty-seven individuals vaping e-cigs (group-1) and 45 NS (group-2) were included. Demographic and implant-related data were collected using a structured baseline questionnaire. Peri-implant plaque index (PI), bleeding on probing (BOP), and probing depth (PD) were recorded and peri-implant bone loss (PIBL) were assessed using standardized digital radiographs. Enzyme-linked immunosorbent assay was used to assess the levels of TNF-α and IL-1β in peri-implant sulcular fluid.

Results

Bleeding on probing showed statistically significantly higher values in group-2 patients as compared to group-1 patients ($P < .01$). Probing depth ≥ 4 mm and PIBL was statistically significantly higher in group-1 patients as compared to group-2 patients ($P < .05$). Mean concentrations of TNF-α ($P < .001$) and IL-1β ($P < .01$) were statistically significantly increased in individuals in group 1 as compared with group 2. A significant positive correlations were found between TNF-α levels and BOP ($P = .024$) and PIBL ($P = .016$); and significant positive correlation was found between IL-1β and PIBL ($P = .018$) in group 1, respectively.

Conclusions

Clinical and radiographic peri-implant parameters are compromised among vaping individuals. Increased levels of proinflammatory cytokines in peri-implant sulcular fluid may suggest greater local inflammatory response in vaping individuals for peri-implant inflammation.

Al-Aali KA., Alrabiah M., ArRajaie AS., Abduljabbar T., Vohra F., Akram Z. Peri-implant parameters, tumot necrosis factor- alpha, and interleukin-1 beta levels in vaping individuals. *Clinical implant dentistry and related research* 2018; 20(3):410-5

Comparative analysis of prevalence of apical periodontitis in smokers and non-smokers using cone-beam computed tomography

Hanan A.Balto, Lama Alabdulaaly, Shaima Bahammam, Asma'a A.Al-Ekrish

Objective

The aim of this study was to compare the prevalence and size of periapical lesions among smokers and non-smokers using cone-beam computed tomography (CBCT).

Materials and methods

Retrievable CBCT datasets for 46 male patients ≥18 years during a consecutive period from 2008 to 2016 were examined. The medical, smoking history and other clinical findings (signs of previous dental trauma; Decayed Missing Filled Teeth (DMFT) scores; the percentage of root filled teeth; and oral hygiene status) were obtained. Periapical status of all included teeth was assessed by CBCT images. Statistical analysis was conducted using *t*-test, Pearson correlation and multiple regression.

Results

The prevalence of apical periodontitis was 13.93% in smokers and 14.26% in non-smokers with no significant difference ($p = 0.936$). The mean of the average size of lesions between the two groups were almost comparable, 3.50 mm in smokers and 2.89 mm in non-smokers ($p = 0.567$). Pearson correlation and multiple regression analysis showed that the percentage of lesion present and the average lesion size were not correlated to any independent variable.

Conclusions

While smoking is considered a risk factor for marginal periodontitis, there was no difference between smokers and non-smokers in terms of apical periodontitis.

Balto HA., Alabdulaaly L., Bahammam S., Al-Ekrish AA. Comparative analysis of prevalence of apical periodontitis in smokers and non-smokers using cone-beam computed tomography. *SDJ* 2018; in-press

Proinflammatory cytokine levels and peri-implant parameters among cigarette smokers, individuals vaping electronic cigarettes, and non-smokers

Aws S. ArRejaie, **Khulud Abdulrahman Al-Aali**, Mohammed Alrabiah, Fahim Vohra, Sameer A. Mokeem, Ghadeer Basunbul, Ali Alrahlah, Tariq Abduljabbar

Background

Tobacco smoking compromises the prognosis of dental implant treatment and is associated with increased risk of peri-implant bone loss and increased implant failure rate. There is a dearth of studies that have compared clinical, radiographic, and immunological peri-implant parameters among cigarette smokers (CS), individuals vaping e-cigarettes (e-cigs), and non-smokers (NS). This study aimed to compare clinical and radiographic peri-implant parameters and levels of matrix metalloproteinase (MMP)-9 and interleukin (IL)-1β levels among CS, individuals' vaping e-cigs, and NS.

Methods

Thirty-two CS (group 1), 31 individuals vaping e-cigs (group 2), and 32 NS (group 3) were included. Demographic- and implant-related data were collected using a structured baseline questionnaire. Peri-implant plaque index (PI), bleeding on probing (BOP), and probing depth (PD) were recorded and marginal bone loss (MBL) were assessed using standardized digital radiographs. Enzyme-linked immunosorbent assay was used to assess levels of MMP-9 and IL-1β in peri-implant sulcular fluid. Pearson correlation coefficient was used to analyze for correlations of MMP-9 and IL-1β levels with peri-implant parameters.

Results

BOP showed significantly higher values in group 3 as compared with groups 1 and 2 ($P < 0.01$). PI ($P < 0.01$), PD ≥ 4 mm ($P < 0.01$), and mean concentrations of MMP-9 ($P < 0.001$) and IL-1β ($P < 0.01$) were significantly higher in groups 1 and 2 than group 3. MBL was significantly higher in group 1 as compared with group 2 and group 3 ($P < 0.01$). Significant positive correlations were found between MMP-9 ($P = 0.0198$) and IL-1β ($P = 0.0047$) levels and MBL in group 1; and a significant positive correlation between IL-1β and MBL in group 2 ($P = 0.0031$).

Conclusions

Peri-implant health was compromised among CS than vaping individuals and NS. Increased levels of proinflammatory cytokines in CS and vaping individuals may suggest greater peri-implant inflammatory response.

ArRajaie AS., Al-Aali KA., Alrabiah M., Vohra F., Mokeem SA., Basunbul G., Alrahlah A., Abduljabbar T. Proinflammatory cytokine levels and peri-implant parameters among cigarette smokers, individuals vaping electronic cigarettes, and non-smokers. *Journal of Periodontology* 2018

Peri-implant soft tissue status and crestal bone levels around adjacent implants placed in cigarette smokers and never smokers: Five-year follow-up results.

ArRejaie AS, **Al-Aali KA**, Alrabiah M, Mokeem SA, Vohra F, Abduljabbar T.

BACKGROUND:
It is hypothesized that peri-implant soft tissue inflammation and crestal bone loss (CBL) are higher around adjacent implants placed in cigarette smokers compared with never smokers. The aim of the present 5-years follow-up retrospective clinical study was to compare the peri-implant soft tissue status and CBL around adjacent implants placed in cigarette smokers and never smokers.

METHODS:
Cigarette smokers (group 1) and never smokers (group 2) with adjacent dental implants were included. Demographic information regarding age, sex, duration of smoking (pack-years), daily frequency of toothbrushing and most recent visit to a dentist or dental hygienist were recorded using a questionnaire. Information regarding implant dimensions (length × diameter), duration of implants in function, loading protocol (and type of restoration was recorded. Peri-implant plaque index (PI), bleeding on probing (BOP), probing depth (PD), and mesial and distal CBL were measured. P <0.05 were considered statistically significant.

RESULTS:
Seventy-two male participants (37 in group 1 and 35 in group 2) were included. The mean age of individuals in groups 1 and 2 were 50.3 ± 5.4 and 48.5 ± 3.8 years, respectively. In group 1, the mean duration of cigarette smoking was 22.3 ± 1.6 pack years. A family history of smoking was more often reported by individuals in group 1 compared with group 2. In groups 1 and 2, 54 and 70 adjacent implants, respectively were placed in the regions of missing premolars and molars. All implants were delayed loaded and were fixed with non-splinted screw-retained restorations. In groups 1 and 2, toothbrushing twice daily was reported by 78.3% and 74.2% individuals, respectively. There was no statistically significant difference in peri-implant PI, BOP, PD, and mesial and distal CBL among individuals in groups 1 and 2.

CONCLUSIONS:
Peri-implant soft tissue status and crestal bone levels were comparable around adjacent dental implants placed in cigarette smokers and never smokers.

ArRejaie AS, Al-Aali KA, Alrabiah M, Mokeem SA, Vohra F, Abduljabbar T. Peri-implant soft tissue status and crestal bone levels around adjacent implants placed in cigarette smokers and never smokers: Five-year follow-up results. *J Periodontol*. 2018 Oct 12. doi: 10.1002/JPER.18-0117

Clinical indices and local levels of inflammatory biomarkers in per-implant health of obese and nonobese individuals

Alasqah MN, Al-Shibani N, **Al-Aali KA**, Qutub OA, Abduljabbar T, Akram Z.

BACKGROUND:
Obesity seem to regulate peri-implant health. It is proposed that peri-implant crevicular fluid(PICF) levels of interleukin (IL)-1β and IL-6 are higher in obese as compared to nonobese individuals.

OBJECTIVE:
The purpose of the present clinico-laboratory study is to estimate and compare the clinical and radiographic indices and PICF levels of IL-1β and IL-6 among obese and nonobese patients.

MATERIALS AND METHODS:
Fifty patients were divided into two groups (25 obese with ≥27.5 kg/m^2 and 25 nonobese with <27.5 kg/m^{2}individuals). Clinical indices for both periodontal and peri-implant evaluating plaque index (PI), bleeding on probing (BOP), probing depth (PD), clinical attachment level (CAL), and crestal bone loss (CBL) were recorded around teeth and implants. PICF was collected and assessed for the levels of IL-1β and IL-6 using enzyme-linked immunosorbent assay.

RESULTS:
A significant difference was observed in PI and BOP around natural teeth and implants in obese patients, respectively ($P < .05$). CBL was found to be significantly higher among obese as compared to nonobese patients ($P = .022$). Peri-implant and periodontal PD was higher in obese as compared to nonobese but did not reach statistical significance. Levels of IL-1β and IL-6 were statistically significantly higher among obese patients as compared to nonobese ($P = .001$). Pearson correlation analysis showed IL-1β was positively correlated with CBL ($P = .0079$), whereas IL-6 showed positive correlation with both BOP ($P = .0019$) and CBL ($P = .015$) among obese patients.

CONCLUSIONS*:*
Clinical peri-implant parameters were worse and proinflammatory biomarkers were significantly higher in obese patients compared with nonobese subjects. The findings of the present study suggests that increased proinflammatory biomarkers in PICF of obese patients may modulate peri-implant inflammation around dental implants.

Alasqah MN, Al-Shibani N, **Al-Aali KA**, Qutub OA, Abduljabbar T, Akram Z. Clinical indices and local levels of inflammatory biomarkers in per-implant health of obese and nonobese individuals. *Clin Implant Dent Relat Res*. 2018 Dec 13. doi: 10.1111/cid.12700.

Clinical performance of one-piece zirconia dental implants: A systematic review

Aws S. ArRejaie, Rana S. Al-Hamdan, Ghadeer I. Basunbul, Tariq Abduljabbar, **Khulud A. Al-Aali**, Nawaf Labban

The aim of the present review was to evaluate the clinical and radiographic performance of one piece zirconia implants (O-PZI). This review followed the PRISMA (Preferred Reporting Items for Systematic Review and Meta-Analysis) guidelines that addressed the following focused question: What is the overall clinical and radiographic performance of O-PZI? The MEDLINE, EMBASE, Cochrane Central Register of Controlled Trials, and Cochrane Oral Health Group Trials Register databases were searched. Six clinical studies were included. For studies evaluating O-PZI compared with one-piece titanium implants, zirconia implants showed higher crestal bone loss (CBL) in both the studies. However, one study demonstrated a high failure rate compared to titanium dental implants, while one study demonstrated comparable survival rates between zirconia and titanium dental implants.

For studies evaluating O-PZI for the restoration of single crown and fixed dental prostheses, O-PZI showed comparable bone loss and survival rates for single crowns and fixed dental prostheses. Two studies were included that compared O-PZI with two-piece zirconia (T-PZI). One study showed a higher CBL and low survival rate for O-PZI compared to T-PZI, whereas the other study demonstrated comparable CBL and survival rates between O-PZI and T-PZI. It is still debatable whether O-PZI demonstrate better clinical performance when compared with titanium implants or two-piece design.

Aws S. ArRejaie, Rana S. Al-Hamdan, Ghadeer I. Basunbul, Tariq Abduljabbar, **Khulud A. Al-Aali**, Nawaf Labban. Clinical performance of one-piece zirconia dental implants: A systematic review. *Journal of Investigative and Clinical Dentistry* 2018; **https://doi.org/10.1111/jicd.12384**

Shaping Ability of Superelastic and Controlled Memory Nickel-Titanium File Systems: An In Vitro Study

Raidan A. Ba-Hattab, and Dieter Pahncke

Improvements in the thermomechanical processing procedures of NiTi wires have led to the development of new NiTi instruments that compose mainly of martensite crystals, making the wire stable at clinical condition. This study aimed at comparing the shaping ability of two rotary nickel-titanium systems manufactured from different NiTi wires. Twenty simulated root canals each with a curvature of 35° in resin blocks were divided into two groups of 10 canals each. Canals in the first group were prepared with superelastic F360 instruments (Gebr. Brasseler, Germany) while canals in the second group were prepared using controlled memory HyFlex®CM™ instruments (Coltène Whaledent, Switzerland). Images were taken before canal preparation and after the use of each instrument. The assessment of the canal shapes was accomplished with a computer image analysis program. Data were statistically analyzed using SPSS program. Within the limitation of this in vitro study, HyFlex®CM™ instruments remained better centered in the apical third of the canals. In most canal segments, no significant differences were observed between either system in the amount of material removed. Both systems were comparable to each other in regards to their ability to enlarge root canal in the same way without procedural errors.

Ba-Hattab RA., Pahncke D. Shaping Ability of Superelastic and Controlled Memory Nickel-Titanium File Systems: An In Vitro Study. International Journal of Dentistry 2018; Article ID 6050234, 5 pages https://doi.org/10.1155/2018/6050234

The role of hospital service quality in developing the satisfaction of the patients and hospital performance

Jeen-Su Lim, Kee-Sook Lim, John H. Heinrichs, **Khulud Al-Aali**, Alamzeb Aamir and Muhammad Imran Qureshi

This paper aimed to examine a conceptual model for the relationships between hospital service quality, patient satisfaction, hospital utilization, and hospital financial performance. A total of 176 hospitals was selected from California State for this study. The standardized performance measures were used together with precisely defined specifications and standardized data-collection protocols. First, an exploratory factor analysis with Varimax rotation was performed. The measurement properties were then assessed in a confirmatory factor analysis (CFA). The analysis results show that quality had a significant effect on satisfaction, which, in turn, affected the financial performance. The results provide support for the previous findings indicated that service quality was positively associated with patient satisfaction and that satisfaction and utilization had a significant positive effect on financial performance. The analysis results provide support for the previous findings that hospital service quality is positively related to patient satisfaction. The findings also show that patient satisfaction and hospital utilization have a significant positive effect on hospital financial performance.

Lim J., Kee-Sook Lim, Heinrichs JH., **Al-Aali K.**, Aamir A., and Qureshi MI. The role of hospital service quality in developing the satisfaction of the patients and hospital performance. Management Science Letters 8 (2018) 1353–1362

Effect of case diagnosis and professional training on endodontic irrigant selection

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Aim:

The aim of this study is to investigate the type of endodontic irrigants used in cases with different pulpal diagnoses by general dental practitioners (GDPs) and specialists.

Materials and Methods:

A questionnaire on irrigant selection was designed and distributed to GDPs, endodontists, and advanced restorative specialists with advanced endodontic training in Riyadh, Saudi Arabia. Participants were asked to select the irrigant(s) they used in vital, necrotic, and retreatment cases and to select the irrigant they think is the best.

Results:

A total of 261 dentists responded: 65% were GDPs, 21% were endodontists, and 14% were restorative specialists. Sodium hypochlorite (NaOCl) was the most commonly used irrigant (65%–80%) followed by saline. Other materials such as local anesthetic solutions, chlorhexidine, and ethylenediaminetetraacetic acid (EDTA) were also used. Diagnosis of the case significantly affected the choice of irrigant. NaOCl was selected more in necrotic than in vital or retreatment cases. The endodontists used NaOCl and EDTA as an adjunct significantly more than GDPs, who significantly favored saline ($P < 0.001$). Choices of restorative specialists were better than GDPs but were not statistically significant than either groups.

Conclusion:

This survey shows that irrigant selection is affected by case diagnosis and specialty training.

Basudan SO., **Alghamdi SM.,** Alsultan HS. Effect of case diagnosis and professional training on endodontic irrigant selection. Saudi Endodontic Journal 2018; 8(3):196-201

Effect of antimicrobial photodynamic therapy in open flap debridement in the treatment of peri-implantitis: A randomized controlled trial

Albaker AM, ArRejaie AS, Alrabiah M, **Al-Aali KA**, Mokeem S, Alasqah MN, Vohra F, Abduljabbar T.

BACKGROUND:
To evaluate the effects of single application of antimicrobial photodynamic therapy (aPDT) as an adjunct to open flap debridement (OFD) and OFD alone in patients with peri-implantitis (PI).

MATERIALS AND METHODS:
Twenty four patients with PI were divided into 2 groups receiving aPDT with OFD and OFD alone respectively. Peri-implant plaque index (PI), bleeding on probing (BOP), pocket depth (PD) and marginal bone level (MBL) were assessed at baseline, 6 and 12 months post-therapy. Digital periapical radiographs were taken and viewed on a calibrated computer screen using a software for the assessment of MBL. Only single implant from each patient was included in the study protocol (intent to treat analysis).

RESULTS:
At baseline, peri-implant PI, BOP, PD and MBL were comparable among individuals in aPDT and OFD groups. All patients had localized peri-implant PD ≥5 mm. At 6 months, aPDT and OFD significantly reduced peri-implant PI, BOP, PD and MBL. Similarly, after 12 months post-therapy, both groups reduced PI, BOP, PD and MBL. However, there was no significant difference between aPDT and OFD groups over time.

CONCLUSION:
Single application of aPDT as an adjunct to OFD does not provide additional benefit in improving clinical and radiographic peri-implant parameters in peri-implantitis.

Albaker AM, ArRejaie AS, Alrabiah M, **Al-Aali KA**, Mokeem S, Alasqah MN, Vohra F, Abduljabbar T. Effect of antimicrobial photodynamic therapy in open flap debridement in the treatment of peri-implantitis: A randomized controlled trial. Photodiagnosis Photodyn Ther. 2018 Sep;23:71-74. doi: 10.1016/j.pdpdt.2018.05.003. Epub 2018 May 5.

Influence of Er: Cr: YSGG laser on adhesive strength and microleakage of dentin bonded to resin composite; In-vitro study

Vohra F, Alghamdi A, Aldakkan M, Alharthi S, Alturaigi O, Alrabiah M, **Al-Aali KA**, Alrahlah A, Naseem M, Abduljabbar T.

BACKGROUND:
The aim of this study was to evaluate the surface treatment of dentin with phototherapy (ER-CR-YSGG laser) in the presence of different bonding systems on their shear bond strength and microleakage.

MATERIALS AND METHODS:
Eighty intact human third molars were divided into two groups. Forty teeth were treated with conventional flat wheel diamond bur and the remaining forty were treated with Er Cr YSGG laser (phototherapy). The two groups i.e. treated with laser (l) and group treated with abrasive bur (NL) were further divided into two subgroups of twenty samples each. Subgroup 1 was surface treated with etch and rinse (ER) and other 20 remaining samples were treated with self- etch (SE) bonding regime. Specimens from all the groups were assessed for shear bond strength and microleakage scores. Ten samples from all groups were immersed in 2% methylene blue for 24 h and assessed under a digital microscope for microleakage. Data was assessed using analysis of variance and tukey multiple comparisons test.

RESULTS:
The lowest bond strength was achieved in laser prepared phototherapy group bonded with self-etch (LSE-11.87 ± 1.21). The maximum bond strength score was observed in non-laser-etch and rinse group (NLER-23.66 ± 2.56). The highest mean microleakage was observed among laser bonded with self-etch (LSE) specimens (1.0 ± 0.13). The lowest microleakage scores were seen in group treated with non-phototherapy etch and rinse (NLER-0.4 ± 0.11) regime.

CONCLUSION:
Use of etch and rinse dentin bonding regime in combination with ER-CR-YSGG phototherapy dentin treatment has the potential for clinical application in comparison to conventional conditioning technique.

Vohra F, Alghamdi A, Aldakkan M, Alharthi S, Alturaigi O, Alrabiah M, **Al-Aali KA**, Alrahlah A, Naseem M, Abduljabbar T. Influence of Er: Cr: YSGG laser on adhesive strength and microleakage of dentin bonded to resin composite; In-vitro study. Photodiagnosis Photodyn Ther 2018 Sep;23:342-346. doi: 10.1016/j.pdpdt.2018.08.002. Epub 2018 Aug 2.

Effect of phototherapy on shear bond strength of resin cements to zirconia ceramics: A systematic review and meta-analysis of in-vitro studies

Al-Aali KA

BACKGROUND:
The present study systematically reviewed the literature to investigate the effect of phototherapy on the shear bond strength (SBS) of resin cement to zirconia ceramic.

METHODS:
Electronic databases including MEDLINE (PubMed), ISI Web of Science, Scopus, SciELO, LILACS and EMBASE until April 2018. The addressed focused question was: Does phototherapy increase the SBS of resin cement to zirconia ceramics?"

RESULTS:
A total of 8 in-vitro studies were included in the qualitative and quantitative analysis. The mean SBS for phototherapy ranged from 4.1 to 18.95 MPa while mean SBS for sandblasted zirconia-composite specimens ranged from 3.98 to 23.35 MPa in the included studies. Qualitative analysis showed 3 studies favoured application of phototherapy in significantly increasing SBS, while 4 studies indicated sandblasting showed significantly greater SBS of resin cement to zirconia ceramics. Considering the effects of phototherapy, significant heterogeneity for SBS (Q value = 136.37, $p<0.0001$, I^2 = 94.87%) was noticed among both the groups. The overall mean difference for SBS (SMD = -0.59, 95% CI = -1.99 to -0.80, p = 0.402) was not significant between phototherapy and sandblast (control) groups.

CONCLUSION:
Whether the effect of phototherapy on increasing the SBS of resin cement to zirconia ceramic is debatable. Further in-vitro studies should be performed in order to obtain strong conclusions.

Al-Aali KA. Effect of phototherapy on shear bond strength of resin cements to zirconia ceramics: A systematic review and meta-analysis of in-vitro studies. Photodiagnosis Photodyn Ther. 2018 Sep;23:58-62. doi: 10.1016/j.pdpdt.2018.05.006. Epub 2018 Jun 15.

Association of advanced glycation end products with peri-implant inflammation in prediabetes and type 2 diabetes mellitus patients

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BACKGROUND:
It is postulated that peri-implant sulcular fluid (PISF) levels of advanced glycation end products (AGEs) are higher with high glycemic levels.

PURPOSE:
In the present clinico-biochemical study, we explored the clinical and radiographic peri-implant parameters and levels of AGEs among prediabetic, type 2 diabetic (T2DM), and non-diabetic patients and to evaluate the correlation of AGEs with clinical peri-implant parameters.

MATERIALS AND METHODS:
Ninety patients were divided into three groups of 30 patients each; group 1: patients with prediabetes; group 2: patients with T2DM; and group 3: non-diabetic individuals. Clinical and radiographic peri-implant parameters assessed included plaque index (PI), bleeding on probing (BOP), probing depth (PD), and marginal bone loss (MBL). PISF was collected and analyzed for AGEs levels using enzyme-linked immunosorbent assay. Between-group comparison of means was verified with Kruskal-Wallis test and Pearson correlation coefficient for correlations of AGE levels with peri-implant parameters.

RESULTS:
Mean peri-implant PI, BOP, PD, and MBL was significantly higher in group 1 and 2 as compared with non-diabetic patients ($P < .05$). Mean PI, BOP, PD, and MBL were comparable between group 1 and group 2 patients ($P > .05$). Mean levels of AGEs in PISF were significantly higher among prediabetic and T2DM patients as compared with non-diabetic patients ($P < .05$). Between group 1 and group 2, mean levels of AGEs was significantly higher in group 2 ($P < .05$). A significant positive correlations were found between levels of AGEs and PD ($P = .0371$) and MBL ($P = .0117$) in T2DM patients, respectively.

CONCLUSION:
Clinical and radiographic peri-implant parameters were worse and levels of AGEs in PISF were increased in individuals with prediabetes and T2DM. AGEs may play an important role in peri-implant inflammation in prediabetes and T2DM.

Alrabiah M, **Al-Aali KA**, Al-Sowygh ZH, Binmahfooz AM, Mokeem SA, Abduljabbar T. Association of advanced glycation end products with peri-implant inflammation in prediabetes and type 2 diabetes mellitus patients. Clin Implant Dent Relat Res. 2018 Aug;20(4):535-540. doi: 10.1111/cid.12607. Epub 2018 Apr 6.

Educational environment as perceived by dental students at King Saud University

Samar Al-Saleh, Ebtissam M.Al-Madi, Balqees AlMufleh, **Al-Hanoof Al-Degheishem**

Objectives

Main objectives of the present study were to develop a baseline information about dental students' perception of their educational environment at the College of Dentistry, King Saud University (KSU) in Riyadh; and to investigate the role of four different variables on the students' perception.

Methods

Dundee Ready Education Environment Measure (DREEM) questionnaire was distributed among 497 undergraduate dental students, in the second week of the first semester of the academic year, from second year students to interns studying in the College of Dentistry of King Saud University (KSU).

Results

Response rate was 60.73%. Mean for the total DREEM scores was 108.42/200. DREEM subscales mean were above 50% of the total score. DREEM overall score showed no significant statistical difference among the four variables investigated, except the academic year, where the second year students scored significantly higher (118.36 ± 15.8) compared to the interns (105 ± 21.3).

Conclusion

Students' perception of educational environment in the KSU College of Dentistry was satisfactory. However, several weak areas were identified which need some attention and consideration.

Al-Saleh S., M.Al-Madi EM., AlMufleh B., **Al-Degheishem A.** Educational environment as perceived by dental students at King Saud University. SDJ 2018;30(3);240-9

Is the time an impact factor for improvement mandibular denture retention?

Amal M Elsawy, Noura A Omar, Iman A El asfahani

Complete denture is still the most common way to treat edentulism. Therefore, achieving optimum retention and stability is an essential and dynamic issue to improve the quality of life.

The aim of this study was to evaluate denture retention for one year follow up.

Material and methods: 12 patients from the outpatient clinic of Prosthodontics Department (Faculty of Dentistry, Minia University, Egypt) were included in this study. They were selected out of sixty examined patients. The age ranges were 55-67 years. They have completely edentulous ridges and having Class III broad and rounded ridge with adequate height and width according to Cawood and Howell classification of edentulous mandibles. The protocol of the study was approved by the Local Research and Ethics Committee. Patients received complete maxillary and mandibular dentures following the conventional steps of complete denture construction. A force measurement gauge was used for measuring the retention for mandibular denture. The retention was recorded after two weeks from denture insertion, three, six and twelve months. Data was statistically analyzed using t test at a significance level<0.05.

Results: The retention values for the mandibular dentures showed a statistically insignificant change with time along the follow period (p=0.065).

Conclusion: The present results showed that the time cannot be considered as an effective factor for improvement of mandibular denture retention.

Elsawy AM., Omar NA., El asfahani IA. Is the time an impact factor for improvement mandibular denture retention? J Dent Health Oral Disord Ther. 2018;9(3):250–253.

Incremental placement techniques for direct composite restorations of occlusal and proximal cavities

Khamis A Hassan, **Salwa E Khier** and **Alhanoof Aldegheishem**

Background:

Placing direct posterior composite restorations has become routine clinical practice as they offer several advantages over amalgam restorations. Several placement techniques are described in the dental literature; among which are the incremental techniques. These techniques enable reduction of the C-factor and relief of the shrinkage stresses generated upon light polymerization.

Objectives:

This paper reviews the different incremental techniques used for placing direct composite restorations in occlusal and proximal cavities. A detailed description of such techniques was presented and illustrated. The rationale for each of these techniques was highlighted, and the advantages and disadvantages were pointed out. An elaborate account of combining the incremental placement techniques with polychromatic stratification was given for the direct fabrication of “esthetic” posterior composite restorations. Research studies comparing the effects of these techniques on micro leakage, cuspal deformation, and marginal adaptation were summarized.

Methodology:

A narrative review was conducted through a literature search in the following electronic databases: PubMed, and Google Scholar. Electronic search for the following keywords was used: stratified, C-factor, shrinkage, dentin, composite, posterior, polymerization, split-incremental, centripetal, stress. The search covered the period from 2001 to 2018.

Results:

A total of 208 articles were cast, of which 129 were potentially relevant articles. 83 of these articles were dismissed for not meeting the inclusion and exclusion criteria, while a total of 46 articles were only included in this review.

Conclusion:

The practicing dentists have a variety of incremental composite placement techniques from which to select when directly restoring posterior teeth. The incremental placement techniques in combination with polychromatic stratification enable dentists to directly fabricate “esthetic” posterior composite restorations by utilizing dentin, enamel and effect shades for reproducing tooth colors.

Hassan KA, **Khier SE**, **Aldegheishem A**. Incremental Placement Techniques for Direct Composite Restoration of Occlusal and Proximal Cavities: A Review. Int J Dent Ora


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