Each year, enormous volumes of research is carried out in various scientific fields related to Dental Science, each one aiming to find solution to unanswered questions related to basic and clinical Dentistry. Quality and methodology of this research is the key to successful and widely acceptable outcomes, and is one of the most important factors in quality improvement of research production of a country.

As part of its promotional policies to improve quality of indigenous research production, The Iranian Division of International Association of Dental Research aims to provide an opportunity for exchange of valuable ideas and information between researchers in various fields of dentistry. This opportunity may be used to encourage evidence based, multi disciplinary research focusing on health care needs.

It is hoped that by improving quality and quantity of dental research production, we can take a step forward in development of scientific and technological policies in dentistry, in order to meet the health care needs of our patients, improve their quality of life by making evidence-based clinical decisions, and take a step forward towards a healthy and highly spirited society.

Dr. M Ghasemian pour  
IADR- Iran President

Prof. Ghassem Ansari  
Congress Chairman

December 2010
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Oral Presentations:
ASSESSMENT OF ACCURACY OF RIDGE-MAPPING VERSUS CT-SCAN IN DETERMINATION OF RESIDUAL ALVEOLAR RIDGE WIDTH.

Hadi A¹, Behnia H²
¹ Dept. of Prosthodontics, Shahid Beheshti University of Medical Sciences, Tehran, Iran.
² Dental Research Center, Department of Oral and Maxillofacial Surgery, Shahid Beheshti University of Medical Sciences, Tehran, Iran.

Objectives: Dental implants should be surrounded with at least 1mm of bone. Assessment of ridge width is an important step in achieving this goal. The use of ridge mapping to assess available bone levels avoids some of the problems associated with CT Scanning. The aim of this study was to assess the accuracy of ridge-mapping compared to CT-Scanning in determination of bony ridge widths.

Materials: A modified surgical stent was designed to locate the beaks of ridge-mapping calipers at the same points of the jaw during two measurements. 52 implant sites in 11 cases were studied. Measurements were made at 3mm and 6mm distances from crest of the ridge in each implant site. Two measurements were made; one on the CT-Scan and the other intra-orally.

Results: Differences between CT-Scan and intraoral measurements were not significant (P>0.05).

Conclusion: Results of this study suggest that it is possible to use ridge-mapping to determine the ridge-width instead of CT-Scan. Ridge-mapping can provide reliable information about bone levels, which can result in avoiding radiation exposure and reducing cost for patients. However it is suggested to use methods other than ridge mapping in patients with complex treatment needs.

Key words: Dental implant, Ridge-mapping, CT-Scan, Bone calipers.
OBJECTIVES: The use of self-adhesive resin cements is associated with advantages such as simple application, reduced working time, no acid gel washing and reduced risk of etching and drying. The present study evaluated the micro-shear bond strength, created by self-adhesive resin cements of Panavia-F 2.0, RelyX Unicem and Maxcem to non-precious dental alloy of Verabond II.

METHODS: In this in vitro experimental study, after casting alloy disks, their surfaces were grounded by paper, sandblasted by AL₂O₃ (15 seconds), ultrasonically cleaned (2 minutes) and dried. After placing the cylinders on blocks, the cements were packed into them and their surfaces were abraded by a cellulose strip, cured for 40 seconds and stored at 23 °C for 1 hour. Subsequently, the cylinders were cut and the specimens were stored in distilled water at 37 °C for 24 hours. Micro shear bond strength test was performed and debonding forces were analysed by using one-way ANOVA and Tukey Post-Hoc test.

RESULTS: Panavia-F 2.0, RelyX Unicem and Maxcem specimens presented micro shear bond strengths of 33.82±3.85 MPa, 31.42±4.52 MPa and 16.84±3.31 MPa respectively. There were significant differences between Panavia-F 2.0 and Maxcem specimens and also between RelyX Unicem and Maxcem groups (both: P<0.0001). No significant difference existed between Panavia-F 2.0 and RelyX Unicem specimens.

CONCLUSION: The micro shear bond strength of Panavia-F 2.0 demonstrated the highest values, while Maxcem cements showed the lowest bond strength values. Bond strength values of RelyX Unicem and Panavia-F 2.0 were capable of producing a durable bond. Moreover, use of Maxcem cement is not recommended due to its low bond strength to non-precious alloys.

KEYWORDS: Self-adhesive cements, Non-precious alloy, Micro shear bond strength.
COMPARISON OF SMOKING AMONG DENTISTS AND DENTAL STUDENTS IN IRAN

Ghasemi H1, Khami M2, Vehkalahti MM3
1 Dept. of Community Oral Health, Shahid Beheshti University of Medical Sciences, Tehran, Iran, Dept. of Oral Public Health, Helsinki University of Medical Sciences, Helsinki, Finland.
2 Dept. of Community Oral Health, Tehran University of Medical Sciences, Tehran, Iran, Dept. of Oral Public Health, Helsinki University of Medical Sciences, Helsinki, Finland.
3 Dept. of Oral Public Health, Helsinki University of Medical Sciences, Helsinki, Finland.

Objectives: In Iran, 32% of men and 5% of women are reported to be smokers. Dental professionals, as members of health profession and as role models for their patients, should be aware of health hazards of smoking. We compared smoking among general dental practitioners (GDP) and dental students (DS) in Iran.

Methods: GDPs at nationwide dental meetings in Tehran and dental students from seven randomly selected dental schools in Iran anonymously filled in a self-administered questionnaire. Smoking history and current smoking habits were inquired by the question: "Do you smoke?" separately for three different smoking habits; cigarettes, pipe, and water-pipe. Each question offered the following alternatives: No; No, I have quit; Yes, once a month or less; Yes, a few times (2-3) a month; Yes, a few times (2-3) a week; Yes, daily. Respondents with “Yes” answers were considered as being smokers. Statistical evaluation was by Chi-square test.

Results: Totally, data from 980 GDPs and 270 dental students were analyzed. The mean age of the GDPs was 37.4 years (SD=7.7) and 64% were men. For dental students, the figures were 26.1 (4.4) and 43%. Almost one quarter of respondents reported exhibiting at least one kind of smoking habit. Of the three different smoking habits, cigarettes and water-pipes were most commonly used, and pipe smoking was rather rare (3%). Cigarette smoking was more frequent in GDPs (18% vs. 13%; p=0.04) and water-pipe smoking in dental students (17% vs. 11%; p=0.02). For GDPs, any smoking was more prevalent in men than women (p<0.001). For dental students, this was the case regarding cigarette smoking. Among GDPs, water-pipe smoking tended to be more prevalent in younger subjects (p=0.06). No other significant age related differences were found.

Conclusions: Compared to the lay-population, smoking among these dental professionals was slightly less frequent. Based on their role as models for patients, non-smoking should be strongly emphasized among the dental profession.

Keywords: Dentist, dental student, smoking
OBJECTIVES: Recurrent aphthous stomatitis (RAS) represents a common mucosal ulcer of unknown etiology. Immunologic factors may play a role in pathogenesis of RAS. Epithelial growth factor (EGF) is believed to have an important role in maintaining the integrity of oral epithelium and promotion of healing of ulcers. The aim of this study was to evaluate the relationship between salivary epithelial growth factor and recurrent aphthous stomatitis.

METHODS: In this case-control study, 18 patients with RAS and 18 healthy controls without history of RAS participated. Saliva samples were collected from the control group and the case group during stages of active ulceration and remission (without ulceration). EGF concentration in saliva was measured using enzyme-linked immunosorbent assays. Statistical analysis was performed using Chi-square test, Mann-Whitney test and T-test.

RESULTS: The mean salivary EGF levels during active and remission stages were reported to be 1772.05 ± 954.13 and 2020.17 ± 996.94 pg/ml respectively, which were lower than those of healthy controls (2357.00 ±1365.96). EGF level in RAS patients during active and remission stages were not significantly different from healthy controls.

CONCLUSIONS: EGF level is decreased in RAS patients. Meanwhile its level in remission stage of RAS is lower than healthy controls without history of RAS.

KEY WORDS: Recurrent aphthous stomatitis, salivary epithelial growth factor.
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COMPARISON OF IN VITRO ANTIBACTERIAL EFFECTS OF TWO DIFFERENT MOUTHRINSES CONTAINING EXTRACT OF GREEN TEA AND 0.2% CHLORHEXIDINE

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Objectives: There is growing interest amongst oral health care professionals in natural herbal therapeutic agents that complement mechanical removal of biofilms in the oral cavity. Considering antioxidant, anti-inflammatory and antimicrobial properties of green tea, this study aimed to evaluate the antibacterial effect of mouthrines containing green tea extract versus 0.2% chlorhexidine on a selected number of microorganisms in vitro.

Methods: Antibacterial activity of both mouthrines were assessed by determining disk diffusion and minimal inhibitory concentration (MIC) methods against five microorganisms including Streptococcus Mutans, Streptococcus Sanguis, Enterococcus Faecalis, Psedomonas Aerogenosa and Eshershia Coli. Zones of growth inhibition were measured in millimeters after 24 hours of incubation at 37 °C. MIC for both agents were assessed at concentrations of 1, 2, 4, 8, 16, 32, 64, 128, 256 and 512 per milliliter and interpreted as the lowest concentration of agents that completely inhibited growth of the test species.

Results: 0.2% Chlorhexidine produced larger zone of growth inhibition compared to the mouthrinse containing green tea extract (P<0.01). Paradoxically, growth inhibition zones of tested bacteria were significantly larger in pure extract of green tea than 0.2% chlorhexidine (P<0.01). The chlorhexidine mouthrinse inhibited growth of all tested species and exhibited significantly lower MICs than the green tea mouthrinse (P<0.01).

Conclusions: Even though the mouthrinse containing green tea extract presented an in-vitro antimicrobial activity inferior to 0.2% chlorhexidine, pure extract of green tea had considerable bactericidal effect.

Keywords: Antibacterial effect, Green tea, 0.2% Chlorhexidine, Mouthrinse
EVALUATION OF SMILE ESTHETICS WITH DIFFERENT DISPLAY OF GINGIVAL LEVEL BY ORTHODONTISTS AND GENERAL PUBLIC

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Objectives: The aim of this study was to determine the esthetic perception of an orthodontist and a lay person to variations in gingival display during smile.

Methods: A photograph of smile with varying amounts of gingival exposure during smile was rated for attractiveness by laypeople and orthodontists. One smiling photograph with good dental alignment, symmetry and normal amount of gingival display was used in this study and it was digitally altered to obtain second, third and fourth photograph by varying the amount of gingival display in increasing fashion from 4mm, 6mm and 8mm respectively. These photographs were shown to laypeople and orthodontists to give the scoring of attractiveness based on five point attractiveness scale.

Results: There is a significant difference in the scores given by the orthodontists and laypeople. Compared to layperson orthodontists had given less score as the gingival exposure is increased. Comparatively more amount of gingival exposure is acceptable by the female orthodontist than the male orthodontist. Female layperson did not appreciate the increased gingival exposure in comparison to male laypersons.

Conclusion: As the amount of gingival display was increased during smile, Images were scored less attractive by orthodontists and layperson. Laypersons are found to be more tolerant to increased gingival display at smile.
COMPARISON OF IN VITRO ANTIBACTERIAL EFFECTS OF TWO DIFFERENT MOUTH RINSES CONTAINING EXTRACT OF GREEN TEA AND 0.2% CHLORHEXIDINE

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Objectives: There is growing interest amongst oral health care professionals in natural herbal therapeutic agents that complement mechanical removal of biofilms in the oral cavity. Considering antioxidant, anti-inflammatory and antimicrobial properties of green tea, this study aimed to evaluate the antibacterial effect of mouthrinses containing green tea extract versus 0.2% chlorhexidine on a selected number of microorganisms in vitro.

Methods: Antibacterial activity of both mouthrinses were assessed by determining disk diffusion and minimal inhibitory concentration (MIC) methods against five microorganisms including Streptococcus Mutans, Streptococcus Sanguis, Enterococcus Faecalis, Psedomonas Aerogenosa and Esheirshia Coli. Zones of growth inhibition were measured in millimeters after 24 hours of incubation at 37 °C. MIC for both agents were assessed at concentrations of 1, 2, 4, 8, 16, 32, 64, 128, 256 and 512 per milliliter and interpreted as the lowest concentration of agents that completely inhibited growth of the test species.

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Conclusions: Even though the mouthrinse containing green tea extract presented an in-vitro antimicrobial activity inferior to 0.2% chlorhexidine, pure extract of green tea had considerable bactericidal effect.

Keywords: Antibacterial effect, Green tea, 0.2% Chlorhexidine, Mouthrinse
ASSOCIATION OF SEVERITY OF PERIODONTITIS WITH ANGIOGRAPHIC EXTENT OF STABLE CORONARY ARTERY DISEASE: A CLINICAL AND INFLAMMATORY MARKER EVALUATION

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Objectives: Cardiovascular diseases are the leading cause of death in the west. Recently, a downward trend in incidence and mortality rates has been reported in many countries, including Iran. For years, dentists have been aware that certain characteristics are common to patients with periodontitis and patients with cardiovascular disease. Research has shown that atherosclerosis is more common in patients with periodontitis. This suggests that periodontal disease and cardiovascular disease may have similar causative pathways. The aim of the present case-control study is to examine the association between periodontal disease and CAD, utilizing angiographic data in subjects without evidence of recent acute MI, to firmly establish CAD-positive (+) and CAD negative (-) status.

Methods: One hundred and sixty five patients with medical histories suggestive of having CAD and scheduled for coronary angiography (CA) consented to enroll in this study. This included patients who had an indication to undergo CA. These indications included history of stable typical chest pain, atypical chest pain with positive myocardial SPECT scan imaging and positive exercise tolerance test. Patients undergoing CA after acute cardiac events, evaluation of previous coronary interventions i.e. coronary artery bypass grafting and percutaneous transcoronary angioplasty, or evaluation of stenoses in patients with already documented CAD, based on previous CAs, were excluded. Other exclusion criteria were: age less than 40 years, diabetes mellitus, presence of factors requiring antibiotic prophylaxis prior to a dental examination and being completely edentulous. Periodontal examination was carried out by the principle investigator under supervision by supervisors, and the following data were obtained regarding presence and severity of periodontitis: I. Bleeding on probing, II. Probing depth, III. Clinical attachment level (CAL).

Results: Periodontitis was more prevalent in patients with Coronary artery disease; it was also more diffuse in patients with CAD.

Conclusions: There was a strong association between periodontitis and CAD.

Keywords: Periodontitis, Coronary Artery Diseases
DIFFERENCES IN CEPHALOMETRIC ANALYSIS MEASUREMENTS: A COMPARISON OF COMPUTERIZED VERSUS HAND-TRACING METHODS

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Objectives: The aim of this study was to evaluate the accuracy of cephalometric measurements of radiographs using hand tracing of radiographic printouts in comparison with computerized tracing using specific software.

Methods: A sample consisting of 90 standardized lateral cephalometric radiographs was used, which consisted of male and female patients with normal skeletal and dental components in a group of 10 year olds. The radiographs were analyzed by one observer who performed the manual and computerized tracings. The observer used Dolphin Software in McNamara analysis of all 90 radiographs and then randomly retraced and rechecked the results with their own and another observer. A total of 16 anatomical landmarks of McNamara analysis were located, and angular and linear measurements were obtained. Measurement reproducibility was evaluated by calculating intraclass correlation coefficients (ICC). Differences greater than 0.05 were considered to be statistically significant.

Results: Significant differences were found between the two methods for "Inferior Airway Space" in the girls’ sample. Cephalometric measurements of most parameters were reproducible for both methods.

Conclusions: The study concluded that confidence can be increased in tracings obtained from computer-assisted cephalometric analysis, as the majority of discrepancies found between both manual and computerized methods were not statistically significant, while any differences were minimal and clinically acceptable.

Keywords: Cephalometrics, analysis, McNamara, computerized
COMPARISON OF CALCIUM HYDROXIDE, MTA AND CEM CEMENT IN STEPWISE EXCAVATION: PRELIMINARY RESULTS

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Objectives: Stepwise excavation is a conservative approach in treatment of deep carious lesions in which pulpal exposure is probable. Different materials have been suggested as liners beneath restorations. Calcium hydroxide is the most common material. The aim of this clinical randomized trial is to compare effects of calcium hydroxide, MTA and CEM cement in stepwise excavation of deep caries with no re-entry until 6 months after restoration.

Methods: 180 patients participated in this study. Inclusion criteria were existence of at least one tooth with deep caries, no evidence of irreversible pulpitis and PDL widening, and presence of a radiopaque zone at the pulpal wall. 28 patients remained participating. They were randomly divided into 4 groups: Group 1(Control): No liner applied, Group 2: Calcium Hydroxide, Group 3: MTA, Group 4: CEM cement. After evaluating response of the tooth to cold, hot, percussion and pressure, a cavity was prepared and caries excavated completely from the periphery of the cavity but it was remained on the pulpal floor or the axial wall. The liner was applied, the cavity was conditioned with polyacrylic acid, and restored with posterior glass ionomer (Fuji 9 plus, GC Co., USA). Clinical symptoms of patients were evaluated each week until 6 months and x-rays were taken after 2 and 6 months.

Results: Preliminary results of this study showed that only one case in group 2 resulted in irreversible pulpitis after stepwise excavation, which needed RCT. There has been no evidence of clinical symptoms in the remaining cases in all groups until now.

Conclusions: Preliminary results of this clinical study indicate that all the materials are promising in stepwise excavation of deep caries with no re-entry but longer evaluation times are required.

Keywords: Stepwise excavation, deep caries, MTA, CEM cement, calcium hydroxide
EVALUATION OF MOTHER’S AWARENESS ABOUT THE FIRST PERMANENT MOLAR TEETH OF THEIR CHILDREN

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Objectives: The First Permanent Molar (FPM) is at a high risk of developing caries resulting in early loss of this tooth. Ignoring FPM by parents in early mixed dentition has a great role in increasing such caries risk. The purpose of this study was to evaluate the awareness of mothers about the FPM being a permanent tooth.

Methods: A study was designed using 60 children randomly selected from 0-12 years old. Children were examined for their oral hygiene and their mothers were then questioned regarding their knowledge of their children’s dentition, FPM and oral hygiene. DMFT scores as well as occlusion were recorded.

Results: Majority (60%) of mothers were not aware of the fact that the molar teeth erupt around the age of 7, and are permanent teeth. 51.7% of mothers were not aware that FPM are not replaced once extracted. Male DMFT scores were mainly in the range of 4-6 and female DMFT scores were mainly between 7-9.

Conclusion: Majority of mothers are not aware of the primary and permanent dentition, eruption timings and importance of FPM. These findings emphasize the importance of providing information to mothers and establishment of a home based education program in order to promote oral health in children.

Keywords: Awareness, Mother, First Permanent Molar, Children
A NEW CONCEPT OF FUNCTIONAL TREATMENT FOR CL II DIV.1 MALOCCLUSIONS USING R- APPLIANCE

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Objective: To investigate the effectiveness of a newly designed R- Functional appliance to overcome the side effect of Head Gear action and flaring of lower anterior teeth during treatment with traditional functional appliances.

Methods: 18 female patients who attended a private practice in Tehran were selected. The mean age of these patients was 10.5 ±0.12 years with ANB value higher than 4, SNB value less than 78, O.J value more than 4 mm and normal mandibular growth pattern.

R-Appliance is a tooth and tissue born appliance including buccal and lingual shields, which are connected to each other through occlusal clearance during bite construction. The lingual shield should be fabricated with the least possible amount of undercut relief. The right and left lower lingual shields are connected and reinforced with a heavy round arch wire measuring 1.2mm, in order to withstand load of muscular activity. In addition to the heavy palatal wire for appliance reinforcement, a labial bow from canine to canine with a vertical loop using a 0.7 round wire was constructed. Study Models, X-rays and photographs were taken before and after 18 months of study, and Cephalometric data were observed and analyzed.

Results: Paired T-test and Wilcoxon tests showed that SNB values increased 2±1.7 (p<0.001), while ANB and 1-SN values decreased significantly. Changes in SNA, IMPA and Y- Axis were not significant as is shown in the Graph.

Discussion: Traditional functional appliances restrain maxillary growth (SNA) and procline mandibular incisors (IMPA), resulting from the action of mandibular retractor muscles. But due to less relief in R-Appliance construction bite and in order to avoid any trauma resulting from lingual tissue impingement, the patient moves the mandible into a forward position and keeps the protractor muscle active in order to counter act the side effects of retractor muscles in traditional functional appliance therapy.
EFFECT OF REFERENCE POINT NUMBER ON CURVE FITNESS TO DENTAL ARCH FORM

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Objective: Adjustment of an accurate curve to the dental arch form is an important part of orthodontic treatment. The aim of this study was to compare fitting accuracy of two curves constructed by different numbers of clinical bracket points (CBP) to the dental arch form using 4\textsuperscript{th} degree polynomial function.

Materials: In this diagnostic study, a mathematical formula associated with a polynomial function was used to reconstruct dental arch forms of 20 adolescents with normal occlusions. CBPs were marked on every tooth present in each maxillary and mandibular model (second molar to second molar) using an orthodontic bracket positioning gauge. A Coordinate Measuring Machine (CMM) was used to record the coordinates of each CBP (x, y). A curve fitting software was then operated to obtain the best 4\textsuperscript{th} degree polynomial function and associated curve fitted to all 14 CBPs. Another polynomial 4\textsuperscript{th} degree function and curve was obtained for the same models using CBPs only on central incisors, canines and second molars. Curves for each model were compared using statistical values such as correlation coefficient, standard error, sum of residuals and R\textsuperscript{2}.

Results: The statistical values for two curves fitted to each dental model had insignificant differences. There was no difference between maxillary and mandibular dental arches in this regard.

Conclusion: 6 CBPs were enough for proper fitting of 4th degree polynomial function to the dental arch form of both jaws.
DETERMINATION OF OSEOLNTERATION RATE OF IMPLANTS
PLACED USING A FLAPLESS TECHNIQUE IN 5 GROUPS OF RATS
WITH NORMAL AND OSTEOPOROTIC BONE

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Objectives: Osteoporosis is one of the age-related diseases which can influence implant success. Common therapies include Estrogen, Vit D3 and Alendronate. The purpose of this study is a histologic comparison of surrounding mucosa and bone of implants in 5 groups of rats with different treatment modalities.

Methods: Fifty one white female rats from same race and weight were divided into 2 groups. Thirty nine rats received an ovariectomy operation and the 12 remaining formed our sham operation. After 6 months, 3 rats from each group were evaluated for formation of osteoporosis. After ensuring presence of osteoporosis, the ovariectomy group was divided into subgroups of no treatment, estrogen ingestion, Vitamin D ingestion and Alendronate ingestion. Titanium screw implants with 1mm diameter and 7mm length were placed and the treatment modalities for osteoporosis began. Group 1 was the control group with normal bone. Groups 2 to 5 had osteoporotic bone, and in the following order received no treatment, estrogen, Vitamin D and Alendronate respectively. After 2 months all of the rats were sacrificed and rational analysis of osseointegration was evaluated.

Results: Alendronate and Vit D can increase incremental lines of bone. No effect was observed with estrogen.

Conclusion: within the limitations of this study Alendronate and Vit D is recommended for osteoporotic patients undergoing implant placement.

Key words: Dental implant, Osteoporosis, Estrogen, Alendronate, Vitamin D, Rats,
A COMPARISON OF STUDENTS' APPEARANCE SELF PERCEPTION AND SURGEON CONCEPT

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Objectives: Cosmetic surgery has increased during the recent decade. It is carried out because of psychosocial concerns, cultural changes in society and an increase in acceptance of cosmetic surgical procedures. An important point to be considered is patient's facial self-perception or self-satisfaction. In this study, nursing student's attitude towards their appearance and cosmetic surgery was evaluated and compared with oral & maxillofacial surgeons' concept.

Methods: This was a description-analytical and cross-sectional study, which was carried out in the nursing faculty. 150 students were selected by convenient sampling. Each student completed a questionnaire that evaluated their attitude towards their appearance and cosmetic surgery. Each student was examined by two surgeons, and the surgeons completed a checklist assessing facial harmony and need for cosmetic surgical procedures. Data was analyzed by SPSS using T-student test, Kruskul Wallis test, Wilcoxon test, and Freidman and spearman correlation coefficient.

Results: 15.4% of students had negative attitude toward their appearance, 84.6% had positive attitude and 22% of students thought they needed cosmetic surgery. There was no significant difference between the 2 surgeon’s evaluations, except in regions of eyes and nose (P>0/05). However, there were significant differences between students’ self-perceptions regarding surgery compared to surgeons’ evaluations (p<0/05).

Conclusion: Student’s attitude to their appearance was positive and acceptance of cosmetic surgery was moderate. There was significant correlation between surgeons’ evaluations (P>0/05). However, there were significant differences between students’ self-perception and surgeons’ evaluations (P<0/05). As differences exist between students’ and surgeons’ opinions, it is important that surgeons evaluate patients' self-perception and motivations during consultation appointments.

Key Words: Self perception, Cosmetic surgery, surgeon opinion
IRANIAN DENTAL STUDENTS’ ATTITUDES AND SKILLS REGARDING SMOKING CESSATION COUNSELING

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**Objectives:** To determine Iranian senior dental students’ views about and skills to provide Tobacco Cessation Counseling (TCC) in a dental setting.

**Methods:** To obtain a representative sample of senior dental students studying in dental schools in Iran, a multi-stage approach (stratified cluster random sampling) was used. A two-page self-administered questionnaire was designed and piloted, which included questions on TCC skills; interest in training; attitudes and barriers to TCC, and demographics. Chi-square tests were used to evaluate statistical significance of differences in frequencies between subgroups.

**Results:** From the total sample, 5% were self-reported current smokers. The students were far more likely to be actively involved in advising patients to quit smoking than in other TCC skills such as Assessing, Assisting and Arranging. Having better knowledge about TCC skills appears to positively influence attitudes of students toward tobacco cessation programs in the dental setting (P<0.004).

**Conclusions:** Majority of dental students considered TCC as part of the dentist’s professional role. Of these a small percentage reported having sufficient skills in providing a TCC program. Although there is clearly room for improvement, the positive attitude of dental students toward TCC is encouraging.

**Keywords:** Smoking, Tobacco cessation, Dental students, Counseling
EFFECTS OF FLAPLESS BUR DECORTICATION ON VELOCITY OF TOOTH MOVEMENT IN DOGS

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Objectives: To elucidate the effectiveness of a new surgical technique for acceleration of orthodontic tooth movement and to elucidate any potential complications.

Introduction: Different supplemental surgical procedures that are effective in reducing orthodontic treatment time have been recommended. Considering the need for reducing orthodontic treatment time and the invasive nature of all other surgical techniques proposed, we propose a new technique called flapless bur decortication. There is no requirement for flap retraction, and with the aid of a fine surgical fissure bur, small holes are formed along mesiobuccal, distobuccal and buccal bone of the tooth to be moved and extracted tooth. Because all of the holes are made in attached gingival tissue, there is minimal risk of complications.

Methods: This study was designed as a split-mouth study. The left and right maxillary first premolars of five dogs were extracted. An A-NiTi closed coil spring was used for premolar protraction in both sides using an absolute anchorage. Decortication was performed on one side of each dog and the other side was used as the control group (i.e. non-decortication side). The distance between each canine and second premolar tooth was measured monthly, and the monthly tooth movements were calculated. The site of decortication was evaluated regarding postsurgical complications.

Results: The case teeth moved more than their controls during the first month and less than their controls during the third months. The difference between case and control movement was not significant after three months. We did not find any postsurgical complications.

Conclusion: Based on the results of our study, the proposed method called 'flapless bur decortication' can be considered for increasing the rate of tooth movement in humans. It is assumed that the indication can be increasing rate of tooth movement in the short term, but in the long run, it would probably have little effect on the rate of tooth movement.

Keywords: Decortication, Corticision, Orthodontic tooth movement
DOES SALIVARY NITRIC OXIDE LEVEL REFLECT SUCCESS OF SCALING & ROOT PLANNING FOR PERIODONTITIS

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**Objectives:** Nitric oxide (NO) is synthesized either by NO synthase (NOS) from L-arginine or recycled by entero-salivary circulation from ingested nitrates and nitrites. NO is a free radical and exerts a vast range of biochemical immune functions ranging from protective to destructive. We aimed to assess the salivary nitric oxide level changes in patients with moderate chronic periodontitis who underwent scaling and root planning (SRP).

**Methods:** Patients diagnosed with probing attachment loss depth \(\leq 4\)mm and more than 2mm in >30% sites were included in the periodontitis group (PG). Periodontal index (PI), gingival index (GI), clinical attachment loss (CAL), bleeding index (BI), and probing pocket depth (PPD) were recorded at baseline (day\(_0\)) and 14 days after SRP (day\(_{14}\)). Besides, un-stimulated salivary NO was measured with colorimetric Griess reaction at days 0 and 14. Healthy individuals with PPD \(\leq 2\)mm were included as the control group (CG).

**Results:** 17 and 27 individuals were enrolled as PG and CG respectively, during February-November 2010 at Babol Dental School. Mean age was 37.47±9.12 and 26.92±4.61 in GP and CG respectively. There were 10 (58.8%) females and 7 (41.2%) males in GP and 16(59.3%) females and 11(40.7%) males in CG. At day 0, in the periodontitis group, Baseline PI (1.68 ±0.27), GI (1.78± 0.24), BI (1.61± 0.32), PPD (2.82± 0.41), CAL (2.92 ±0.35), NO (169± 86 mg) were recorded. Significant improvement was observed in PI (0.57± 0.32, \(P<0.001\)), GI (0.86± 0.1, \(P<0.001\)), BI (0.9 ±0.13, \(P<0.001\)), PPD (2 ±0.27mm, \(P<0.001\)), CAL (2.33± 0.86, \(P<0.001\)) and NO (79 ±71, \(P<0.001\)). At day 0, NO levels were significantly higher in the periodontitis group compared to the control group (63± 27, \(P<0.001\)), even after adjustment for gender and age. In addition, a linear regression model was built and revealed that PPD was the best predictor to estimate salivary NO levels (\(P<0.001\)). In addition, number of teeth with PPD \(\geq 3\)mm (\(r=0.598, P<0.001\)), number of teeth with PPD \(\geq 4\)mm (\(r=0.495, P<0.001\)) or number of teeth with at least one periodontal pocket \(\geq 5\)mm in any aspect of tooth (\(r=0.353, P<0.001\)) were significantly correlated with salivary NO levels.

**Conclusion:** Our findings support the hypothesis of oxidative system involvement in periodontitis. Salivary Nitric oxide is a sensitive inflammatory biomarker which can aid the clinician in prognostic estimation, diagnosis, and treatment course response during both surgical and non-surgical periodontal treatment.

**Keywords:** saliva, nitric oxide, periodontitis, scaling and root planing, free radical
Assessment of bite-wing radiography accuracy in pulpal exposure diagnose of extensive carious teeth

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Objectives: The aim of this study was to evaluate, whether the bite-wing radiography is capable of showing pulpal exposure. Considering that bite-wing radiography is one of the conventional radiographies to diagnose proximal carries, it has been a question if this radiography could help us to predict the pulpal exposure.

Methods: Bite-wing radiographies taken from patients with intra-dentinal carries, coming to radiographic department of dental Azad university of Tehran. Patients were categories into two groups, the first group had positive predictions of pulpal exposure & the other had negative predictions. After removing whole infected dentine, teeth pulpal exposure & without exposure were determined.

Results: According to the result of this study, the sensitivity & specificity of bite-wing radiography were 83% & 71%, respectively.

Conclusion: Bite-wing radiography can be more useful to diagnose the pulpal exposure in those with negative prediction rather than the positive predictions.

Key words: bite-wing radiography, pulpal exposure
ID#:2010044

The effect of 3 self etching resin cements on microleakage of ceramic inlays to human dentine

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\textbf{Objectives:} This in-vitro study compared the ability of 3 different self etching resin cements; Panavia F2, Maxcem and Biscem in reducing microleakage in class 5 ceramic inlays.

\textbf{Methods:} 30 facial class 5 cavities were prepared in 30 freshly extracted human premolar teeth which were randomly divided into 3 equal groups of 10 each. Impressions of the cavities were taken using Panasil impression material, following which Alumina in-ceram inlays were casted. Inlays were cemented onto the cavities in each group according to manufacturer's instruction. The specimens were then subjected to thermo cycling for 1000 cycles (5C±55C) with 30 seconds of dwell time. The teeth were coated with 2 layers of nail varnish except for the restoration and its 1mm periphery. They were then immersed in 50% AgNo3 for 6 hours and in an X-Ray developing solution for a further 2 hours. The teeth were then cut buccolingually to assess for dye penetration using a stereomicroscope (20X). Marginal penetration was scored on a 0-4 scale.

\textbf{Results:} Statistical analysis using kruskal-wallis test revealed significant difference between Panavia F2, Biscem and Maxcem, with superiority of Panavia F2 on occlusal margins. Analysis also revealed no significant difference between occlusal and gingival areas using Maxcem and Biscem groups, whereas Panavia F2 showed significant difference between microleakage values of occlusal and gingival margins. There was no significant difference in microleakage values of the gingival margin between Panavia F2 and Biscem on one side, and Maxcem and Biscem on the other side. However, Panavia F2 showed a significant difference compared to Maxcem in regards to gingival margin microleakage, with superiority of Panavia F2.

\textbf{Conclusion:} Based on the limitations of this study, none of the cements could completely prevent microleakage. Panavia F2 prevented microleakage more than Maxcem and Biscem on the occlusal marins, and could prevent more microleakage on the gingival margin compared to Maxcem. Prevention of microleakage on the occlusal areas is more than gingival areas when using Panavia F2.
Effect of self-etching adhesives on the bond strength of light-curing glass ionomer cements to composite resin

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Objectives: Adequate bond strength between glass ionomer cement and composite via bonding agent is essential for a successful sandwich restoration. The present study aimed to assess the effect of different self-etch bonding agents on the bond strength of light-curing glass ionomer cement to composite.

Methods: Fifty specimens (6x4x2 mm) were made using glass ionomer cement (Fuji II LC, GC, Japan) and divided into five groups. Specimens were treated with the following five bonding agents: Adper prompt L-Pop (3M ESPE, USA), SE bond (Kuraray, Japan), AdheSE (Vivadent, Ivoclar, Liechtenstein), Protect bond (Kuraray, Japan) and Single bond (3M ESPE, USA) according to the respective manufacturer recommendation and bonded with composite Z100 (3M ESPE, USA). At 24 hours, specimens were subjected to microshear test at a crosshead speed of 1 mm/min. Data were analyzed using one-way ANOVA (p<0.05).

Results: Mean values and standard deviations (Mpa) were as follow: Fuji II LC + Adper prompt L Pop (15.14±0.90); Fuji II LC + SE bond (20.03±1.19); Fuji II LC + AdheSE (16.03 ±1.03); Fuji II LC + protect bond (16.24±1.98); Fuji II LC + Single bond (16.03±1.49). Results indicated there are no significant differences between groups.

Conclusion: Different self-etch bonding agents used in this study show same bond strength of light-cured glass ionomer cement to composite.
BIOMECHANICAL EFFECTS OF SURGICALLY CUT DIRECTION IN UNILATERAL MANDIBULAR LENGTHENING BY DISTRACTION OSTEOGENESIS USING A FINITE ELEMENT MODEL

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Objectives: Analyzing changes made during DO in asymmetric mandibles using a 3-D computer model.

Introduction: Although precise prediction of results before DO is of paramount importance, performing 3D simulations for all DO patients is not practical. Therefore, formulation of general guidelines based on the factors affecting three dimensional results of distraction treatment is recommended.

Methods: This study was performed on a three dimensional model of a desiccated mandible, based on a finite element method. Oblique, vertical and horizontal cuts were made on the right side of the mandible. The distractor pins were opened first for 15 mm and then for 30 mm. Amount and direction of movement of proximal and distal segments and the displacement of pogonion were evaluated in all three planes of space.

Results: The movements of proximal and distal segments are shown in multiple finite element diagrams. In the distal segment, maximum displacement in the pogonion occurred in the vertical cut. In the proximal segment, maximum displacement occurred in the coronoid process in horizontal and oblique cuts in a superior direction. The condylar process rotated in a clockwise direction when the vertical cut was used and the coronoid process moved inferiorly.

Conclusion: In order to make the gonial angle more prominent, we should use a vertical surgical cut. Conversely, a horizontal cut is used to lengthen the ramus. In vertical and oblique cuts, the distal segment and pogonion are displaced superiorly, whereas in horizontal cuts, this landmark is displaced inferiorly. Therefore, vertical and oblique cuts can be used in patients with long anterior facial heights, and considering all other conditions as being equal, horizontal cuts are preferred to be used in short-faced patients. If mandibular body length is very short, it is better not to use a horizontal cut because this cut does not result in lengthening of the distal segment in the antero-posterior dimension.

Keywords: Distraction Osteogenesis, Mandible, Asymmetry.
EFFECT OF WATER ON FLEXURAL STRENGTH OF SILORANE AND METHACRYLATE BASED COMPOSITES: A PRELIMINARY REPORT

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Objectives: The purpose of this study was to evaluate the effect of water on flexural strength of silorane-based and methacrylate-based low shrinkage composite resins.

Methods: Two low shrinkage composite resins: Filtek silorane (3M/ESPE) and GC Kalore (GC-International) were studied. Filtek Z-250 (3M/ESPE) was used as control. For each material, 20 bar shaped specimens (2×2×25 mm) were prepared and divided into 4 groups, each comprising 5 specimens. The specimens were stored at 37±1°C under two different conditions: wet or dry. The specimens were subjected to the three point bending test with a cross-head speed of 1.0 mm/min immediately after preparation and at 24h, 1 week and 1 month after preparation. Three way ANOVA and Tukey tests were used for statistical analysis (P < 0.05).

Results: Water storage resulted in decreased flexural strength for all materials tested. The strength of all materials improved as time of storage increased regardless of storage media. Irrespective of the media and time of storage, Z-250 exhibited the highest flexural strength among the materials tested.

Conclusions: Water storage affected the strength of Silorane based composite resins in a manner similar to that of its methacrylate counterpart.

Key words: Flexural strength, Kalore, Silorane, Time, Water storage
A LONGITUDINAL EVALUATION OF HEAD AND NECK POSTURE IN ADOLESCENTS FROM 9 TO 11 YEARS OLD

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Objectives: Significant changes of head and neck posture occur during growth period in adolescents. Considering these growth induced changes along with that of orthodontic treatment is important to make a realistic judgment on treatment results. The aim of this study is to determine changes of head and neck posture in adolescents from Qazvin city during 2 years of growth, from 9 to 11 years old.

Methods: In this longitudinal study, 58 adolescents (29 females and 29 males) with normal occlusion were selected from the archive of Qazvin dental school. The lateral cephalograms which had been taken in natural head position (by using a mirror and looking at their own eyes) were traced and 12 angular and linear measurements of the head and neck posture were calculated during two years. The changes of head and neck posture were analyzed separately in male and female individuals and statistically assessed by paired t test.

Results: Head and neck posture measurements showed a significant change in females but insignificant in male adolescents during 2 years. Angular measurements between cranial base (SN) and true vertical line showed a significant increase in females (p=0.002) as well as measurements between cervical spine and true horizontal line (p=0.008). But the measurements between cervical spine and skull remain almost steady during two years of growth.

Conclusion: These findings suggest neither flexion nor extension happened in this period of growth but there was a clockwise rotation of head and neck as a whole without altering their angulation to each other. It could be explained by increasing mandibular length and subsequent forward shift of center of gravity of skull.

Keywords: Natural Head Position (NHP), adolescent, cephalometry, growth
HISTOLOGICAL EVALUATION OF HUMAN PULPAL RESPONSE AND DENTINAL BRIDGE FORMATION AFTER DIRECT PULP CAPPING WITH MTA AND CALCIUM HYDROXIDE: A RANDOMIZED CLINICAL TRIAL

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Objectives: When a pin point pulpal exposure occurs, direct pulp capping with special dental materials can stimulate formation of a dentinal bridge prior to restoring the cavity. The golden standard has been using calcium hydroxide, although this agent has some weak points such as solubility and formation of tunnel defects in dentinal bridge that affect long term sealing of restorations. The current study compares effects of two different pulp capping agents (calcium hydroxide and Mineral trioxide aggregate) on human pulpal response and formation of dentinal bridge.

Methods: In this experimental study, 16 human premolars were used. After exposure of the buccal pulp horn through an occlusal cavity, the teeth were divided into 2 groups according to the direct pulp capping material used: Group A: (no=8) received chemically set calcium hydroxide (Dycal), and Group B: (no=8) received ProRoot MTA as the pulp capping agent. After 6 weeks the teeth were extracted and evaluated according to dentinal bridge formation.

Results: Results showed no significant difference between calcium hydroxide and MTA in terms of pulp inflammation, dentinal bridge formation and clinical symptoms.

Conclusion: MTA seems to be an ideal replacement for calcium hydroxide as a direct pulp capping agent since this novel material does not have the short comings of calcium hydroxide.

Keywords: Pulpal Exposure, Pulp Cap, Dentinal Bridge, MTA
ID#:2010053

TENSILE BOND STRENGTH OF COMPOSITE TO DENTINE IN BUR-CUT, ER:YAG AND ER;CR:YSGG PREPARED-CAVITIES

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Objectives: The purpose of this study was to evaluate the effect of Er:YAG and Er;Cr:YSGG laser on tensile strength of composite resin to dentine in comparison with bur-cut cavities.

Methods: fifteen extracted caries-free human third molars were selected. The teeth were cut under the occlusal pit and fissure and randomly divided in 3 groups. Five cavities were prepared by diamond bur, 5 cavities prepared by Er:YAG laser and the other group prepared by Er;Cr:YSGG laser. Then, all the cavities were restored by composite resin. The teeth were sectioned longitudinally with Isomet and the specimens prepared in dumbbell shape (n=36). The samples were attached to special jigs and the tensile bond strength of two groups was measured by universal testing machine at a speed of 0.5 mm/min. The results of three groups were analyzed with Kolmogorov-Smirnov test.

Results: The means and standard deviations of tensile strength of bur-cut, Er:YAG laser-ablated and Er;Cr:YSGG laser-ablated dentine were 5.04 ± 0.93, 13.37± 3.87 and 4.85 ± 0.93 MPa.

Conclusion: There is little difference in tensile bond strength of composite resin in Er;Cr:YSGG lased-prepared cavities in comparison with bur-cut cavities but in Er:YAG laser group shows higher bond strength than the other groups. Erbium laser can be an alternative device in restorative dentistry.

Keywords: Er;Cr:YSGG laser, Er:YAG laser, Resin composite, Tensile bond strength.
X-RAY DIFFRACTION AND SCANNING ELECTRON MICROSCOPE INVESTIGATION OF ROOT CANAL WALLS AFTER FINAL IRRIGATION WITH 17% EDTA OR BIOPURE MTAD BEFORE AND AFTER LASER IRRADIATION

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Objectives: This in vitro study evaluated the effect of diode laser irradiation on crystallographic characteristics of root canal walls after final irrigation with either 17% EDTA or MTAD, using x-ray diffraction (XRD) and a scanning electron microscope (SEM).

Methods: Samples were prepared and divided into six groups (ten teeth in each). The teeth were irrigated with sterile saline (group 1) as control, 17% EDTA (group 2) and MTAD (group 3). Each group was further divided into two groups, either receiving diode laser irradiation at a wavelength of 810 nm and an output power of 2 W for 5 × 5 seconds or no irradiation.

Results: SEM micrographs revealed closed dentinal tubules in the control group, while in unlased MTAD and EDTA groups clean root canal walls were evident. Erosion was mostly seen in EDTA-treated teeth and after laser irradiation it increased throughout the canal dentin. After irrigation and laser irradiation, the XRD spectrums indicated that there was a little change in the EDTA group.

Conclusions: EDTA made changes in the mineralization of dentin due to its higher accumulation on the dentinal wall surface and produced significant degrees of erosion in comparison with MTAD by changing the physical properties of root canal dentin inner surface. These undesirable changes can be enhanced by further laser irradiation.

Keywords: Diode laser, EDTA, MTAD, Scanning electron microscope, X-ray diffraction
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**Objectives:** Administration of local anesthetic is a preliminary step in dental treatments. The aim of this study was design of a mechanical based dental injection syringe to administer controlled volumes of local anesthetic solution.

**Methods:** NDIS administers $\frac{1}{4}$ (0.45ml) of a cartridge volume at each step of injection.

**Results:** NDIS reduces the required injection force to $1/4^{th}$ of conventional syringes. Lower injection rate and volume allow smoother administration of local anesthetics.

**Conclusion:** Patient’s pain is reduced since the balloon effect at site of injection is lowered. NDIS eliminates any possibility of the cartridge bursting during injection, which may happen when administrating conventional forceful injections. NDIS is autoclavable. It is registered as a new innovation in dentistry in Iranian National Patent Organization.

**Keywords:** New Dental Injection Syringe, Anesthetics, Injection
TWO YEAR DEVELOPMENTAL CHANGES IN UPPER AIRWAY ANATOMY IN A GROUP OF NORMAL IRANIAN ADOLESCENTS

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Objectives: Posterior airway space, as measured by lateral cephalometric radiography, is highly correlated with measurements using three dimensional CT-scan, with 92% accuracy in predictability. Therefore, use of lateral cephalograms in normal subjects for finding upper airway norms in order to assist diagnosis of obstructive problems will have adequate validity. The purpose of this study was assessment of two year developmental changes of upper airway anatomy in 9 to 11 year-old Iranian students with normal occlusion in the city of Qazvin.

Methods: In this descriptive longitudinal study, 58 individuals (31 females, 27 males) with normal occlusion were selected from the archives of Qazvin Dental School patient records. The two lateral cephalograms which had been taken in NHP were scanned, and 4 angular, 11 linear parameters and total nasopharyngeal area were calculated during two years after superimposition on true vertical radiographs. Furthermore, a special software was programmed for airway evaluations. Changes were assessed by paired t-test and gender effects were studied by student t-test.

Results: Significant increase was observed in posterior height of nasal cavity, vertical diameter of choanal openings, nasopharynx floor length, nasopharynx total depth, anterior cranial base length, total cranial base length, angle of nasopharyngeal depth, vertical angle of nasopharynx and nasopharyngeal area. The stable measurements were length of pharyngeal clivus, roof angle of nasopharynx, posterior cranial base and anterior cranial base palatal angle.

Conclusion: Nasopharyngeal dimension and inclination increases significantly from 9 to 11 years in Iranian adolescents, with no difference between both sexes.

Keywords: Diagnosis, Digital image analysis, Orthodontics, Nasopharynx.
FACIAL PROFILE ATTRACTIVENESS IN SAGITAL DIMENTION USING COMPUTERIZED SOFTWARE PREDICTION IN IRANIAN POPULATION

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Objectives: The aim of the orthodontic treatment is to achieve a well-balanced and proportional face and well-arranged dental arches in an optimum occlusal relationship to enhance the facial esthetics and attractiveness. The present study assessed the perception of facial attractiveness by means of profile digital images in the sagittal plan.

Methods: 80 patients of 4 different category of orthodontic problems including class II, class III, open bite and deep bite were participated. The lateral cephalometry radiographs were digitized and systematically altered regarding the location of the mandible in the sagittal plan, using Dolphin Imaging software program (version 10.0). Five manipulated profile images in addition to the patients' own profile were presented to the 3 type of the raters including laypersons, orthodontists and surgeons. The facial attractiveness of the profile images were assessed using a 6-scaled visual analogue scale. The data were analyzed using Kruskal wallis and Mann whitney U tests.

Results: The most attractive facial profiles were normal images in both male and female patients as assessed by all raters (mean ranks of 2.04 in class II, 2.18 in class III). Severe facial profiles in both class II (mean ranks of 5.61) and class III patients' images (mean ranks of 5.43) ranked as the least attractive. The increased deviations from the normal proportions, the rankings decreased and the raters showed more differences at their scores. No significant differences were found in the overall rankings of male and female profile images between female and male raters.

Conclusion: Laypersons and dental specialists' perception of the facial profile attractiveness in sagittal plan were similar to each other in some degree; however, some differences existed at their ideas. Dental specialists can use the results of the beauty perception by the laypersons to modify the treatments and consequently increase the patients' satisfaction.

Key words: Facial profile attractiveness, Sagital plan, Software prediction program
VALIDATION OF THE PERSIAN VERSION OF CHILD-OIDP INDEX

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Objectives: Given the current need for studies evaluating oral health related quality of life in children, this study was designed to linguistically and culturally adapt Child-OIDP index to Persian language, and to test validity and reliability of the prepared Persian version of the Child-OIDP index for assessment amongst 11-14-year-old Iranian children.

Methods: In this cross-sectional study, the Child-OIDP index was translated into Persian, according to suggested cross-cultural and validation methodology and following close collaboration with UCL. Psychometric properties of the index were evaluated in terms of face, content and construct validity in addition to internal consistency and test-retest reliability. To do this, a sample consisting of 384, 11-14-year-old Iranian children completed the Persian version of Child-OIDP index during face to face interviews, was clinically examined and also completed a self-administered questionnaire regarding demographic information and oral behaviors.

Results: The Persian version of child-OIDP demonstrated excellent validity and reliability. Cronbach’s alpha value was 0.59, with corrected item-total values of between 0.161 and 0.379, and with no alpha if-item-deleted values were greater than 0.59. The test-retest analysis gave an intra-class correlation coefficient (ICC) value of 0.78. The index showed significant associations with perceived oral treatment needs and perceived satisfaction with the mouth. (P<0.001). 53.9% of the 384 children reported dental problems during the previous 3 months, leading to a negative impact on daily performances.

Conclusion: it was concluded that the Persian version of Child-OIDP index is a valid and reliable measure of oral health-related quality of life that can be applied to Iranian children.

Keywords: Child-OIDP index, Oral Health Related Quality of Life, validity, reliability.
ORAL IMPACTS ON DAILY PERFORMANCE OF IRANIAN 11-14 YEAR-OLD ADOLESCENTS, USING CHILD-OIDO INDEX.

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Objectives: Regarding the recent need for studies evaluating oral health related quality of life (OHRQoL) of children in developing countries, the aim of this study was to evaluate prevalence, intensity and extent of impact of oral problems on quality of life of 11-14 year old Iranian adolescents.

Methods: In this cross-sectional study, a sample consisting of 384 11-14-year-old Iranian children participated. The Persian Child version of the Oral Impacts of Daily Performances (Child-OIDP) was used to assess oral impacts in close collaboration with UCLA University. Children completed a survey during face to face interviews, were clinically examined and also completed a self-administered questionnaire regarding demographic information and oral behaviors.

Results: 53.9% of the 384 children reported dental problems during the previous 3 months, leading to an impact on daily performances according to the Child-OIDP index. The most prevalent performance affected was eating and cleaning the mouth. The most prevalent oral problems leading to an oral impact were tooth sensitivity and bleeding of gums. 32.9% of children reported severe to very severe intensity of oral impacts, while 28% reported moderate and 31.9% reported little to very little intensity of impacts.

Conclusion: Oral impacts on daily performance were moderately common among the participating Iranian school children. The pattern of impacts varied according to the type of self-perceived oral problem.

Keywords: Child-OIDP index, Oral Health Related Quality of Life, validity, reliability, prevalence.
IMAGE FINDINGS OF ODONTOID CERVICAL FRACTURES: A SYSTEMATIC REVIEW

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Objectives: Increasing motor vehicle accident injuries have led to an increase in cervical spine trauma associated with neurologic complications and disabilities. Odontoid fractures are the most common upper Cervical Spine fractures; flexion loading is the cause in the majority of patients, and results in anterior displacement of the dens. The goal of this study was to systematically evaluate the image findings of Odontoid injuries.

Methods: This study was designed to review systematically the articles related to image findings of odontoid fractures. PubMed was the source of majority of papers. The search strategy included articles published during years between 01-01-2000 to 15-06-2009. Articles which contained desired keywords such as Odontoid, dens, injur* and finding* in their titles and abstracts were selected.

Results: In primary PubMed search, 44 articles and one book were retrieved. Then, titles and abstracts were studied and 9 articles related to the study were selected. Each of the articles was studied twice by two independent reviewers and common opinions were recorded. The results showed that MRI is as reliable as multi-slice detector CT. Also, in MR imaging of dislocated type 2 fractures, hematoma was seen in prevertebral soft tissues.

Conclusions: Odontoid fractures have different image findings; knowledge of image characteristics is a valuable tool for prevention of neurologic complications and in effective treatment of these patients.

Keywords: Odontoid fractures, Systematic review, Image findings
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FINITE ELEMENT ANALYSIS OF DISTRACTION OSTEOGENESIS FOR CLEFT PALATE CLOSURE (PART I)

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Objectives: Current methods of cleft palate closure result in scar formation and later growth impairment. Distraction osteogenesis (DO) might be an effective means to repair or at least reduce the size of wide clefts. To investigate the biomechanical aspects of distraction osteogenesis with osteotomy line in affected side of palate, a finite element study was designed.

Methods: DO simulation was applied to reduce the size of a unilateral hard palate cleft on a 3D model of maxilla. The created cleft was ~6mm wide and 50mm long. The osteotomy line was assumed on the affected side. DO screw was placed on two different positions; anteriorly (model 1) and posteriorly (model 2). A five-step linear static analysis with 1mm displacement in each step was performed on the prepared 3D solid models. Displacement pattern of the bony island in each of the two models (posterior vs. anterior position), reaction forces at DO locations and Von-Mises stress were estimated.

Results: The movement of the bony island in model A2, shows that the rotation center of the bony island was located beyond the posterior edge of the hard palate. Model A1 showed a curved-shape displacement.

The maximum reaction force in the first step in model A1 is significantly less than A2.

Conclusion: With the ostetomy line in the affected side of the palate, different positions of DO screw would result in different displacement pattern & different reaction forces.

Keywords: Cleft palate, Distraction osteogenesis, finite element
EFFECT OF NANOCRYSTALLINE HYDROXYAPATITE IN ARTIFICIAL SOCKET PRESERVATION ON ORTHODONTIC TOOTH MOVEMENT

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Objectives: To determine the effect of socket preservation using Nanocrystalline HA following orthodontic tooth movement and bone remodeling around a prepared defect site.

Methods: In this experimental study, eight different prepared defect sites were investigated on four dogs. Defects were prepared in the lower jaw using implant drills, with one side serving as control and the other side serving as the experimental side. Prepared defect sites were preserved using bone substitutes (Nanocrystalline HA) in the experimental group. The first premolar tooth was pulled towards the prepared defect by a NiTi closed coil spring (Ormco®), and values of orthodontic tooth movement were compared between the two groups at the end of twelve weeks. Socket preservation and its influence on dimensions of the defect site (alveolar bone) were examined clinically. Statistical package of SPSS (Mann-Whitney-Wilcoxon test) was used for purpose of comparison.

Results: The amount of tooth movement was 1.4±0.13 mm in the control site and 1.07±0.11 mm in the experimental site. Significant difference existed between the two groups (p<0.05).

Conclusion: Administration of Nanocrystalline Hydroxyapatite for socket preservation can reduce the amount of tooth movement in conjunction with preserved dimensions of alveolar bone.
THE PRECEDE-PROCEED MODEL IN ORAL HEALTH PROMOTION

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Objectives: To evaluate usefulness of the PRECEDE-PROCEED Model in designing and planning an oral health promotion program based on the determinants of health among Iranian pre-adolescents.

Background: Health behavioural models have been employed to explain human behaviour and to promote individual health. Some theories stress the situational characteristics and others focus on the significance of psychological factors. A well-developed model currently being used to combine various behavioural models in order to achieve greatest impact on the target population is the PRECEDE-PROCEED Model.

Methods: The original PRECEDE-PROCEED model was modified according to the background situation of the study population and adapted for clinical oral health outcomes. Based on the modified model, a cross-sectional study was designed to find out determinants and their impacts on clinical outcomes among a random sample of Iranian preadolescents (n = 457). Mother’s oral health-related factors were explained as "Reinforcing factors". Parent's education was attributed to the "Enabling factors". Then, according to these determinants, a 3-month school-based oral health trial was planned and implemented among the preadolescents. Improvement in gingival health as clinical outcome was compared between the intervention groups with and without parental involvement.

Results: Baseline data showed that the PRECEDE-PROCEED model can comprehensively demonstrate the determinants of oral health among Iranian preadolescents. Using the model helped in determination of the role of “important others” in children’s oral health. Gingival health improved among the preadolescents in intervention group with parental involvement (OR = 7.7) compared to their counterparts (OR = 1.8). The model fully supported the oral health program to improve preadolescents’ oral health.

Conclusions: Designing and planning an intervention according to this theoretical model can provide a comprehensive understanding for facilitating preadolescents’ oral health.

Keywords: PRECEDE-PROCEED model, Oral health promotion, Oral health study, Determinants of health
DENTAL RESEARCH IN IRAN: A BIBLIOMETRIC ANALYSIS OF ELECTRONICALLY AVAILABLE LITERATURE

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Objectives: To carry out a bibliometric analysis of all electronically available dental literature in Iran from 1983 to 2006, in order to study availability and examine trends.

Methods: Accessing all electronically available Iranian dental articles published in domestic journals, and comparing the results with Iranian dental articles published in Pubmed. The following data were collected from each article: name of journal, year of publication, number of authors, gender of corresponding author, academic levels of authors, main language of article, language of abstract, study environment, population studied, field of dentistry, type of article, design strategy, design of study, and analysis design.

Results: In terms of publications in domestic journals, a total of 1,994 dental articles were electronically available, published in six different dental journals in Iran. Majority of articles, 84.5%, were original studies. In terms of design strategy, 49.7% of studies were cross-sectional, 35.5% were prospective, and 14.8% were retrospective studies. The main language of 99.3% of articles was Farsi, and 0.7% was English. Majority of articles, 38.7%, were written by two authors. Gender of corresponding author in 66.7% of articles was male, and in 33.3% of articles was female. There was an increasing trend in percentage of original studies, clinical trials and female corresponding authors. In terms of publications in Pubmed, a total of 75 dental articles from Iran were electronically available. Significant differences were revealed in terms of number of authors, study types and design strategies when compared to publications in domestic journals.

Conclusion: A number of encouraging trends were identified, which is a reflection of improvements in quality of domestic electronic dental literature. However, as the majority of articles are written in Farsi, availability of research evidence to the international community is limited. Overall, results of this study indicate the need for future bibliometric analyses which can be used to construct a comprehensive database that will assist in evidence-based clinical decision making.

Key words: Bibliometric, research papers, dental literature
EFFECT OF MATERNAL ANXIETY ON CHILD BEHAVIOR IN THE DENTAL CLINIC

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Objectives: Difficulties in child patient management may occur when the mother is also anxious and frightened of dental treatment. Although some mothers are able to contain their dental fears, there are those who experience such an intensity of effect that it increases their child’s anxiety and can disturb the developing treatment alliance. The aim of this study was to assess levels of mother’s anxiety and its relation to their child’s behavior in the dental clinic.

Methods: A random sampling system was used to include a total of 80 children (aged 2-12 years) with their mothers. Assessment was carried out by interviews using questionnaires for mothers, and visual analogue scale with pictorial and numeric anxiety assessment for children.

Result: 60% of children with mothers who had a relaxed status when remembering past dental experience were relaxed. 47.5% of mothers believed that the child is the one member of family who has fear of visiting the dentist.

Conclusion: 48% of children who had educated mothers exhibited scores 8-10 in the visual analogue scale, indicating a higher level of cooperation.
OROFACIAL CLEFTS AND RISK FACTORS: A BASED CASE — CONTROL STUDY IN IRAN

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**Objectives:** Nonsyndromic cleft lip with or without cleft palate (CLIP) or cleft palate only (CPO) are orofacial clefts with multifactorial etiology. These include environmental factors and heterogeneous genetic background. Therefore, studies on different and homogenous populations can be useful in detecting related factors. The aim of the present study was to evaluate possible risk factors in patients with non-syndromic clefts in Tehran / Iran.

**Methods:** Data was collected from 300 patients and 300 controls during years 2005-2010. Binary logistic regression analysis was used to calculate relative risk using odds ratio (OR) and ±95 confidence interval (%95 CI).

**Results:** Statistical analysis suggest that low maternal age (OR=0.825; %95CI, 0.593-1.147), low socioeconomic status (OR=0.23; %95CI, 0.007-0.074), maternal systemic disease (OR=0.364; %95CI, 0.152-0.873) and passive smoking (OR=0.1613; %95CI,0.0430-0.874) increased risk for CUP and CPO.

There was a significant difference in iron and folic acid use during pregnancy when the case and control groups were compared (P<0.001).

**Conclusion:** In assessing risk factors for orofacial clefts, lack of folic acid supplementation, low maternal age, maternal systemic disease and passive smoking should be considered.

**Key words:** orofacial cleft/risk factor/Iran
NASAL AIRWAY EVALUATION AFTER LEFORT 1 OSTEOTOMY

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Objectives: The aim of this study was to investigate functional and anatomic changes in nasal airway after lefort 1 osteotomy.

Methods: 25 patients were included in this study. The data were classified according to the direction of the maxillary movement: in group 1 the maxilla was repositioned superiorly; in group II the maxilla moved anteriorly and in group III both superior and anterior maxillary movement were performed. Nasal evaluations such as rhinoscopy, anterior rhinometry and acoustic rhinometry was performed 1 week before and 3 months after surgery. During operation additional rhinosurgery such as resection of the inferior concha or septoplastic intervention was performed to avoid functional problems in nasal breathing, particularly when the maxilla was impacted.

Results: Rhinomanometric assessment showed a significant improvement in nasal breathing and airflow as well as a significant decrease in resistance in the whole groups and in each group respectively. Acoustic rhinometry revealed a significant decrease in total nasal volume but an increase in cross-sectional areas of inferior concha ismuths nasi regions.

Conclusion: There is an improvement in anatomical and functional properties of nasal airway after lefort 1 osteotomy and concerns about the respiratory consequences of this surgical procedure appear unwarranted particular when functional rhinosurgery is undertaken concomitantly and impaction is not up to 5 millimeters.

Key word: nasal airway, lefort 1, acoustic rhinometry, rhinomanometry
WITH N2O IN BEHAVIOR MANAGEMENT OF UNCOOPERATIVE CHILDREN IN THE DENTAL OFFICE

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Objectives: The aim of this study was to evaluate the safety and efficacy of administered midazolam, nitrous oxide and promethazine-nitrous oxide as a sedative agent in behavior management.

Methods: 36 sedation sessions were carried out on 18 children, who exhibited uncooperative behavior (according to the Frankle scale). The patients (9 male & 9 female) aged 36-96 months, were in good health (ASAI) and needed at least two similar dental treatment sessions. Subjects were randomly assigned into one of two experimental groups (A or B). Using a cross over study design, half of the patients were selected to receive midazolam (.5 mg/kg) plus N2O/O2 on their first visit and promethazine (1mg/kg) plus N2O/O2 on the second visit. All patients received 50% nitrous oxide inhalation sedation, and each patient served as their own control. Vital signs (pulse rate & SaO2) were recorded every 10 minutes during treatment. Patient behavior was assessed in two stages during dental treatment. First stage was 15-20 minutes at the beginning of treatment, including: replacement of nasal mask, local anesthesia and initiation of tooth preparation with a high speed hand piece. Second stage was during the next 15-20 minutes of treatment, including: initiation of root canal therapy and restoration of tooth. Steps of treatment were recorded using a video camera and were assessed blindly by an experienced pedodontist. Based on Houpt scale, sleeping, movement, crying and overall behavior were analyzed for assessing patient’s behavior parameters. Collected data was statistically analyzed using Paired T-test and Wilcoxon statistical tests.

Results: more patients exhibited calm behavior in the midazolam group at the beginning of treatment, with an increase in crying and movement towards the end of treatment. At the end of treatment and from the fifteenth minute onwards, crying of patients sedated with midazolam was significantly higher at the beginning of treatment, but this difference was not found in the promethazine group. In general, during the primary phase, midazolam plus N2O/O2 showed a better effect on the patient’s overall behavior, but this difference was not found at the end of treatment.
EVALUATION OF DENTAL UNDERGRADUATE STUDENTS SOCIAL NICOTINE DEPENDENCE IN IRAN

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Background: The Kano Test for Social Nicotine Dependence (KTSND) is a 10-item questionnaire which has been developed to assess psychological and physical dependence of tobacco use.

Objectives: The objective of the present study was to investigate the prevalence and factors associated with smoking in a sample of undergraduate dental students in Iran, in order to investigate any association between psychosocial status and smoking.

Methods: Self-administered questionnaires including KTSND, smoking status, and stages in quitting smoking were conducted in five main dental schools in Iran.

Results: From one hundred and twelve 6th year dental students, 31% were men, 58% were women and the remaining number had missing responses. The majority of students were aged 23 years. Current smokers accounted for 12.5% of participants, majority of whom reported studying in Shahed University. Data analysis clarified that 77% of students believed that "Smoking is a sort of culture ", 53% agreed with the belief that "Cigarettes can relieve stress" and 76.7% disagreed with a standing of "Cigarettes provide positive physical and psychosocial effects". In the case of social factors, dental students were significantly more likely to mention smoking habit as a sort of culture.

Conclusion: The incidence of smoking and total KTSND scores among dental undergraduate students was highest in Shahed University. The total KTSND score was related to smoking status. Future tobacco-control educational programs are indicated.
EVALUATION OF EFFICACY OF LOW LEVEL LASER THERAPY (LLLT) ON APEXOGENESIS IN PERMANENT IMMATURE RAT MOLAR TEETH

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Objectives: The purpose of this study was to evaluate efficacy of low level laser radiation on root formation and apexogenesis of mandibular immature molar teeth in Rats.

Methods: This study was carried out on 24 male albino rats which were 30 days old. They were randomly divided into two groups of 3 and 5 days of laser therapy. One mandibular quadrant was the case and the other the control group which did not receive any radiation. GAALAS laser was then radiated to the case sides for 19 seconds at each focal point (3 focal points in each side). The data were then collected using Mamography.

Results: In both groups of 3 and 5 days dose of laser therapy, root length and speed of root formation were significantly higher than in the control groups, although there was no remarkable difference between 3 and 5 days dose of radiation.

Conclusion: Low level laser irradiation can influence and induce the apical tissues and pulpal cells, in order to accelerate the process of root formation. Increasing the frequency of irradiation seems to be ineffective.

Key words: Laser phototherapy, Apexogenesis, Rat teeth
COMPARING THE SEDATIVE EFFECT OF ORAL MIDAZOLAM/HYDROXYZINE VS CHLORAL HYDRATE/HYDROXIZINE IN CHILDREN

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Objectives: The use of premedication and sedation has been widely accepted among the international dental community. The aim of this investigation was to determine the sedative effect of oral midazolam/Chlorhexydine and Chloral hydrate/Hydroxyzine combination in uncooperative children aged 4-10 years.

Methods: A total of 16 Children aged from 4-6 years were selected from those referred to Pedodontic Clinic at SBMU due to un cooperativeness. Cases with an anxiety score of 2 in Frankl scoring system were included with at least two similar dental needs with each case acting as self control. Informed consent was obtained from the parents in all cases. Each patient was assigned randomly to receive one of the two regimens first, while some received the other first. Dental behavior was videotaped using a mounted digital video recorder for all cases in each appointment. Child’s reactions were scored using North Carolina Behavior Rating (NCBRS). Patients received 1mg/kg Hydroxyzine and 0.5 mg/kg Midazolam in one visit and 50 mg/kg Chloral Hydrate along with 1mg/kg Hydroxyzine in the other visit. Attempts were made to keep the two treatment sections equal in all aspects including lesion size and timing. Collected data were then tabulated and analyzed using Wilcoxon and Paired t-test.

Results: There was a clear increase in the level of child’s cooperation and behavior following use of these drugs. However there was no significant difference when reaction of children was compared after administration of the two cocktail drugs. There was a slight superiority in the use of Chloral hydrate/Hydroxyzine over that of Midazolam/Hydroxyzine combination (75% to 63% improved behavior). Wilcoxon test showed no significant difference between effects of the two drug groups (P=0.05).

Conclusion: There were no significant differences between the two combination drugs; however Chloralhydrate/Hydroxyzine combination appears to have a higher sedative effect with a longer lasting period when compared to Midazolam/Hydroxyzine.
ENAM SERIES MUTATION EFFECT IN NON-SYDROMIC AUTOSOMAL AMELOGENESIS IMPERFECTA

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Objectives: Amelogenesis imperfecta (AI) is a term used for a clinically and genetically diverse group of conditions caused by mutations in genes critical for normal enamel formation. The aim of this study was to elaborate the mutated genes involved in such defective cases clinically proven as AI.

Methods: Different inheritance patterns such as X-linked, autosomal dominant and autosomal recessive types were tested to identify the case genetic pattern. The presence of genes including: AMELX (XP22.3-22.1), ENAM (4q21), KLK4 (19q13.3-q13.4), MMP20 (11q22.3-q23), DLX3 (17q21), FAM83H (8q24.3) were tested using CPR test which involves study of DNA in extracted blood cells. Blood samples were obtained from five young individuals who were referred to the Pediatric dental clinic at Shahid Beheshti Medical University during 2009-2010 due to their inadequate dentition. Following clinical evaluation by two pediatric dentists, all cases were diagnosed with Amelogenesis imperfecta. Laboratory tests were performed on each case and the gene types and mutation sites were identified.

Results: Based on findings of the present study, genetic alterations were evident in exon 5 of FAM83H, exon 9 of ENAM, intron 4, exon 5 of MMP20 and intron1 KLK4 genes. Such alterations are shown to be associated with AI. These mutations are shown by primer forward but not with primer reverse. Several SNPs were seen in intron1, exon 2 of KLK4, intron 4 and exon 5 FAM83H genes which are considered as general polymorphism.

Conclusion: Mutations were evident in cases tested, indicating direct effect of such gene mutation on the occurrence of Amelogenesis imperfecta.

Keywords: Enamel – Amelogenesis imperfect – FAM83H – ENAM – MMP20 – KLK4
COMPARISON OF CLINICAL EFFECTS OF AUTOGENOUS BONE GRAFT WITH AND WITHOUT PLASMA RICH GROWTH FACTORS IN REGENERATION OF DEGREE II FURCATION INVOLVEMENT OF MANDIBULAR MOLARS

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**Objectives:** Plasma rich growth factor (PRGF) containing autologous growth factors, has been shown to promote soft tissue healing. The purpose of this randomized controlled clinical study was to evaluate the difference in clinical parameters in treatment of grade II furcation involvement in mandibular molars, using autogenous bone grafts with and without plasma rich growth factors (PRGF).

**Methods:** 30 mandibular molars with grade II furcation involvement in 30 patients were treated. Test sites received autogenous bone graft and PRGF, while control sites were treated with autogenous bone graft only. Clinical parameters included: clinical probing depth (CPD), vertical clinical attachment level (v-CAL), horizontal clinical attachment level (h-CAL), location of the gingival margin (LGM), surgical exposed horizontal probing depth of bony defect (E-HPD), vertical depth of bone crest (v-DBC), vertical depth of the base of bony defect (v-DBD), and length of intrabony defect (LID). After 6 months, patients underwent re-entry surgery in order to evaluate the results. All data were analyzed using SPSS 14 software, and statistical tests Kolmogrov, mann U whitney and paried t test were used.

**Results:** After 6 months, both treatment approaches led to significant improvements in v-CAL and h-CAL, and a significant decrease in CPD, E-HPD, v-DBD and LID. There was no significant difference between LGM and V-DBC in the two treatment groups compared to baseline. Also, there was no significant difference in any of the parameters between the study groups.

**Conclusion:** Based on the results of this study, application of PRGF in treatment of furcation involvement with bone graft does not provide any clinical enhancement in the therapeutic outcomes, but further research is necessary.

**Key words:** Furcation, Furcation involvement, Autogenous bone graft, Plasma rich growth factors.
SURVEYING THE EFFICACY OF EDUCATION ON NUTRITIONAL AND DENTAL CARIES KNOWLEDGE OF PARENTS OF OBESE CHILDREN

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Objectives: Obesity, dental caries and periodontal diseases are among growing chronic diseases, especially in children, and are a major public health concern. The aim of this study was to determine nutritional and dental caries knowledge of obese children’s parents. (Parents of 7 year-old obese pupils, BMI≥95)

Methods: This semi-experimental study was conducted to investigate the impact of nutritional and dental caries educational program (32 hours) on knowledge of 75 parents who were randomly selected from several Health clinics in Tehran, Iran (2010). A questionnaire was completed by each subject. Based on their demographic data, nutritional and dental caries knowledge were divided into three categories: Good, Moderate and Weak. Data were analyzed using SPSS software.

Results: 52% of obese children were girls. In 85% of cases, family size belonged to household ≥ 4. The highest level of education was academic, 55% and 50% in fathers and mothers respectively. 39% of Fathers were individual employees. 72% of mothers (mean age 35.62 ±6), were housewives. Scores of nutritional and dental caries knowledge in the three categories (Good, Moderate, Weak) were: (3.6%, 50.9%, 45.5%) before, and (58.2%, 61.8%, 0%) after education, respectively (p≤ 0.0001)

Conclusion: Considering the results, education on nutritional and dental caries knowledge is an effective and highly recommended approach to promote knowledge by using attractive modern technology.

Keywords: Nutrition, Dental caries, Knowledge
QUALITY IMPROVEMENT OF MUMS ASSESSMENT SYSTEM THROUGH ELECTRONIC APPROACH

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Objectives: Examinations are formidable even to the best prepared, for the greatest fool may ask more than the wisest man can answer. This classic statement by George E. Miller encapsulates in a single phrase the central role of assessment in any form of education. Traditionally, assessment is viewed as a “necessary evil” in the curriculum, an act that we carry out because we have to.

Methods: Expert need assessment was performed over a 3-day workshop. They include EDO managers and staffs on student assessment. The output was running a workshop entitled “Design of the test step by step”, which held in all schools of MUMS. A pre-test and post-test were carried out before and after workshop. Then e-learning content was also prepared for electronic education for the first time on this topic for Faculty members.

Results: Based on finding, there was a significant difference between knowledge before and after educational workshop.

Conclusions: Due to time limitation of Faculty members, it is recommended to run electronic courses rather than traditional workshops. Comparison between these approaches needs further studies.
EVALUATION OF IMMEDIATE LOADING ON IMPLANT-RETAINED MANDIBULAR OVERDENTURES

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Objectives: Immediate Loading has become one of the hottest arenas in implant dentistry due to its benefits such as: saving time and money from shorter treatment time, reducing the bone loss and rapid restoration of function, aesthetics, comfort, speech and health. To assess the immediate loading on implants subjected for implant-supported overdentures in lower jaw clinically and radiographically.

Methods: A clinical trial study has been conducted on 10 patients necessitating an implant-retained overdenture in lower jaw. The patients were provided with 20 Implantium implants (http://www.implantium.com) inserted in canine sites (2 implants per a patient). After preliminary clinical and radiographic examinations, the implants were inserted through flapless surgery and immediately (less than 24 hours) were loaded with an implant-retained overdenture. Necessary clinical and radiographic parameters including: Pain, Mobility of the implant, Bleeding on Probing (BOP), Probing Depth (PD), Marginal Bone Loss and periimplant radiolucency; were recorded on the day of surgery and were followed up regularly up to 3 months afterward.

Results: Out of 20 implants inserted in the present study, 4 implants of 4 patients were failed and this data was exhibited a success rate of 80%.

Conclusions: It is recommended to use Immediate Loading on Implantium Implant System as conservative as possible for implant-retained Mandibular overdentures regarding the factors affecting this process such as Mandible and patient status.

Keywords: Immediate Loading, Dental Implants, Overdenture
COST AND PRODUCTIVITY OF PREVENTIVE DENTAL PUBLIC HEALTH SERVICES IN IRAN

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It has been extensively reported that preventive dental services are less expensive, cost effective, non-invasive, less stressful and much better tolerated by great numbers of children worldwide. Visiting a dentist during the first year of life, arranging regular dental examinations and intra-oral check-ups, using topical and systemic fluoride, fissure sealants and oral hygiene instructions have been recommended by WHO for both developed and developing countries.

Iran has a unique system of Primary Health Care Network than is designed especially to increase the access of rural communities to oral health services. Currently there are 4600 health centers throughout Iran, of which about 3000 have dental clinics. Only 2100 clinic are served by either a dentist or oral health worker (who is trained to provide specific preventive dental services just like a dentist). About 900 of these dental clinics are covered by part-time dental staff and a total of 900 clinics are inactive due to various reasons. Total budget allocated for the spring season was about $ US 825 Million.

A questionnaire was used to collect information on preventive dental services provided by the PHC Network over the spring of 2010 in Iran. Internet was used as a medium to collect information from 46 medical science universities. Only about 50% of questionnaires were responded by the time the analysis started for this report. This population based study evaluates the cost of preventive care productivity of available manpower given the conditions of current facilities and resources.
AN IN-VITRO ASSESSMENT OF THE INFLUENCE OF ZIRCONIA CORE DESIGN ON FRACTURE LOAD OF MOLAR ALL-CERAMIC CROWNS

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Objectives: The Zirconia core is routinely made with a uniform thickness in All-ceramic systems and therefore, cannot support the veneering porcelain in different areas during chewing cycles and occlusal loads. This study compared the amount of fracture load in all-ceramic crowns with two different Zirconia Core designs made by the Cercon CAD/CAM system.

Methods: Ten Metallic master dies were duplicated from prepared mandibular first molar teeth using a Non precious metal alloy NNB (Sankin-Dentsply, Germany). In the next step 10 zirconia Standard copings with uniform thickness of 0.5mm and ten customized copings were fabricated by Cercon CAD/CAM system with the following features: 1 mm high labial reinforcing collar and 2 mm high lingual buttressing shoulder. Thereafter, these 20 Zirconia copings were veneered by an experienced technician using an index. All samples were then cemented onto the respected master metallic dies by Resin cement (Panavia F) under a static load of 25N. The samples were then placed into Universal Testing Machines (Zwick, Ulm, Germany) and underwent a vertical load at a crosshead speed of 0.5mm/min. The load was recorded when catastrophic fracture occurred.

Results: Results of the present study showed the following mean loads at fracture: 1852.11±587.9N for crowns with standard core designs and 3332.63±916.38N for the customized group. Data analysis were performed by Two-way ANOVA and t-Test and it showed that the amount of Fracture load achieved in the group with Customized core design was significantly greater than the samples with standard designing (p<0.0001).

Conclusion: Considering the limitations of this study, the customized core design showed higher results in Fracture load testing in comparison with the standard group.

Keywords: Fracture, Zirconia Core, All-ceramic crown
Poster Presentations:
ND: YAG LASER AND MTA-RETROFILLED CANALS: A LABORATORY AND SEM TRIAL OF MICROBIAL LEAKAGE

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Objectives: MTA is currently one of the best materials used to seal pathways of communication between the root canal system and external surface of a tooth. Laser irradiation has been studied in terms of improving microleakage in retrofilled root canals. The present study aims to assess the effect of Nd: YAG laser irradiation on microbial microleakage of MTA-retrofilled roots in vitro.

Materials: Crowns of 80 single-canal extracted human incisors were cut in order to obtain a 13 mm mean length of roots. Apical and coronal (step-back technique) preparations were performed using files up to size 40 and 80 respectively (irrigation with 5.25% sodium hypochlorite; smear layer removal with 17% EDTA). Roots were then obturated using gutta-percha and AH26 sealer. The apical 3 mm of all roots were then cut using a bur and 3 mm retro-cavities were ultrasonically prepared. Specimens were randomly divided into two experimental groups of 25 specimens each, with one positive (C+) and two negative control groups (C-1 & C-2) of 10 in each. In the first group (MTA+Laser), Nd:YAG laser was irradiated onto the cavity walls and apical cross-sectional area prior to placement of MTA. In the second group (MTA), only MTA was placed. Root surfaces were covered with two layers of nail polish except for the apical 2 mm. In the two negative control groups, the whole root surface was covered with nail polish. Specimens were then embedded in a microbial leakage test system and examined daily for 90 days. Contamination times were also recorded. Data was statistically analyzed by Kaplan-Meier and Mann-Whitney U tests. Six separate specimens were submitted for SEM examination.

Results: In C+, all samples were contaminated after 24 hours. In C-, none of the samples were contaminated until the end of the study period. Specimens in the first group were contaminated earlier than those in the second group (p = 0.04; Mann-Whitney U). Comparison of survival times in the two groups using Kaplan-Meier survival analysis by Log Rank test showed significant differences (p = 0.032).

Conclusion: Based on the results of the present study, it appears that Nd:YAG laser irradiation increases apical microleakage.

Keywords: Apicectomy; SEM; Microbial Leakage; MTA; Nd:YAG laser.
DIAGNOSTIC ABILITY OF ANB AND WITS APPRAISAL FOR SKELETAL CLASS II

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Objectives: Different cephalometric analyses have been presented to diagnose the anteroposterior relationship of the jaws, however all have some shortcomings and no analysis has yet been developed with absolute accuracy. The present study assessed diagnostic ability of ANB angle and Wits appraisal in classification of skeletal class II pattern in patients with deficient mandibles.

Methods: This diagnostic study was carried out using 60 cephalograms of patients with a class II skeletal pattern, aged 9-17 years old, who were referred to Shahid Beheshti Dental School in Tehran. Assessments were carried out according to gold standards by three orthodontists. Patients’ cephalograms were traced, and angular and linear measurements of SNA, SNB, ANB, Wits, SN, SN-MeGo, FMA, Jarabak index, Basal and Sum of posterior angles were calculated. The ROC curves were plotted for two measures of Wits and ANB, in the case of FHP/SN = 6, and areas under the curves were determined. Any correlation between the two analyses was assessed using Pearson Coefficient statistical analysis.

Results: The values for ANB angle and Wits appraisal in the studied specimens were 5.89 ± 2.2 and 4.02 ± 2.96 respectively. The area under the ROC curve for ANB angle was 0.493 and 0.6 for Wits appraisal. Therefore, Wits appraisal was more accurate than ANB angle in diagnosing skeletal class II patients. Furthermore, significant correlations were found between the two analyses (P<0.0001).

Conclusion: The present study demonstrated that Wits appraisal was more critical than ANB angle in the diagnosis of patients with class II skeletal pattern with deficient mandibles.

Keywords: Wits appraisal, ANB angle, Diagnostic ability.
EVALUATION OF SALIVARY EPITHELIAL GROWTH FACTOR LEVELS IN RECURRENT APHTHOUS STOMATITIS

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Objectives: Recurrent aphthous stomatitis (RAS) represents a common mucosal ulcer of unknown etiology. Immunologic factors may play a role in pathogenesis of RAS. Epithelial growth factor (EGF) is believed to have an important role in maintaining the integrity of oral epithelium and promotion of healing of ulcers. The aim of this study was to evaluate the relationship between salivary epithelial growth factor and recurrent aphthous stomatitis.

Methods: In this case-control study, 18 patients with RAS and 18 healthy controls without history of RAS participated. Saliva samples were collected from the control group and the case group during stages of active ulceration and remission (without ulceration). EGF concentration in saliva was measured using enzyme-linked immunosorbent assays. Statistical analysis was performed using Chi-square test, Mann-Whitney test and T-test.

Results: The mean salivary EGF levels during active and remission stages were reported to be 1772.05 ± 954.13 and 2020.17 ± 996.94 pg/ml respectively, which were lower than those of healthy controls (2357.00 ±1365.96). EGF level in RAS patients during active and remission stages were not significantly different from healthy controls.

Conclusions: EGF level is decreased in RAS patients. Meanwhile its level in remission stage of RAS is lower than healthy controls without history of RAS.

Key words: Recurrent aphthous stomatitis, salivary epithelial growth factor.
COMPARING THE EFFECT OF TWO DUAL CURE LUTING AGENT SYSTEM ON REGIONAL POST RETENTION

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Objectives: In the recent years, the use of fibre post has been increased significantly due to it’s pleasant physical qualities. One of the most common problems with these posts is their detachment from dentin which is mainly because of the type of cement. Although, some researchers claimed that self adhesive cements are stronger, others were more interested in separate acid-etch adhesives. The aim of this study which was compared the differences of two types of dual cure resin cements, self adhesive and separate acid-etch adhesive, on the amount of retention of a non-metal types of posts in different areas of the root.

Methods: 20 first and second endodontically root threaded premolars were prepared 1mm coronal to CEJ. Samples were divided into two groups (10 teeth in each group) and were prepared to insert 12mm posts. First group were cemented with Rely X Unicem and cured according to manufacture guide. In the second group, canals were etched were bonded with All-Bond 2 and cemented with Dou Link and light cured. The posts were cut into three equal pieces by a Diabond blade, push out energy was placed on the placed on the samples till they became dislodged. Statistical programs used for analysis were t-test, one-sample kolmogorov-simirinov.

Results: There was significantly difference in all areas of 2 groups. Separate Acid etch adhesive group had more strength in coronal and middle areas. Strength decreased from coronal to apical. Self adhesive group were stronger in apical areas (p<0.001) and the bond strength increased from coronal to apical (p<0.05).

Conclusions: Due to the fact that the bond strength in separate acid etch adhesive tech is more convenient for cementation of fiber posts.

Keywords: Fiber reinforced composite post, push out test, bond strength.
EFFICACY OF A MODIFIED SINGLE CONE OBTURATION TECHNIQUE IN PREVENTING BACTERIAL LEAKAGE

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Objectives: The ultimate goal of endodontic obturation is to achieve an impermeable seal along the root canal system. Although a large number of filling materials and obturation techniques have been proposed, none of them are able to block bacterial passage completely. A single cone technique (Easyfill) that uses MTA (Mineral Trioxide Aggregate) or CEM (Calcium Enriched Material) as a sealer would be much faster and easier as it does not require the procedure of drying. This study was designed to assess the sealing properties of Easyfill technique in comparison with lateral condensation, using a split chamber bacterial leakage model.

Methods: 95 Instrumented single canal teeth were divided into 4 experimental groups (lateral condensation and AH26, CEM, MTA plus single cone) and 3 control groups (negative control, positive control and single gutta percha cone). A split chamber leakage method using E. Faecalis as a microbial marker was used for evaluation of bacterial microleakage. Bacterial penetration was monitored over a 42-day period. In the case of observing turbidity in lower chamber, microleakage was recorded and control cultures on specific media were performed in order to ensure purity.

Results: At the end of the study period the percent of microleakage was 30% for lateral condensation, 20% for AH26+single cone, 84.2% for CEM+single cone and 60% for MTA+single cone. The only statistically significant difference was observed between the CEM+single cone and lateral condensation groups. (P<0.001)

Conclusion: Considering the specific conditions of this study, the highest resistance to bacterial leakage was achieved by the modified single cone technique using AH26, which was comparable to that of lateral condensation.

Keywords: Modified single cone; Easyfill; Bacterial leakage; Enterococcus Faecalis
SOFT AND HARD TISSUE RELATIONSHIP AFTER ORTHOGNATIC SURGERY WITH GENIOPLASTY

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³ Dentist, Tehran University of Medical Sciences, Tehran, Iran.

Objectives: Today, patients with malocclusions and esthetic problems can undergo orthognatic surgery in order to correct the relationship of the teeth and jaws. For prediction of surgical results, hard and soft tissue relationships after surgery should be known.

Methods: In this study, we evaluated 14 patients (11 women and 3 men, 7 were class III and 7 were class II) who were candidates for orthognathic surgery plus genioplasty. The patient's cephalograms which were taken before and at least 6 months after orthognathic surgery were evaluated, and measurements of Pg-Pg interstice were made manually.

Results: after statistical analysis, a ratio of 0.92:1 was found for Pg’/Pg ratio.

Conclusion: It is possible to find a linear relationship for Pg-Pg’ change after orthognathic surgery with genioplasty.

Keywords: Genioplasty, orthognatic surgery, Pogonion, Chin soft tissue
ASSESSMENT OF ACCURACY OF RIDGE-MAPPING VERSUS CT-SCAN IN DETERMINATION OF RESIDUAL ALVEOLAR RIDGE WIDTH.

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Objectives: Dental implants should be surrounded with at least 1mm of bone. Assessment of ridge width is an important step in achieving this goal. The use of ridge mapping to assess available bone levels avoids some of the problems associated with CT Scanning. The aim of this study was to assess the accuracy of ridge-mapping compared to CT-Scanning in determination of bony ridge widths.

Materials: A modified surgical stent was designed to locate the beaks of ridge-mapping calipers at the same points of the jaw during two measurements. 52 implant sites in 11 cases were studied. Measurements were made at 3mm and 6mm distances from crest of the ridge in each implant site. Two measurements were made; one on the CT-Scan and the other intra-orally.

Results: Differences between CT-Scan and intraoral measurements were not significant (P>0.05).

Conclusion: Results of this study suggest that it is possible to use ridge-mapping to determine the ridge-width instead of CT-Scan. Ridge-mapping can provide reliable information about bone levels, which can result in avoiding radiation exposure and reducing cost for patients. However it is suggested to use methods other than ridge mapping in patients with complex treatment needs.

Key words: Dental implant, Ridge-mapping, CT-Scan, Bone calipers.
MICRO SHEAR BOND STRENGTH OF THREE SELF-ADHESIVE RESIN CEMENTS TO DENTAL ALLOYS

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Objectives: The use of self-adhesive resin cements is associated with advantages such as simple application, reduced working time, no acid gel washing and reduced risk of etching and drying. The present study evaluated the micro-shear bond strength, created by self-adhesive resin cements of Panavia-F 2.0, RelyX Unicem and Maxcem to non-precious dental alloy of Verabond II.

Methods: In this in vitro experimental study, after casting alloy disks, their surfaces were grounded by paper, sandblasted by AL₂O₃ (15 seconds), ultrasonically cleaned (2 minutes) and dried. After placing the cylinders on blocks, the cements were packed into them and their surfaces were abraded by a cellulose strip, cured for 40 seconds and stored at 23 °C for 1 hour. Subsequently, the cylinders were cut and the specimens were stored in distilled water at 37 °C for 24 hours. Micro shear bond strength test was performed and debonding forces were analysed by using one-way ANOVA and Tukey Post-Hoc test.

Results: Panavia-F 2.0, RelyX Unicem and Maxcem specimens presented micro shear bond strengths of 33.82±3.85 MPa, 31.42±4.52 MPa and 16.84±3.31 MPa respectively. There were significant differences between Panavia-F 2.0 and Maxcem specimens and also between RelyX Unicem and Maxcem groups (both: P<0.0001). No significant difference existed between Panavia-F 2.0 and RelyX Unicem specimens.

Conclusion: The micro shear bond strength of Panavia-F 2.0 demonstrated the highest values, while Maxcem cements showed the lowest bond strength values. Bond strength values of RelyX Unicem and Panavia-F 2.0 were capable of producing a durable bond. Moreover, use of Maxcem cement is not recommended due to its low bond strength to non-precious alloys.

Keywords: Self-adhesive cements, Non-precious alloy, Micro shear bond strength.
DIAGNOSTIC ABILITY OF ANB AND WITS APPRAISAL FOR SKELETAL CLASS II

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2 Dentist, Tehran, Iran.

Objectives: Different cephalometric analyses have been presented to diagnose the anteroposterior relationship of the jaws, however all have some shortcomings and no analysis has yet been developed with absolute accuracy. The present study assessed diagnostic ability of ANB angle and Wits appraisal in classification of skeletal class II pattern in patients with deficient mandibles.

Methods: This diagnostic study was carried out using 60 cephalograms of patients with a class II skeletal pattern, aged 9-17 years old, who were referred to Shahid Beheshti Dental School in Tehran. Assessments were carried out according to gold standards by three orthodontists. Patients’ cephalograms were traced, and angular and linear measurements of SNA, SNB, ANB, Wits, SN, SN-MeGo, FMA, Jarabak index, Basal and Sum of posterior angles were calculated. The ROC curves were plotted for two measures of Wits and ANB, in the case of FHP/SN = 6, and areas under the curves were determined. Any correlation between the two analyses was assessed using Pearson Coefficient statistical analysis.

Results: The values for ANB angle and Wits appraisal in the studied specimens were 5.89 ± 2.2 and 4.02 ± 2.96 respectively. The area under the ROC curve for ANB angle was 0.493 and 0.6 for Wits appraisal. Therefore, Wits appraisal was more accurate than ANB angle in diagnosing skeletal class II patients. Furthermore, significant correlations were found between the two analyses (P<0.0001).

Conclusion: The present study demonstrated that Wits appraisal was more critical than ANB angle in the diagnosis of patients with class II skeletal pattern with deficient mandibles.

Keywords: Wits appraisal, ANB angle, Diagnostic ability.
COMPARISON OF SMOKING AMONG DENTISTS AND DENTAL STUDENTS IN IRAN

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Objectives: In Iran, 32% of men and 5% of women are reported to be smokers. Dental professionals, as members of health profession and as role models for their patients, should be aware of health hazards of smoking. We compared smoking among general dental practitioners (GDP) and dental students (DS) in Iran.

Methods: GDPs at nationwide dental meetings in Tehran and dental students from seven randomly selected dental schools in Iran anonymously filled in a self-administered questionnaire. Smoking history and current smoking habits were inquired by the question: "Do you smoke?" separately for three different smoking habits; cigarettes, pipe, and water-pipe. Each question offered the following alternatives: No; No, I have quit; Yes, once a month or less; Yes, a few times (2-3) a month; Yes, a few times (2-3) a week; Yes, daily. Respondents with “Yes” answers were considered as being smokers. Statistical evaluation was by Chi-square test.

Results: Totally, data from 980 GDPs and 270 dental students were analyzed. The mean age of the GDPs was 37.4 years (SD=7.7) and 64% were men. For dental students, the figures were 26.1 (4.4) and 43%. Almost one quarter of respondents reported exhibiting at least one kind of smoking habit. Of the three different smoking habits, cigarettes and water-pipes were most commonly used, and pipe smoking was rather rare (3%). Cigarette smoking was more frequent in GDPs (18% vs. 13%; p=0.04) and water-pipe smoking in dental students (17% vs. 11%; p=0.02). For GDPs, any smoking was more prevalent in men than women (p<0.001). For dental students, this was the case regarding cigarette smoking. Among GDPs, water-pipe smoking tended to be more prevalent in younger subjects (p=0.06). No other significant age related differences were found.

Conclusions: Compared to the lay-population, smoking among these dental professionals was slightly less frequent. Based on their role as models for patients, non-smoking should be strongly emphasized among the dental profession.

Keywords: Dentist, dental student, smoking
EVALUATION OF SALIVARY EPITHELIAL GROWTH FACTOR LEVELS IN RECURRENT APHTHOUS STOMATITIS

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Objectives: Recurrent aphthous stomatitis (RAS) represents a common mucosal ulcer of unknown etiology. Immunologic factors may play a role in pathogenesis of RAS. Epithelial growth factor (EGF) is believed to have an important role in maintaining the integrity of oral epithelium and promotion of healing of ulcers. The aim of this study was to evaluate the relationship between salivary epithelial growth factor and recurrent aphthous stomatitis.

Methods: In this case-control study, 18 patients with RAS and 18 healthy controls without history of RAS participated. Saliva samples were collected from the control group and the case group during stages of active ulceration and remission (without ulceration). EGF concentration in saliva was measured using enzyme-linked immunosorbent assays. Statistical analysis was performed using Chi-square test, Mann-Whitney test and T-test.

Results: The mean salivary EGF levels during active and remission stages were reported to be 1772.05 ± 954.13 and 2020.17 ± 996.94 pg/ml respectively, which were lower than those of healthy controls (2357.00 ± 1365.96). EGF level in RAS patients during active and remission stages were not significantly different from healthy controls.

Conclusions: EGF level is decreased in RAS patients. Meanwhile its level in remission stage of RAS is lower than healthy controls without history of RAS.

Key words: Recurrent aphthous stomatitis, salivary epithelial growth factor.
WITHDRAW
COMPARISON OF IN VITRO ANTIBACTERIAL EFFECTS OF TWO DIFFERENT MOUTHRINSES CONTAINING EXTRACT OF GREEN TEA AND 0.2% CHLORHEXIDINE

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Objectives: There is growing interest amongst oral health care professionals in natural herbal therapeutic agents that complement mechanical removal of biofilms in the oral cavity. Considering antioxidant, anti-inflammatory and antimicrobial properties of green tea, this study aimed to evaluate the antibacterial effect of mouthrinses containing green tea extract versus 0.2% chlorhexidine on a selected number of microorganisms in vitro.

Methods: Antibacterial activity of both mouthrinses were assessed by determining disk diffusion and minimal inhibitory concentration (MIC) methods against five microorganisms including Streptococcus Mutans, Streptococcus Sanguis, Enterococcus Faecalis, Psedomonas Aerogenosa and Eshershia Coli. Zones of growth inhibition were measured in millimeters after 24 hours of incubation at 37 °C. MIC for both agents were assessed at concentrations of 1, 2, 4, 8, 16, 32, 64, 128, 256 and 512 per milliliter and interpreted as the lowest concentration of agents that completely inhibited growth of the test species.

Results: 0.2% Chlorhexidine produced larger zone of growth inhibition compared to the mouthrinse containing green tea extract (P<0.01). Paradoxically, growth inhibition zones of tested bacteria were significantly larger in pure extract of green tea than 0.2% chlorhexidine (P<0.01). The chlorhexidine mouthrinse inhibited growth of all tested species and exhibited significantly lower MICs than the green tea mouthrinse (P<0.01).

Conclusions: Even though the mouthrinse containing green tea extract presented an in-vitro antimicrobial activity inferior to 0.2% chlorhexidine, pure extract of green tea had considerable bactericidal effect.

Keywords: Antibacterial effect, Green tea, 0.2% Chlorhexidine, Mouthrinse
EFFICACY OF A MODIFIED SINGLE CONE OBTURATION TECHNIQUE IN PREVENTING BACTERIAL LEAKAGE

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Objectives: The ultimate goal of endodontic obturation is to achieve an impermeable seal along the root canal system. Although a large number of filling materials and obturation techniques have been proposed, none of them are able to block bacterial passage completely. A single cone technique (Easyfill) that uses MTA (Mineral Trioxide Aggregate) or CEM (Calcium Enriched Material) as a sealer would be much faster and easier as it does not require the procedure of drying. This study was designed to assess the sealing properties of Easyfill technique in comparison with lateral condensation, using a split chamber bacterial leakage model.

Methods: 95 Instrumented single canal teeth were divided into 4 experimental groups (lateral condensation and AH26, CEM, MTA plus single cone) and 3 control groups (negative control, positive control and single gutta percha cone). A split chamber leakage method using E.Faecalis as a microbial marker was used for evaluation of bacterial microleakage. Bacterial penetration was monitored over a 42-day period. In the case of observing turbidity in lower chamber, microleakage was recorded and control cultures on specific media were performed in order to ensure purity.

Results: At the end of the study period the percent of microleakage was 30% for lateral condensation, 20% for AH26+single cone, 84.2% for CEM+single cone and 60% for MTA+single cone. The only statistically significant difference was observed between the CEM+single cone and lateral condensation groups. (P<0.001)

Conclusion: Considering the specific conditions of this study, the highest resistance to bacterial leakage was achieved by the modified single cone technique using AH26, which was comparable to that of lateral condensation.

Keywords: Modified single cone; Easyfill; Bacterial leakage; Enterococcus Faecalis
SOFT AND HARD TISSUE RELATIONSHIP AFTER ORTHOGNATIC SURGERY WITH GENIOPLASTY

Shirani Gh1, Arshad M2, Asefi S3
1 Department of Oral & Maxillofacial Surgery, Tehran University of Medical Sciences, Tehran, Iran.
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3 Dentist, Tehran University of Medical Sciences, Tehran, Iran.

Objectives: Today, patients with malocclusions and esthetic problems can undergo orthognathic surgery in order to correct the relationship of the teeth and jaws. For prediction of surgical results, hard and soft tissue relationships after surgery should be known.

Methods: In this study, we evaluated 14 patients (11 women and 3 men, 7 were class III and 7 were class II) who were candidates for orthognathic surgery plus genioplasty. The patient's cephalograms which were taken before and at least 6 months after orthognathic surgery were evaluated, and measurements of Pg-Pg interstice were made manually.

Results: after statistical analysis, a ratio of 0.92:1 was found for Pg’/Pg ratio.

Conclusion: It is possible to find a linear relationship for Pg-Pg’ change after orthognathic surgery with genioplasty.

Keywords: Genioplasty, orthognathic surgery, Pogonion, Chin soft tissue
ASSOCIATION OF SEVERITY OF PERIODONTITIS WITH ANGIOGRAPHIC EXTENT OF STABLE CORONARY ARTERY DISEASE: A CLINICAL AND INFLAMMATORY MARKER EVALUATION

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Objectives: Cardiovascular diseases are the leading cause of death in the west. Recently, a downward trend in incidence and mortality rates has been reported in many countries, including Iran. For years, dentists have been aware that certain characteristics are common to patients with periodontitis and patients with cardiovascular disease. Research has shown that atherosclerosis is more common in patients with periodontitis. This suggests that periodontal disease and cardiovascular disease may have similar causative pathways. The aim of the present case-control study is to examine the association between periodontal disease and CAD, utilizing angiographic data in subjects without evidence of recent acute MI, to firmly establish CAD-positive (+) and CAD negative (-) status.

Methods: One hundred and sixty five patients with medical histories suggestive of having CAD and scheduled for coronary angiography (CA) consented to enroll in this study. This included patients who had an indication to undergo CA. These indications included history of stable typical chest pain, atypical chest pain with positive myocardial SPECT scan imaging and positive exercise tolerance test. Patients undergoing CA after acute cardiac events, evaluation of previous coronary interventions i.e. coronary artery bypass grafting and percutaneous transcoronary angioplasty, or evaluation of stenoses in patients with already documented CAD, based on previous CAs, were excluded. Other exclusion criteria were: age less than 40 years, diabetes mellitus, presence of factors requiring antibiotic prophylaxis prior to a dental examination and being completely edentulous. Periodontal examination was carried out by the principle investigator under supervision by supervisors, and the following data were obtained regarding presence and severity of periodontitis: I. Bleeding on probing, II. Probing depth, III. Clinical attachment level (CAL).

Results: Periodontitis was more prevalent in patients with Coronary artery disease; it was also more diffuse in patients with CAD.

Conclusions: There was a strong association between periodontitis and CAD.

Keywords: Periodontitis, Coronary Artery Diseases
EVALUATION RELATIONSHIP OF POLYMORPHISM OF IL-10 WITH GINGIVITIS IN 8-12 YEARS OLD CHILDREN


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Objectives: The host immune system and genetic factors influencing it have an important role in the multifactorial disease of gingivitis. Genetic polymorphisms in cytokines and their receptors have been proposed as potential markers for periodontal disease. Recent studies have suggested that IL-10 polymorphism is involved in inflammatory and autoimmune diseases. Our aim was to evaluate the possible association of the IL-10 polymorphism and gingivitis in children.

Methods: 100 children were enrolled in this study, 50 with gingivitis and 50 as healthy controls. An epithelial sample from the bucal mucosa of each was prepared and the IL-10 mutation at position -1082(H/L), -819(C/T) was detected by polymerase chain reaction-restriction fragment length polymorphism (PCR_RFLP).

Results: The results showed that distribution of H allele in the case group was 34% and 24% in controls(P=0.27). Distribution of the L allele in the two groups was reported as 98% (P=1). C allele distribution was 36% and 21% in the case and control groups respectively (P=0.54). and the T allele distribution was reported 94% in the case group and 90% in the controls(P=0.7). There was no significant difference for genotype distribution between the groups.

Conclusions: The study showed no correlation between the IL_10 polymorphism and gingivitis in young children.

Keywords: Cytokine, Gingivitis, Polymorphism, IL-10
EFFECT OF RESIN INFILTRATION TECHNIQUE ON ENAMEL HYPOCALCIFICATIONS: PRELIMINARY RESULTS

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Objectives: Non-carious enamel hypocalcifications are one of the esthetic problems which patients seek for their treatment. Microabrasion, macroabrasion, composite and porcelain veneers are some treatment methods used to improve shade of the involved teeth. Resin infiltration technique is a new ultraconservative approach to prevent progression of white spot enamel lesions due to caries. The objective of this clinical study was to evaluate the effect of this new method on enamel hypocalcifications.

Methods: In this clinical study 40 teeth in different patients were considered and divided randomly into two groups of 20 as follows: Group 1(control): No treatment, Group 2: treatment of enamel hypocalcification with resin infiltration technique. The inclusion criteria were teeth with enamel hypocalcification with no sign of caries or cavitation. Baseline and final shades of teeth in hypocalcified areas were taken using VITA 3D Master, professional photography camera and Photoshop computer software. Isolation of the teeth was done with rubber dam or liquidam. After cleaning the teeth, Icon kit (DMG, Germany) was applied according to manufacturing instructions to condition the white spot with 15% hydrochloric acid gel followed by application of the resin infiltrant.

Results: Preliminary results of this study on 14 hypocalcified teeth in group 2 showed immediate improvement of shades of 10 teeth in comparison to control group. The shades of three of the teeth did not improve definitely due to overlapping of liquidam on hypocalcified lesions which caused the material not to contact the white spot lesion efficiently.

Conclusions: Until now it seems that in specific cases of localized and generalized enamel hypocalcifications, resin infiltration technique may improve shade of the teeth as a conservative esthetic treatment in just one appointment that could satisfy patients.

Keywords: resin infiltration technique, hypocalcification, esthetic
PREVALENCE OF CARBONATED SOFT DRINK CONSUMPTION AMONG DENTAL STUDENTS

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2 Research Center of Dental Faculty, Tehran University of Medical Sciences, Tehran, Iran.

Objectives: Carbonated soft drinks contain acids and sugar that can cause dental caries and erosion. The objective of this study was to evaluate prevalence of consumption of carbonated soft drinks and fruit juices among dental students in Dental Faculty of Tehran Islamic Azad University.

Methods: In this cross-sectional study, 529 undergraduate dental students from first to final year participated. A questionnaire was given to each student that included: sex, frequency of soft drink consumption per day, type of soft drinks, oral hygiene method after drinking, oral hygiene method during the day, frequency of dental visits per year, chewing xylitol containing gum, and consumption of dairy products. Data was analyzed using descriptive statistical tests.

Results: 529 dental students participated in this study. 112 were male and 409 were female. In 8 questionnaires sex was not stated. 66% of students consumed soft drinks every day; 1% consumed energetic soft drinks and 18% consumed fruit juice daily; 22% of respondents did not brush their teeth after drinking. 23% brush once a day, 53% brush twice a day, 18% brush 3 times a day and the rest brush more than 3 times per day. 38% of students consumed xylitol chewing gum for their dental health. 19% of students reported visiting their dentist every 6 months, 19% reported visiting yearly and the remaining reported visiting when a dental treatment is required.

Conclusions: The prevalence of soft drinks consumption was high among dental student. This may cause high prevalence of dental caries and erosion in professional individuals who are responsible for the dental health of their community. It is advisable to educate dental students regarding the negative effects of these drinks on dental health and advise them of oral hygiene methods after consumption of soft drinks.

Key words: soft drink, fruit juice, dental students
COMPARISON OF MICROLEAKAGE OF RESIN MODIFIED GLASS IONOMER CEMENT AND A HYDROXYAPATITE BASE

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Objectives: Microleakage is one of the most common problems in dentistry. The objective of this in-vitro study was to compare microleakage values of light cure resin modified glass ionomer cement and a base containing hydroxyapatite.

Methods: In this experimental study, 40 intact human premolars were divided into 4 groups of 10. A round cavity measuring $3\pm0/2$ mm in diameter and 1 mm in depth was prepared in dentine on the buccal surface of each sample according to ISO 11405-2003. The groups were as follows: group 1: Light cure resin modified glass ionomer lining cement, group 2: Light cure resin modified glass ionomer restorative cement, group 3: A base containing hydroxylapatite applied with bonding agent, a base containing hydroxylapatite applied without bonding agent. The cavities were filled with each material according to manufacture’s instructions. After thermo cycling (5000 cycles) the specimens were immersed in AgNO\textsubscript{3} solution for 2 hours. After sectioning the specimens, dye penetration was evaluated using a stereomicroscope. Microleakage was graded according to ISO 11405(2003) in occlusal and gingival cavity margins (0-3). Data was statistically analyzed using kruskal-wallis wilcoxon and Mann-Whitney tests.

Results: Group 3 showed the most microleakage of grade zero in gingival and occlusal cavity margins. In group 4, most microleakages of grade 3 in both margins was seen and the difference was significant (p<0.05), but there were no significant difference among glass ionomer groups (p>0.05).

Conclusions: It seems that the hydroxyapatite base with a bonding agent which is suggested as optional in the manufacturing instructions of the material should be followed. This causes a decrease in micro leakage around the material but will not eliminate it.

Keywords: microleakage, liner, resin modified glass ionomer, class5
ACCURRTE FORCE AMALGAM CONDENSER, A NEW INSTRUMENT FOR IMPROVEMENT OF DENTAL AMALGAM CONDENSATION

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Objectives: Dental amalgam is one of the most popular restorative materials used in dentistry. Dental amalgam has the properties of a plastic material immediately after amalgamation, so that it can be adapted to the prepared cavity. Adequate condensation pressure is one of the most important factors affecting mechanical characteristics of amalgam. Conventionally, a hand amalgam condenser is used for amalgam condensation. According to research studies in this field, the optimum pressure required for condensation of the admixed type of amalgam is 7Mpa. Various research studies have shown that many dental practitioners do not apply the required condensation force. Some reasons for this include lack of an accurate force evaluation system during the process of education and daily clinical practice. The aim of this study was to provide a solution to the above issues.

Methods: The Accurate Force Amalgam Condenser includes an innovative part called the Force Indicator Unit (FIU), which provides an objective method to evaluate the adequacy of force applied to the mass of amalgam during condensation. FIU includes a nickel- inconel alloy based on a spring system, which calibrates in a way that its highest contraction occurs at the pressure value of 7Mpa. The spring moves in a tube and indicates the adequacy of applied force objectively.

Results: This instrument can theoretically improve the quality of amalgam condensation.

Conclusion: This new innovative hand instrument can theoretically be used routinely by dental practitioners and for educational purposes; however further studies are required in order to clinically evaluate its efficiency.

Please note: The patent of this invention has been registered in the General Office of Industrial Property of Iran.
GLANDULAR ODONTOGENIC CYST: A SYSTEMATIC REVIEW

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**Objective:** The aim of this study is to evaluate the principal features of ‘glandular odontogenic cysts’ and to compare its frequency of occurrence among four global groups.

**Materials and Methods:** The database searched was PubMed interface of MEDLINE. All cases were confirmed histopathologically.

**Results:** 12 reports on 11 series of consecutive cases were included in the systematic review. GOC affected males twice as frequently, and appeared in the mandible almost three times as frequently. The average age at first presentation was 44 years.

**Conclusions:** GOC presented mainly in older patients, appeared as a swelling, affected the anterior sextants of both jaws, and radiologically was more likely to present as a well-defined unilocular radiolucency with buccolingual expansion. GOC has a marked propensity to recur in most global groups.
FIBROUS DYSPLASIA: A SYSTEMATIC REVIEW

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Objectives: To evaluate the principal features of fibrous dysplasia (FD) by systematic review (SR) and to compare their frequencies between four global groups.

Methods: The databases searched were the PubMed interface of Medline. All cases were confirmed fibro-osseous lesions histopathologically. The SR-included series must also have included radiographs.

Results: Of the 50 reports considered. The mean age at first presentation was 24 years. The decade with the greatest frequency was the second, in which males accounted for 63%. All cases displayed buccolingual expansion; all mandibular cases exhibited downward displacement of the lower border of the mandible and almost all maxillary cases involved the maxillary antrum.

Conclusions: Long-term follow-up of large series that would have revealed the long-term outcomes of FD was lacking. This is necessary because many cases do not burn out at the end of adolescence, as expected of a hamartoma, but are reactivated.
EVALUATION OF DIMENSIONAL ACCURACY OF A SILICONE IMPRESSION MATERIAL USING TWO PUTTY-WASH IMPRESSION TECHNIQUES

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Objectives: Taking impressions is one of the most important steps in fixed prosthodontics. Due to contradictory findings regarding the issue of accuracy of silicone impression materials, this study was carried out to assess the dimensional accuracy of master casts made from Speedex silicone impression material using two putty-wash impression techniques; one conventional and the other putty cut.

Purpose: Determining the accuracy and dimensional stability of a condensation silicone impression material using two putty-wash impression techniques

Methods: This quasi-experimental study was carried out by using metal dies representing human posterior teeth. 24 impressions were taken for each technique and stone models were poured. Height and diameter of dies and inter-die distances were measured using a stereomicroscope M6H10 and compared with laboratory models by the use of ANOVA test and Tukey’s post hoc test.

Results: In the “putty cut” impression technique, partial height of the undercut die and inter-die distance increased. In the 1.5 hours delay group, cervical diameter of the undercut dies increased and total height of stone dies reduced after 1.5 hours, 24 hours and 1 week.

Conclusion: Conventional method is more accurate than the “putty-cut” technique in all die dimensions. Time is a factor which affects the dimensional stability of condensation silicon impression materials. Therefore, condensation silicon impressions should be poured as soon as possible.

Keywords: Dimensional stability, Putty-wash technique, Condensational silicone, Speedex
11 YEAR SURVEY OF PREVALENCE OF ODONTOGENIC CYSTS IN ORAL AND MAXILLOFACIAL SURGERY DEPARTMENT OF TALEGHANI HOSPITAL, SHAHID BEHESHTI UNIVERSITY OF MEDICAL SCIENCES

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Objective: The aim of this study was to analyze records of 107 patients operated for odontogenic cysts in Taleghani Hospital.

Methods: A retrospective study for assessment of prevalence of cysts of the jaws was undertaken at the Maxillofacial Department of Taleghani Hospital in Tehran, Iran. Data were retrieved from histopathological and patient records from 1995 to 2006.

Results: A total of 107 records were analyzed, of these 93 cases (86.9%) were diagnosed with odontogenic cysts, 6 cases (5%) non-odontogenic cysts, 4 cases (3.7%) sinus cysts and 4 cases (3.7%) were diagnosed with pseudocysts. The mean age was 28.9 years, with a predominance of occurrence in males. Odontogenic cysts appear to have a distinct predilection for the second and third decades of life and are more common in the mandible. The most frequent odontogenic cysts were dentigerous cysts (31.2%), followed by odontogenic keratocysts (23.6 %) and radicular cysts (22.6%).

Conclusion: Our results are comparable to studies from other countries. Knowledge of relative frequencies and sites of presentation of odontogenic cysts in different ethno-geographic backgrounds is essential for early diagnosis and management of these benign yet potentially destructive lesions.
MILK AND EGG WHITE MAINTAIN IMMATURE PULP CELLS’ PROLIFERATION CAPACITY AS WELL AS HANK’S BALANCED SALT SOLUTION (HBSS)

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Background: Avulsions of permanent teeth prior to completion of root development can lead to loss of pulp vitality. It is possible to create an environment that favors coronal proliferation of new tissue leading to replacement of sterile necrotic pulp and subsequent continued root development.

Aim: In this study we compared milk and egg white (as available storage media at accident scenes) with HBSS to maintain pulp cells’ proliferative capacity.

Design: Sixty rabbit open apex incisors were randomly stored for 1, 3 and 6 hours in tubes containing milk, egg white or HBSS at 4°C, immediately after extraction. Following fixation and decalcification of teeth, ki-67 antigens were detected in pulp sections using immunohistochemical examination. The mean values of labeling indices were analyzed using “repeated measure ANOVA” test.

Results: labeling indices of dental pulp cells stored in milk and egg white showed similar results to those of HBSS in all studied time intervals (P. value=0.835). In all specimens, Ki-67-marked cells appeared more frequently in apical region of the pulp, followed by the middle and coronal regions respectively (P. value < 0.001).

Conclusions: As shown by rabbit’s dental pulp cells’ viability results in 6 hours, milk and egg white are similar to HBSS in terms of efficacy, and superior in terms of availability and lower cost. In addition, preserving more Ki-67+ cells in the apical region helps proliferation of new tissue, replacement of necrotic coronal pulp and leads to subsequent continued root development.
EFFECT OF CALCIUM HYDROXIDE DRESSING MICROLEAKAGE OF COMPOSITE RESTORATIONS IN ENDODENTICALLY TREATED TEETH SUBSEQUENT TO BLEACHING

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Objective: This study evaluates the effect of calcium hydroxide dressing on microleakage of composite restorations following non-vital bleaching.

Methods: A total of 45 sound extracted human maxillary central incisors underwent endodontic treatment. The teeth were randomly divided into three groups (n=15). In group 1, access cavities were restored with composite. In group 2, the teeth underwent a bleaching procedure for one week before being restored with composite. In group 3, following a bleaching procedure, calcium hydroxide paste was placed in the pulp chamber for one week. The teeth were then restored with composite. The specimens were subjected to a dye leakage test. The data was analyzed using Kruskal-Wallis and Mann-Whitney U tests.

Results: There were significant differences between the groups (P<0.0005). No statistically significant differences were found between groups 2 and 3, while the differences between other groups were significant.

Conclusions: The bleaching agent increased microleakage of composite restorations in non-vital bleaching, whereas microleakage was not found to be increased by calcium hydroxide.

Key words: Calcium hydroxide, composite restorations, laboratory research, microleakage, non-vital bleaching.
IS TODDLERS’ ORAL HEALTH RELATED TO THEIR MOTHERS’ ORAL HEALTH

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Objectives: To assess the oral health status of children up to three years of age, in relation to their mothers’ oral health status in Tehran, Iran.

Methods: A cross sectional study based on WHO recommendations for dental examination was carried out among 1- to 3-year-old children and their mothers, who had attended 18 randomly selected public health centers in city of Tehran. Early childhood caries (ECC) was defined as presence of at least one dmft score. Visible dental plaque was inspected on the labial aspects of upper central incisors. Mothers’ number of teeth was counted and their number of missing teeth (Mt) was used as an indicator of their oral health status. Preceding the dental examination, the mother was interviewed with a questionnaire containing background information. Statistical analysis was carried out using Mann-Whitney test.

Results: In total, 52 out of 504 children were involved with ECC, and almost 70% of them had visible plaque on their upper central incisors. The mean Mt for mothers of children with ECC was 2.4 (SD=4.0) compared to 1.7 (SD=2.7) for mothers of children without ECC (p=0.4). Mothers’ mean Mt was higher in children with visible dental plaque when compared to those without any visible dental plaque (1.9 vs. 1.3) (p=0.02).

Conclusions: Mothers’ higher Mt score was positively associated with their children’s poor oral health. Educating these mothers about desirable oral health care may decrease oral health problems in their children.

Keywords: Oral health, Early childhood caries, Dental plaque, Toddler, Mother
OBJECTIVE

To study oral health information resources among adolescents in Tehran, Iran.

METHODS

A descriptive study was carried out in 2004 among 15-year-olds (n=509) in Tehran. Data collection was by using a self-administered questionnaire. The options for oral health information resources were friends, parents, other relatives, teachers, television/radio, movies, newspapers/magazines, dentists, dentist helper, doctor and medical nurse.

RESULTS

The most common oral health information resources among 15-year-olds were parents, dentists, and television/radio. The differences in friends (boys 11.9% vs. girls 5.6%), other relatives (boys 17.3% vs. girls 9.2%), teachers (boys 26.9 vs. girls 18.1%), television/radio (boys 44.2 vs. girls 33.7%), and medical nurse (boys 6.2% vs. girls 2%) as oral health information resources were statistically significant (P-value< 0.05).

CONCLUSIONS

Improving levels of parent's oral health information, and informative multi-media programs could be effective in promoting oral health of adolescents.

KEYWORDS

Adolescents, Information resources, Oral health.
OBJECTIVES: Dimensional changes of impression materials after using disinfectants are one of the main problems in dentistry which can cause changes in integrity of restorations and result in failure of treatment. Regarding importance of microbial disease and possibility of infection transmission to dental personnel, identifying an appropriate disinfectant is essential. The effect of disinfectants on dimensional stability of impressions has been considered in many studies. The main aim of this study is evaluation of effects of three disinfectants: Perform-ID, Deconex 53+ and 5.25% sodium hypochlorite solution on dimensional stability of poly vinyl siloxane impression materials.

METHODS: In the present experimental study, 60 impressions were taken from a master model. The impressions were categorized into 4 groups: first group was used as control and the other 3 groups were immersed in 3 disinfectants (5.25% sodium hypochlorite solution, deconex 53+ and perform-ID). After disinfection, casts were made from the impressions and after 24 hours, they were measured using a profile meter microscope. Results were analyzed using SPSS software and by ANOVA test.

RESULTS: According to results from ANOVA statistical tests, we found that dimensional changes of perform-ID were $0.0211 < X < 0.0132$ in width, $0.111 < X < 0.122$ in length and $(-0.332) < X < (-0.294)$ in height which was the lowest dimensional change in comparison with the other two groups.

CONCLUSIONS: From the results of this study, it seems that the effect of perform-ID on dimensional changes of poly vinyl siloxane impression material was lowest compared to deconex 53+ and 5.25% sodium hypochlorite solutions. Therefore, we can use perform-ID for disinfection of poly vinyl siloxane impressions.

KEYWORDS: Dimensional changes, Standard model, Short span (AB), Long span (AD), Height of dies (DE).
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Objectives: Retractors such as Minisota are used to keep aside organs such as cheeks and the tongue during maxillofacial surgery. Suctions are also used to remove secretions of blood and saliva from field of operation. The objective was to design a device which can perform both actions in a single unit.

Methods: Surgical Suction Retractor (SSR) was designed to accommodate both actions of retraction and suction during maxillofacial surgical operations. It bears a similar body shape to the Minisota retractor, incorporating double stainless layers bearing drainage holes, which conduct exudates to an outlet connected to a suction hose.

Results: Advantages of using SSR include better performance of tasks of suction and retraction of tongue and cheeks. The operation field would be more adequately cleared of blood and salivary secretions in comparison with conventional suction tips, which indicates a reduced need for an aid to manage the suction position during surgery. SSR is made of stainless steel and is autoclavable.

Conclusion: SSR provides a cleaner operation site for the surgeon, therefore allowing higher precision, accuracy, improved vision and less need for an aid to manage suction.

Keywords: Suction Surgical Retractor, Maxillofacial surgical instruments.
DENTAL TREATMENT NEEDS AND ORAL HEALTH STATUS OF INSTITUTIONALIZED ELDERLY PATIENTS

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Objectives: This study was designed to determine treatment needs and oral health status among elderly institutionalized patients.

Methods: A total of 237 institutionalized elderly patients in city of Mashhad in Iran were enrolled in this survey from October 2008- March 2009. Subjects who were elderly, cooperative, able to withstand bed-side examination and had complete medical records were examined by a penlight dental mirror and a tongue blade.

Results: Of 237 patients, 202 were included. The patients ranged from 60 to 105 years old and were categorized into the following age groups: 60-69; 70-79; 80 and above. The average age of patients was 79.59±8.88 (Female= 80.30±8.29; Male=77.15 ±10.40). Mean age was higher in females compared to males (P=0.033). 83 patients did not wear a denture, and required a partial (15) or complete (68) denture. Five patients required full mouth extractions and complete dentures. All of the 15 dentate patients required scaling and root planning. 65 (32.5%) patients were diagnosed with some kind of oral candidosis and needed anti fungal treatment and routine follow up examinations. Epulis fissuratum was found in 36 patients. Due to atrophic glossitis, 88 patients required dietary consultation. In total, 98% of patients had at least one oral mucosal lesion.

Conclusions: It appears that dental treatment needs are an area of neglect in institutionalized elderly patients in Iran, and serious attention should be given to this group of patients.

Keywords: elderly patients, geriatrics, dental, treatment needs, institutionalized.
EVALUATION OF HISTOPATHOLOGICAL CHANGES OF DENTAL PULP AS A RESULT OF PERIODONTAL DISEASE IN HUMAN EXTRACTED TEETH

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Objectives: Some studies show that advanced periodontal disease can affect dental pulp through connecting pathways such as apical foramen and lateral canals. This research was carried out in order to investigate histopathological changes of dental pulp in extracted human teeth with advanced periodontal disease.

Methods: 20 caries-free teeth were included in this study. The experimental group contained 17 teeth with advanced periodontal disease, while the control group contained 3 teeth with healthy periodontium. After periodontal, endodontic and radiographic examination, atraumatic extractions of teeth were carried out. The samples were then prepared according to the instructions of pathology department of Shahid Beheshty University, and examined histopathologically by a pathologist. Statistical analysis by T-Test was used in this study.

Results: Chronic inflammation was found to be the most common change in dental pulp. Calcification, atrophic changes and fibrosis, vascular changes, odontoblastic layer changes and partial necrosis were the next prevalent changes in dental pulps.

Conclusion: The results of this study showed that advanced periodontal disease can affect dental pulp and cause deteriorating effects.

Keywords: dental pulp, histopathology, periodontal disease.
EVALUATION OF PLAQUE CONTROL IN RIGHT- AND LEFT-HANDED PATIENTS

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Objectives: The aim of this study was to evaluate the effect of right and left handedness on ability of patients to control plaque in different quadrants of the mouth.

Methods: This cross-sectional study was conducted on 40 students of Hamedan University of Medical Sciences during two visits with a two-week interval. Before each visit, students were refrained from brushing their teeth for 12 hours. At both visits, subjects were asked to brush their teeth using a toothbrush without toothpaste, using the Bass technique for 3 minutes. Pre- and post-brushing plaque scores were measured for total dental surfaces and in different quadrants of the mouth using the O'Leary plaque index. Data was statistically analyzed using SPSS Version13 statistical software.

Results: At the first stage, average scores of primary PI (Plaque Index) of right-handed subjects was more than left-handed subjects, whereas at the second stage, results were opposite. Right-handed individuals had higher PI in the upper left quadrants compared to the upper right quadrants at the first stage. In the lower jaw, right quadrants had higher average scores of PI. At the second stage in the lower jaw, results were the same as the first stage, but in the upper jaw PI scores in the left and right quadrants were almost equal. In left-handed subjects, average primary PI score at the first stage in left and right quadrants of both jaws was not significantly different. In the second stage, results were the same in the upper jaw, but in the lower jaw, average PI score in right quadrants was more than left quadrants.

Conclusion: This study indicates that left-handed individuals have a better ability to access the right quadrants of the mouth for performing oral hygiene procedures. In the case of performing oral hygiene procedures in left quadrants, right-handed individuals were more successful, and generally it seems that left-handed individuals are able to perform better in oral hygiene procedures.

Key words: oral hygiene, dental plaque, tooth brushing, right- or left-handedness
COMPARISON OF CYTOTOXIC EFFECTS OF TWO RESIN-BASED SEALERS (AH26 AND 2 SEAL) ON L929 FIBROBLAST CELLS

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Objectives: During root canal therapy, the apical area of an obturated root and the nature of materials used for obturation have important roles in an ideal biological response. During the initial steps, irritative potential of these materials may delay or even halt the repair process. For this reason, it would be preferred to use materials that do not irritate or damage apical and periapical tissues. Therefore, these materials must possess high levels of biocompatibility and be non-irritating to surrounding tissues. The aim of this study was to compare cytotoxic effects of two resin-based sealers (in vitro) on L929 fibroblast cells.

Methods: This study was carried out using an experimental method. Under aseptic conditions, 20 specimens were tested for each sealer (AH26 and 2 Seal). Monolayer cell cultures were prepared on 24 well plates. After incubation at 37°C and 5% CO2-containing humidified air atmosphere, clorometrically by MTT assay was done after 1 hour, 24 hours and 7 days. Optical density was read by ELISA Reader in 570 nm.

Results: Our finding showed that AH26 displayed lower cytotoxicity if the preparation was done using the fresh mix technique. But in the case of four hours after mixing, there was not a significant difference between the two sealers. After 24 hours, AH26 displayed lower cytotoxicity using both techniques, and on the 7th day, no difference was observed between the two sealers.

Conclusion: The results illustrate that AH26 presented lower cytotoxicity in comparison with 2 seal. Maximum cytotoxicity is demonstrated when using 2 seal, and occurs after 24 hours. In fact, this study demonstrated that both sealers, in different times and with different preparation techniques, displayed considerable cytotoxicity. Therefore, it appears that 2seal cannot be used as an appropriate alternative to AH26.

Keywords: Citotoxicity effect, AH26, 2 Seal, L929 fibroblast cells.
IN-VITRO EVALUATION OF ANTIMICROBIAL PROPERTIES OF A NEW ENDODONTIC ROOT CANAL CORE FILLING MATERIAL

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Objectives: The purpose of this study was to assess antimicrobial properties of a new gutta-percha material, prepared from chemically coating nano-silver particles on the surface of conventional gutta-percha points. Antimicrobial properties were assessed using an agar diffusion test and 5 microbial strains (Staphylococcus aureus, Escherichia coli, Enterococcus faecalis, Pseudomonas aeroginosa and Candida albicans).

Methods: Test specimens including nano-silver coated gutta-percha points (NS gutta-percha) and conventional gutta-percha points were placed on prepared wells of agar plates inoculated with different test microbial strains. Zones of growth inhibition were observed and measured after incubation at 37°C for 48 hours under relevant humidity.

Results: NS gutta-percha points showed significantly higher antimicrobial activity compared to conventional gutta-percha against all microbial strains (P<0.05) except for Pseudomonas aeroginosa species. Zones of inhibition of NS gutta-percha in all samples were larger than 5 mm, except in Pseudomonas' plates.

Conclusion: This new obturation material containing nano-silver may be an interesting candidate due to its antibacterial and antifungal properties, and can be used as an alternative to conventional gutta-percha to obturate and seal root canal spaces. However, further studies are needed to evaluate other characteristics of this new material.
EVALUATION OF ORAL HEALTH AND RELATED FACTORS OF 35-44 YEAR OLDS IN SISTAN & BALUCHESTAN PROVINCE IN 2007

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**Objectives:** Systematic analysis of oral health status and related factors for improvement of oral and general health condition is of great importance. The aim of the present study was to evaluate prevalence of dental caries and periodontal disease and some related factors, in a sample of 35-44 year old males and females living in five urban areas of Sistan & Baluchestan province in 2007.

**Methods:** This descriptive cross sectional study was conducted on 550 people living in five different urban areas of the province (Zahedan, Khash, Iranshahr, Sarbaz and Chabahar). The study sample was chosen by multi-stage stratified cluster random sampling. Demographic and social information and oral health habits were registered in a questionnaire containing 11 items. All of the participants were clinically examined according to DMFT and CPITN indices. Data was analyzed by SPSS (version 17) software, Chi-square test and T-test.

**Results:** The proportions of illiterate females (66.3%) were twice as males (33.7%). Mean number of family members were 7.07 ± 2.7. Majority of people brushed their teeth two and three times during one week, at mornings and evenings before sleeping. The average DMFT score was 10.05 ± 7.186, all of the participants had 3 decayed teeth, 6.6 extracted and 0.74 filled teeth. In females, average DMFT scores (11.43 ± 7.5) were higher than males (8.68 ± 6.6). 50% of males and females had calculus, and only 1/8% had healthy gingival condition. A significant relationship was found between DMFT scores with sex and tribal origin. In addition there was a significant relationship between CPITN scores and level of education, tribal origin, frequency of daily brushing and income level.

**Conclusion:** In conclusion, health care directors should consider these related factors for promotion of oral health status in society.

**Key words:** oral health, socio-economic status, 35-44 years old.
LEVELS OF PROFESSIONAL BURNOUT IN DENTISTS

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Objectives: During their professional career, dentists may be subjected to a wide range of stressors. This may lead to professional burnout, a syndrome of emotional exhaustion, depersonalization and reduced personal accomplishment which can disturb their physical, mental and emotional health as well as their professional lives. There are some strategies to control burnout in dentists, but as a first step, it is important for them to be aware of such syndrome. This study was conducted to determine the level of burnout in dentists in city of Hamadan in 2007.

Methods: A cross-sectional descriptive study was conducted among 103 female and male dentists in Hamedan city. The level of dentists' burnout was evaluated by Maslach burnout inventory.

Results: 7.8% of the dentists suffered from burnout syndrome. Burnout was detected in 11% of male dentists but in none of the female dentists. In dentists with burnout, 16% suffered from severe emotional exhaustion, 31% suffered from severe depersonalization and 92% exhibited lower personal accomplishments. Burnout was not correlated to age and working duration in dentists.

Conclusion: Some dentists suffer from burnout syndrome and its effects on their personal, professional and social life. So it is important to consider some strategies to control the predisposing factors of this syndrome.
RELATIONSHIP BETWEEN PERIODONTAL DISEASE AND BLOOD LIPIDS, FBS, BLOOD FACTORS & CRP LEVELS.

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Objectives: Many people in the world are affected by hyperlipidemia, which is a known risk factor for atherosclerosis disease. On the other hand, periodontitis, a prevalent oral disease, has been linked to severe health changes, including an altered lipid metabolism. The aim of the present study was to verify the relationship between periodontal disease and blood lipid, FBS, blood factors & CRP levels.

Methods: Two hundred individuals who were referred to Mashhad University of Medical Sciences were divided into two groups of with and without periodontitis, and it was attempted to match both groups for sex and age. A blood sample was taken from each participant. Total cholesterol, LDL, HDL, Triglyceride, FBS, Blood factors and CRP levels were calculated.

Results: The results showed that LDL (124.6 mg/dl), CRP (6.9 mg/dl), FBS (100.8 mg/dl), WBC (6.1×10^3) and RBC (9.9×10^6) levels were higher in individuals with periodontitis compared to those without periodontitis (LDL = 120.7, CRP = 6.03, FBS = 93.7, WBC = 5.9×10^3 and RBC = 4.9×10^6), but the differences were not significant. Also we noticed that the number of individuals with pathologic levels of FBS (> 100mg/dl=27), TG (> 200mg/dl=17), LDL (> 60mg/dl=13) and HDL (> 45mg/dl=71) in periodontitis patients were higher than the healthy group, although the differences were not significant.

Conclusions: This study demonstrated that regardless of intensity, there is no significant relationship between periodontal disease and blood lipid levels, FBS, CRP and blood cells in the population. Further studies with larger sample sizes are recommended.
EFFECT OF SYNTHETIC ALLOPLASTIC GRAFTS ON ORTHODONTIC INDUCED INFLAMMATORY ROOT RESORPTION (OIIRR)

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Objectives: To determine the effect of socket preservation with synthetic alloplastic grafts on orthodontic induced inflammatory root resorption (OIIRR).

Methods: The study sample consisted of four mixed race dogs. Eight different prepared defect sites were investigated in this experimental study. Defects were prepared on the lower jaw by implant drills, with one side serving as control and the other serving as the experimental side. Prepared defect sites were preserved by synthetic alloplastic grafts in the experimental group. The first premolar tooth was pulled towards the prepared defects by a NiTi closed coil spring (Ormco®), and the amount of orthodontic induced inflammatory root resorption was compared between the two groups at the end of twelve weeks. Socket preservation and its influence on dimensions of the defect site (alveolar bone) were examined clinically. SPSS 11.5 statistical package (Mann-Whitney U test) was used for purpose of data analysis.

Results: Amount of orthodontic induced inflammatory root resorption was 0.12±0.09 square millimeters in control sites, and 0.07±0.06 square millimeters in experimental sites. A significant difference existed between the two groups (p<0.05).

Conclusion: Synthetic alloplastic graft materials are capable of diminishing orthodontic induced inflammatory root resorption (OIIRR). Alloplastic materials may act as a reservoir of mineral elements that can be substituted in resorptive lacunae for purpose of being processed during the reparative phase.
BACTERIAL MICROLEAKAGE OF GUTTAFLOW-FILLED ROOT CANALS COMPARED WITH RESILON/EPIPHANY AND GUTTA-PERCHA/AH26-FILLED ROOT CANALS

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Objectives: The purpose of this study was to assess bacterial apical microleakage in root canals obturated with GuttaFlow and to compare this with leakage of root canals obturated with Resilon/Epiphany or Gutta-percha/AH26.

Methods: A total of 55 single-rooted human teeth were divided randomly into three experimental ($n=15$) and two control groups ($n=5$). Following standardised preparations, the teeth were obturated with GuttaFlow, Resilon/Epiphany or Gutta-percha/AH26. A two-chamber bacterial model using *Enterococcus faecalis* was employed to assess bacterial apical leakage for a period of 60 days.

Results: Kruskal–Wallis statistical test showed no significant difference between the bacterial seals of root canals obturated with GuttaFlow, Resilon/Epiphany or Gutta-percha/AH26.

Key words: bacterial apical leakage; GuttaFlow; Gutta-percha/AH26; Resilon/Epiphany
COMPARISON OF NATURAL HEAD POSITION IN SKELETAL CL I, CL II AND CL III MALOCCLUSIONS

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Objectives: Natural head position has been proven to be a reproducible reference in many studies. Craniofacial morphology is an effective factor in this position. The purpose of this study was to evaluate natural head position in three skeletal malocclusions: class I, class II, and class III).

Methods: This retrospective study was conducted on 102 selected lateral cephalometric radiographs among 250 radiographs of previous study samples with an average age of 17 years. All lateral cephalometric radiographs were taken in the natural head position. The study population was selected from Iranian ethnic origin of Fars province, without any history of orthodontic treatment or orthognathic surgery. None of the subjects suffered from current nasal obstruction. They did not have any symptoms of head, neck or oro-facial pain. All subjects were asymptomatic for TMJ and cervical spine disorders. In order to evaluate the relationship between skeletal class and cervical posture, subjects were divided into three groups: skeletal class I (32 subjects), skeletal class II (40 subjects) and skeletal class III (30 subjects). Fourteen landmarks consisting of: eleven in the craniofacial area and three in the cervical column area were determined and marked on each radiographs. Nine lines were drawn on tracing paper. 14 variables were then measured. Data was statistically analyzed using ANOVA analysis for comparison amongst the three groups, and Post Hoc test (paired T-test) for couple groups. The most Interesting findings were as follows; in comparison between the three groups, ANB, SNB, PNS-ANS / Ver. and SN/Ver. angles were significantly different (p <0/05). In comparison between two groups of SN/CVT: angles in skeletal class I subjects showed significant difference in comparison to skeletal class II subjects.

Conclusion: A more forward head posture was seen in skeletal class III children compared to subjects with skeletal class I (p=0/013) and skeletal class II (p=0/010). No significant differences among the three groups were observed in terms of inclination of cervical column. (p=0/344)

Keywords: Natural head position, cervical posture, malocclusion, craniofacial morphology.
INVITRO EVALUATION OF ION RELEASE FROM ORTHODONTIC MATERIALS IN DIFFERENT TEMPERATURES OF ORAL CAVITY

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Objectives: Different orthodontic appliances including brackets, bands and different types of wires used in the oral cavity may get corroded, which would cause them to release various ions. The Effects of PH changes, different mouthwashes and the foods consumed, on the release of the ions have been studied. Considering the relatively broad range of temperature changes in the oral cavity, temperature can be designated as one of the factors that is capable of being effective on the release of these ions.

Materials and methods: In this study, orthodontic bands, brackets and wires in various types (stainless steel and nickel titanium) were used, which were immersed in containers full of artificial saliva, in nine different samples. Bands and brackets were the same type, but the wires were made of either stainless steel or nickel titanium (three groups). Also each group of the samples was divided into 3 subgroups with each subgroup having 5°c, 37°c and 60°c. Samples from each, were taken at the end of the days: 1st, 7th, 14th, 21st and 28th. Samples were tested electrochemically using ICP device and the outcome of the ion release was determined in each sample. All the results were statistically analyzed.

Results: Test results showed that, regardless of the type of the wires and temperature, the overall rate of release of ions at different times were similar. But the release rate of ions according to the ion's type, at different times, was different. The most released ion in the first day, was the iron ion, but in the next days, the release process of different ions were similar.

Although the release process of different ions, regardless of the type of the wires, at different times were different, the type of the wire was effective on the release rate of copper ions.

The rate of release process of the ions, regardless of temperature, were different at different times, however temperature has not been effective in the release of any of the investigated ions. Temperature changes do not have a significant effect on the release of the ions.

Conclusion: Temperature doesn't have significant effect on metal ion release. The effect of the type of the wire is more significant than that of temperature. The release of the iron ion depends on the time, and also release of the copper ion which depends on the time and type of the wires, are more than that of other ions, and should be considered as we use these wires.

Key Words: Temperature, NITI, Stainless steel, ICP
CORRELATION BETWEEN SMOKING AND TGF-B1 CONCENTRATION IN GINGIVAL CREVICULAR FLUID (GCF) OF PATIENTS WITH CHRONIC PERIODONTITIS

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**Objectives:** Growth factors play a major part in wound healing of the periodontium. TGF-\(\beta\) is one of these factors that presents in the GCF. Thus TGF-\(\beta\) concentration might be of value as a prognostic marker of wound healing activity but effect of smoking on this factor is not known yet. The aim of this study is assessment of effect of smoking on TGF-\(\beta\) concentration in gingival crevicular fluid (GCF) of patients with moderate to severe chronic periodontitis.

**Methods:** GCF samples were collected using a Perio-Paper strip from diseased and healthy sites of 60 patients (30 smokers and 30 non smokers) with moderate to severe chronic periodontitis. After the elution, TGF-\(\beta\) concentrations were measured by ELAISA.

**Results:** TGF-\(\beta\) GCF concentration in smokers diseased sites were higher than that of non smokers diseased sites. Also TGF-\(\beta\) GCF concentration in smokers healthy sites were higher than the concentration of that cytokine in non smokers healthy sites, but such differences were not significant (\(P > 0.05\)). Also the analyses showed that TGF-\(\beta\) GCF concentration in non smokers diseased sites were significantly higher than that of non smokers healthy sites (\(P < 0.0001\)), but in smokers, differences between TGF-\(\beta\) GCF concentration in healthy and diseased sites were not significant.

**Conclusion:** The data indicate that TGF-\(\beta\) GCF concentration increases by prevalence and severity of periodontitis. So higher concentrations of TGF-\(\beta\) in non smokers diseased sites might indicate a role for TGF-\(\beta\) in regulating immune responses, restricting inflammation and initiating the healing process. In smokers, TGF-\(\beta\) concentration declined slightly, therefore differences between TGF-\(\beta\) concentration in healthy and diseased sites were not significant. Probably smoking interferes with healing, regulation and control of the inflammatory processes.
EVALUATION OF MICROLEAKAGE IN FULL COVERAGE CAST CROWNS USING TWO DIFFERENT LUTTING CEMENTS

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Objective: To evaluate and compare values of micro leakage in full coverage cast crown restorations cemented by zinc phosphate and resin modified glass-inomer cements using different marginal adaptations.

Methods: thirty non-carious human premolars were prepared in a standardized manner for full cast crown restorations. All margins were finished in dentin. Crowns were cast using a base metal alloy after impressions and routine laboratory procedures. Metal crown margins were designed so that in one section, maximum adaptation of 300 microns was achieved and in the other section, marginal adaptation was below 100 microns (open margin). The specimens were randomly categorized into two groups: one group cemented using zinc-phosphate cement (Flecks USA), and the other group using resin-modified glass–ionomer cement (Fuji Plus – Japan). After 3 months of storage in distilled water at 37 °C, the specimens were subjected to 1000 thermo cycles ranging in temperature from 5 to 55 °C. The specimens were put in a coloring agent (Methylene blue 2%) for 24 hours and embedded in resin blocks. After vertically cutting the blocks in a mesiodistal direction, each crown was evaluated for micro leakage using a high-resolution digital microscopic camera (Zeiss, Oberkochen, Germany).

Results: Crowns cemented using zinc phosphate cement showed higher micro leakage values compared to resin modified glass-ionomer cement in both open and adapted margins. There was no significant difference found in micro leakage of the adapted and open margins in the resin modified glass-ionomer cement group, whereas in the zinc phosphate cement group, micro leakage values in open margin crowns were higher than in marginally adapted crowns.

Conclusion: Using resin modified glass-inomer as full coverage cast crown cement could decrease micro leakage in any marginal state of adaptation.

Key words: Micro leakage, full cast crown, luting cement, open margin.