



TORABINEJAD  
Dental Materials Research Center  
مرکز تحقیقات مواد دندان برای تراش



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UNIVERSITY



# CONSERVATIVE DENTISTRY

## International Congress

ISFAHAN, IRAN, 2016

Mar 1-3



SBMU-IR-Iran



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SBMU-IR-Iran



TORABINEJAD  
Dental Research Center  
مرکز تحقیقات دندان پزشکی برای تراش



Implant Research Center

Dental Materials Research Center, School of Dentistry, Isfahan University of Medical Sciences, Isfahan, Iran

Tel: +98 313 792 5510

Fax: +98 313 6689590

Email: [tdmrc@dnt.mui.ac.ir](mailto:tdmrc@dnt.mui.ac.ir)

## Message of Congress Scientific Secretaries

Conservative Dentistry provides effective, long-lasting, and low-cost dental treatments. In addition, conservative dentistry reduces physical pain and stress level in patients and preserves sound teeth structure and healthy oral tissues.

Dental Materials Research Center of Isfahan University of Medical Sciences intends to hold an International Congress of Conservative Dentistry to promote the conservative point of view in dental community and research. This congress is being planned to commence in March 1- 3, 2016. During this meeting, we will share our experiences, our expertise and knowledge. The results of the current dental research in this field will be disseminated to local and global organizations as well as participates in this Congress.

We are considering a comprehensive planning including lectures, practical workshops, and posters to provide the latest developments in technology and biomaterials in the field of Conservative Dentistry

Our hope is to significantly improve oral health of our society by charting new directions and developing new horizons in preventive dental cares. We look forward to meeting our colleagues and friends at this International Congress of Conservative Dentistry in the beautiful historic City of Isfahan, in Iran.

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<b>Title</b>	<b>Lecturer</b>	<b>Page</b>
Conservative treatments for white spot lesions	Elham Ahmadi	1
Effect of local administration of Zolendronic acid on the orthodontic tooth movement	Sohrab Asefi	2
Caries in primary teeth and permanent molars children	Imaneh Asgari	3
Dental status of 12 years-old children in Tehran province: a cross-sectional study	Soheila Bakhshandeh	4
Conservative nonsurgical periodontal treatment in esthetic zone	Ali Asghar Basiri	5
Facing challenges in bone reconstructions	Joseph Bassil	6
Periodontal treatment or extraction and implant	Parichehr Behfarnia	7
Proliferation and differentiation of dental pulp-derived stem cells	Mohammad Hossein Beigi	8
Innovation in all-ceramics and cementation	Amine Bensegueni	9
Laser application in conservative periodontal and implant dentistry	Reza Birang	10
Endocrown- a new method for an old technique	Reza Darabi	11
Performance of orthodontists regard to white spots: prevention and treatment	Faeze Eslamipour	12
Oral health and dietary habits of university students: a risk factor for oral health	Zahra Enshaei	13
New technology for caries detection	Kamiar Fathpour	14
Material selection for all-ceramic restorations	Kamiar Fathpour	15
Minimally invasive dentistry: new approach in caries prevention and treatment	Atieh Feiz	16
A review of biomaterials and their role in regenerative dentistry	Mohammad Reza Foroughi	17

<b>Title</b>	<b>Lecturer</b>	<b>Page</b>
Rehabilitation of worn dentition	Ehsan Ghasemi	18
Challenges in conservative dentistry; Who is responsible?	Hadi Ghasemi	19
Knowledge, attitude and performance of dentists in fluoride application	Hadi Ghasemi	20
Root resorption: diagnosis and treatment	Jamileh Ghodduzi	21
Conservative periodontal treatment, improving public general health	Ahmad Haerian	22
Conservative reconstruction of posterior maxilla and mandible	Abbas Haghightat	23
Implant placement in post-extraction sites: treatment options	Dariush Hasheminia	24
Preventing orthodontics complications	Ali Mohammad Kalantar Motamedi	25
Porcelain veneers; connection of esthetic and conservative dentistry	Mehrdad Kazemian	26
Clinical application of MTA	Abbas Ali Khademi	27
Effect of several bleaching agents on teeth stained with a resin-based sealer	Saiedeh Khalesi	28
The effect of surface treatment on the wettability and bioactivity of Ti-6Al-4V dental implant	Mohammad Khodaei	29
Conservative esthetic approaches of tooth color improvements comparing to tooth whitening: A review	Maryam Khoroushi	30
Proposal for development of new protocol on early childhood caries (ECC)	Mohammad Khoshnevisan	31
CO2 lasers to destroy defiance of nanobacteria	Jafar Kolahi	32



<b>Title</b>	<b>Name</b>	<b>Page</b>
Review of clinical applications of CBCT in dental practice	Mojdeh Mehdizadeh	33
Conservative esthetic bridges	Mohammad Reza Malekipour	34
Diastema closure: a conservative non-prep method	Hamid Mazaheri	35
Novel cements in endodontics and pulp regeneration	Hesam Mirmohammadi	36
A conservative view on dental caries classifications	Shiva Mortazavi	37
Direct composite veneers	Seyed Mostafa Mousavinasab	38
Finite element analysis of customized bio-ceramic implants produced by rapid prototyping manufacturing	Sayed Ali Mousavi	39
Combination of chin graft and PRF instead of iliac crest bone grafting for alveolar cleft repair	Bijan Movahedian Attar	40
BioEsthetic concept; an ultra conservative approach to esthetic dentistry	Sina Navab Amir Ghahremani	41
Porcelain Inlay / Onlay	Saied Nemati	42
Porcelain laminate veneer	Saied Nemati	43
New guidelines in fluoride therapy	Firoozeh Nilchian	44
Dental stem cell banking	Nosrat Nourbakhsh	45
Caries risk assessment – A review	Pakdaman A	46
CBCT in endodontics	Masoud Parirokh	47
Tissue Adhesive: Indications in Oral and maxillofacial surgery	Mohammad Hassan Samandari	48
Bonding and resin cements; Cementation	Pouran Samimi	49
Short implants: A conservative approach to implant dentistry	Omid Savabi	50
Intelligent approach in adult orthodontic treatment	Manfred Schussler	51

<b>Title</b>	<b>Name</b>	<b>Page</b>
Oral health literacy as a determinant for oral health	Zahra Saied Moallemi	52
Risk-based caries management	Zahra Saied Moallemi	53
Conservative dentistry with a new approach to stem cells	Reyhaneh Shafieian	54
Repair of replacement	Farzaneh Shirani	55
How to evaluate a smile clinically?	Georges, L.S. Skinazi	56
Extractions are they still pertinent nowadays?	Georges, L.S. Skinazi	57
Attitude and performance of parents regarding professional fluoride therapy in Isfahan	Bahareh Tahani	58
New guidelines in fissure sealant	Bahareh Tahani	59
Application of low level laser in Oral and Maxillofacial disease	Atefeh Tavangar	60
Prevention of facial asymmetry in growing patients	Azita Tehranchi	61
The dynamics of the periapical lesion	Carel Jan Warnsinck	62
Is crown-lengthening a conservative and acceptable periodontal treatment?	Jaber Yaghini	63



***ABSTRACT***

## Conservative treatments for white spot lesions

Ahmadi E<sup>1</sup>

Valizadeh S<sup>1</sup>

**Introduction:** White spot lesions (WSLs) are early mark of demineralization under intact enamel. The incidence of WSLs in fixed orthodontic patients was 73%-95%. So WSL is one of the most frequent esthetic complications. This article is a current review of the preventive and treatment approaches of WSLs.

**Material and Methods:** In this study, Google scholar databases, Scopus and Pub med were searched for articles published during 1986-2015 using keywords" white spot lesions" ,demineralization", laser", varnish fluoride" and orthodontics.

**Results:** Causes of WSLs may include salivary factor (rate and composition), poor oral hygiene, sugar- rich diet and alteration of the oral environment. Prevention and treatment of WSLs can be done with improvement of patient oral hygiene and additional conservative procedures for instance laser therapy, chitosan component, icon resin, chlorhexidine varnish, Xylitol gums, novamin and CPP-ACP.

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1- Department of Operative Dentistry, Tehran University of Medical Sciences, Tehran,

## **Effect of local administration of zoledronic acid on the orthodontic tooth movement**

Seifi M<sup>1</sup>

Asefi S<sup>2</sup>

Hatamifard G<sup>3</sup>

Lotfi A<sup>4</sup>

**Introduction:** Orthodontic tooth movement (OTM) depends on surrounding alveolar bone remodeling which is affected by local or systemic factors. Intra or extraoral anchorage devices as Headgear or Skeletal anchorage devices can be some of complicated local examples. Zoledronic acid (ZA) is the most potent member of bisphosphonates family which have inhibitory effect on the bone resorption by suppressing osteoclastic function. ZA influence was evaluated on OTM in this study as local and/ or systemic anchorage controlling method.

**Material and Methods:** thirty rats were used in 3 experimental groups. They were anesthetized and two closed NiTi coil springs were installed between first molars and central incisors bilaterally, except negative control group. 0.01 ml normal saline was injected beside first molars in right sides of all groups. In the left sides, injection was followed in each group: 1- negative control: didn't receive any appliance or injection 2- positive control: received appliance without saline injection 3- Zoledronic acid: received 0.01 cc solution. After 21 days, rats were decapitated and first and second molars distance was measured by leaf gauge. Histologic analysis was done for Howship's lacunae, blood vessels, osteoclast-like cells and root resorptive lacunae by a blind pathologist. Data were analyzed by Kruskal-Wallis, Mann-Whitney and Wilcoxon tests.

**Results:** Significant difference didn't found in OTM between forced applied groups. ZA decreased bone and root resorption significantly compare to positive control and the test side.

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1- Professor of Orthodontic Department of School of Dentistry, Shahid Beheshti University of Medical Sciences, Tehran, Iran.

2- Postgraduate of Orthodontic Department of School of Dentistry, Shahid Beheshti University of Medical Sciences, Tehran, Iran.

## **Caries in primary teeth and permanent molars in children**

Asgari I<sup>1</sup>

Ghanea N<sup>2</sup>

**Introduction:** First molar has an important role at individual's dental health. Among the known risk factors, the experience of previous caries is of the best predictors for future caries. The aim of this study is to examine the association of primary teeth caries and other risk factors with the incidence of permanent teeth caries by considering the caries extent and severity.

**Material and Methods:** This case-control study has been done on 150 students from second and third grade with 9-years-old. Cases included children with at least one carious permanent molar. Caries-free students who were matched based on the gender and parents education was considered as control group. Examination was done on dental unit under the unit light with blunt explorer and mirror for visual assessment. DMFT, dmft and caries severity (D1-D3) were recorded based on WHO standards. By SPSS18, correlation, Chi Square Analysis, Odds ratio and Logistic regression were calculated.

**Results:** Linear correlation between dmft in primary teeth and DMFT in permanent molars was obtained with  $r: 0.34$  ( $p \text{ value} < 0.001$ ). Decay in permanent molars in students with active caries in primary molars was 3.3 times more probable than others. In regression model other risk factors such as cariogenic diet, parents education, brushing with toothpaste, flossing, using fluoride and regular dental visiting were not significant ( $p \text{ value} > 0.05$ )

**Conclusion:** Caries-free primary teeth predicts permanent teeth without decay with a high possibility. It is helpful in caries risk assessments.

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1- Dental Materials Research Center, Department of Public Oral Health, School of Dentistry, Isfahan University of Medical Sciences, Isfahan, Iran.

2- Dental student, Dental Students' Research Center, School of Dentistry, Isfahan University of Medical Sciences, Isfahan, Iran.

## **Dental status of 12 years-old children in Tehran province: a cross-sectional study**

Bakhshandeh S<sup>1</sup>  
Ghasemianpoor M<sup>2</sup>  
Akbarzadeh Baghban A<sup>3</sup>

**Introduction:** The aim of the present study was to evaluate dental status of 12-year-old children in Tehran, Iran.

**Material and Methods:** The data of this cross-sectional study was taken from the oral-health national survey conducted in 2012. Out of 8761 eligible samples, 569 selected to participate in the present study using a multistage and cluster sampling method. Trained and calibrated examiners performed the clinical examination of the subjects using the WHO recommended questionnaire. Background information, dmft, DMFT and caries free status of the both primary and permanent dentition were recorded.

**Results:** The mean DMFT was 2.03 in urban citizen and 2.24 in rural area and dominated by decayed teeth (1.5 and 2 respectively). Of all subjects 41.6% were caries free in permanent dentition that was more prevalent among boys in urban citizen than girls (46.7% vs. 37.3%), also it was the same for rural area (44.1% vs. 35%). The mean dmft was 1.9 (SD=1.8) and 2.8 (SD=3.5) among urban and rural citizens.

**Conclusion:** To decrease a level of caries among 12 years old children, school-based dental health education activities focusing on oral self-care is necessary. Oral health promotion program should be continued from primary school up to high school.

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1- Preventive Dentistry Research Center, Research Institute of Dental Sciences, Dental School, Shahid Beheshti University of Medical Sciences, Tehran, Iran.

2- Dental Research Center, Research Institute of Dental Sciences, Dental School, Shahid Beheshti University of Medical Sciences, Tehran, Iran.

3- Ph.D in Biostatistics, Associate Professor, Proteomics Research Center, Department of Basic Sciences, School of Rehabilitation Sciences, Shahid Beheshti University of Medical Sciences, Tehran, Iran.

## **Conservative nonsurgical periodontal treatment in esthetic zone**

Basiri AA<sup>1</sup>

Non-surgical conservative periodontal treatment is first choice in esthetic zone. Treatment Goals consist of: elimination of inflammation and pockets with minimal loss of soft tissues, preservation of papilla, Inhibition of recurrence. Treatment Algorithm: Charting, Determination of diagnosis, prognosis, and treatment plan. In phase I of Treatment: avoid gingival curettage and surgical flap, and use laser assisted disinfection, chemotherapy, and photo activated disinfection.

Results: Reduction of pocket depth, inflammation, mobility, and biologic events. Success Rate is based on type/severity of periodontal disease, skill of clinician, and patient cooperation.

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1- Periodontist, Isfahan, Iran.



## Facing challenges in bone reconstructions

Bassil J<sup>1</sup>

Hard tissue defects resulting from trauma, infection, or tooth loss often lead to an unfavorable anatomy of maxillary and mandibular alveolar processes that become not suitable for implant therapy without bone grafting. The goal of pre-implant bone augmentation of the deficient alveolar ridge is reconstruction of the proper alveolar anatomy through the techniques of socket preservation, horizontal and vertical ridge augmentation, sinus bone grafting, and others. A variety of bone grafts and bone grafting materials have been used in the last 30 years for augmentation of deficient alveolar ridge for the purpose of implant treatment of partially and completely edentulous patients. Bone grafting options include autogenous, allogeneic, xenogeneic, synthetic bone, and combination of the above. Autogenous bone grafts are considered "the gold standard" due to their compatibility and osteogenic potentials to form the new bone by processes of osteogenesis, osteoinduction, and osteoconduction. Intraoral sites of autogenous block grafts include symphysis and retromolar-ramus areas have been used for correction of alveolar ridge deficiencies. This presentation will do an overview of the evolution of the different biomaterials and techniques used in this field and will propose an innovative and minimally invasive technique using the malar bone to correct moderate to severe defects of the alveolar process prior to implant placement.

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1- Professor, ITI fellow, Department of Oral surgery at Saint Joseph University, Department of Maxillofacial surgery at the Lebanese Army Hospital, Beirut, Lebanon.

## Periodontal treatment or extraction and implant

Behfarnia P<sup>1</sup>

Maintaining natural teeth in health, function, and esthetics is a primary goal of dentistry. In the past, the maintenance of a natural tooth was paramount, because tooth replacement techniques were costly and not as predictable as repairing the natural tooth. What is new in today's environment is that some dental procedures (as the treatment of severe periodontal disease, furcation treatment, or functional crown lengthening) may have a lower success rate or poorer cosmetic result compared to an implant to replace the tooth. Therefore, on occasion, the significantly compromised natural tooth may be extracted and replaced with an implant. Implants should also be considered as an alternative when more expensive procedures are contemplated in an attempt to save or maintain a compromised tooth.

Success rates for both periodontal and implant therapy are often depend on site and type of the tooth. For periodontally involved teeth, the decision to maintain or to extract and place an implant is often complicated. The primary discussions related to this article will be for periodontal considerations, which may warrant tooth retention or extraction and implant restoration.

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1- Dental Implants Research Center, Department of Periodontics, School of Dentistry, Isfahan University of Medical Sciences, Isfahan, Iran.

## **Proliferation and differentiation of dental pulp-derived stem cells**

Beigi MH<sup>1</sup>

Sharifnabi A<sup>2</sup>

Nasr-Esfahani MH<sup>1</sup>

**Introduction:** Regeneration of bone damages by a tissue engineering approach provides a modern ways of treatment utilizing cells and materials. Considering nanometer size of the natural extracellular matrix components such as cavities, today's interest has been raised to utilizing nanopowders for bone tissue engineering. As well as the use of stem cells for tissue engineering has great importance due to the ability of these cells to differentiate into different cell types.

**Material and Methods:** In this study, in vitro behavior of Mg-substituted fluorapatite (Mg-FHA) was evaluated. The surface of the powders were studied by SEM to evaluate the morphology and amount of precipitated bone-like apatite. We also evaluated the proliferation and differentiation of dental pulp-derived stem cells (DPSCs) in response to Mg-FHA Nanopowders via MTS and RT-PCR test.

**Results:** Our results showed the suitability of Mg-FHA more than FHA nanopowders and TCP due to the greater growth and proliferation of dental pulp derived stem cells by MTS. As well as the according to the RT-PCR test results, more expression of bone-specific factors in Mg-FHA nonopowders.

**Conclusion:** The overall results of this study suggest competency of Mg-FHA nanopowders for proliferation and differentiation of mesenchymal stem cells from dental pulp. Regarding to the expression of osteogenic differentiation factors by these cells in the vicinity with nanopowders, these nanopowders can have a significant potential in the regeneration of damaged dental bone tissue.

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1- Department of Cellular Biotechnology at Cell Science Research Center, Royan Institute for Biotechnology, ACECR, Isfahan, Iran.

2- Department of Materials Science and Engineering, School of Engineering, Shiraz University, Shiraz, Iran.

## **Innovation in all-ceramics and cementation**

Bensegueni A<sup>1</sup>

Knowledge of the latest fixe prosthetic dental materials is vital to optimize the functional and aesthetic result. Due to proven method and efficient material we have the possibility to do minimal invasive preparation, save the maximum of natural tissue and offer the patient strong and long lasting cemented restoration.

Topics & Objectives

The indication of the ceramic (Zirconia, Glass ceramic,...)

Which ceramic for which indication?

Preparation of all ceramic guided by mock up

The cementation

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1- International lecturer, Certified trainer and lecturer of Ivoclar Vivadent, Paris, France.

## **Laser application in conservative periodontal and implant dentistry**

Birang R<sup>1</sup>

Izadi M<sup>2</sup>

Birang E<sup>3</sup>

Due to different complications, in some patients invasive or surgical treatments is not possible so instead of surgical treatment, conservative laser therapy can be used. In implant dentistry, laser therapy can be applied in some surgical stages such as peri-implant soft tissue management and treatment of peri-implantitis disease. So in this lecture we will talk about conservative laser therapy in periodontics and implant dentistry.

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1- Torabinejad Dental Research Center, Department of Periodontics, School of Dentistry, Isfahan University of Medical sciences, Isfahan, Iran.

2- Post-graduate dental student. Dental students' Research Center, School of Dentistry, Isfahan University of Medical Sciences, Isfahan, Iran.

3- Post-graduate dental student. Dental Students' Research Center, Department of Periodontics, School of Dentistry, Khorasgan Azad University, Isfahan, Iran.

## **Endocrown– A new method for an old technique**

Darabi R<sup>1</sup>

Richmond which was one of the restorative methods for extensively damaged and endodontically treated teeth has been considered as an inefficient treatment due to different factors. At the present time improvement of ceramic materials and perfect bonding have helped us to use Endocrown in posterior teeth (molar and premolar) instead of Richmond and conventional post and crowns. In this lecture indications, preparation, impression taking, prosthetic procedures, and cementation of these crowns will be described in details.

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1- Department of Prosthodontics, School of Dentistry, Khorasgan Azad University, Isfahan, Iran.

## Performance of orthodontists regard to white spots: prevention and treatment

Eslamipour F<sup>1</sup>

**Introduction:** Enamel demineralization or white spot lesions are the most common adverse effects of orthodontic treatment. The present study was conducted to assess practice of Iranian orthodontists with regard to prevention and treatment of white spot lesions (WSL) in their patients.

**Material and Methods:** In this descriptive cross - sectional study 109 Iranian orthodontists were recruited. Cluster random sampling was used. For data collection a questionnaire was designed and its validity confirmed by orthodontists and reliability was assessed in a pilot study ( $\alpha=0.85$ ). The questionnaire included a demographic section and 13 questions about practice with regard to prevention and treatment of WSL. Data were entered in SPSS20 software and ANOVA test and t-test at a significance level of  $\alpha =0.05$  were used.

**Results:** The mean score of orthodontists' practice was 7.62(range0-8) and 94.4% of them was good, 3.7% moderate and 1.9% was weak in practice. Women were significantly better than men in practice (P value=0.001). There was significant relationship between age and practice (P value=0.001), but there wasn't significant relation between years of experience and practice (P value=0.230). The results showed that 94.4% of specialists prescribed fluoride products for oral health care. Toothpastes and mouthwashes were the most common products (34%) which they were used.

**Conclusions:** Based on this study orthodontists had good and acceptable practice with regard WSL prevention and treatment. It seems planning educational courses will be useful for promoting their knowledge and practice about new products or procedures using in prevention and treatment of the WSL.

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1- Torabinejad Dental Research Center, Department of Oral Public Health, School of Dentistry, Isfahan University of Medical Sciences, Isfahan, Iran.

## Oral health and dietary habits of university students: A risk factor for oral health

Saied Moallemi Z<sup>1</sup>

Enshaei Z<sup>2</sup>

**Introduction:** Diet is one of the factors affecting oral health. Recent nutrition transition in Iran leads to increased consumption of high-calorie sources especially in younger populations. This study aimed to assess oral health-related dietary knowledge and habits among the Isfahan university students.

**Material and Methods:** A sum of 535 students (381 females and 151 males) with mean age of  $23.6 \pm 4$  years old participated in this study. Data were gathered through a validated self-administered questionnaire with four sessions on demographic factors, oral health behaviors (OHB), oral health-related dietary knowledge (OHD-K), and oral health-related dietary habits (OHD-H). Descriptive analyses, latent class analysis, and Chi2 were applied.

**Results:** Almost all the participants had sufficient knowledge (OHD-K) about cariogenicity of different foods, while half of them (47%) were in the category of improper food choices (OHD-H) in oral health field. OHD-K was not associated with OHD-H ( $P > 0.05$ ). A better OHB was associated with higher OHD-K and proper OHD-H ( $P < 0.001$ ). Males (class size: 12.2%) were more likely to have poor OHB than females (class size: 3.2%).

**Conclusions:** University students, although, had sufficient oral health-related dietary knowledge, they showed improper oral health-related dietary habits. Appropriate programs, focused on oral health-related dietary habits, should be planned to improve healthy habits of the university students.

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1- Torabinejad Dental Research Center, Department of Oral Public Health, School of Dentistry, Isfahan University of Medical Sciences, Isfahan, Iran.

2- Postgraduate dental student, Dental Students' Research Center, School of Dentistry, Isfahan University of Medical Sciences, Isfahan, Iran.



## **New technology for caries detection**

Fathpour K<sup>1</sup>

Early detection of caries lesions is the first step for treatment and preservation of tooth structure. New methods based on new technology have been introduced based on light transmission, light fluorescence, and electrical conductivity/impedance.

Fiber-optic transillumination uses light transmission through the tooth. Devices such as FOTI, DIFOTI, DIAGNO-cam are equipped with this technology.

There are some more devices based on fluorescent response of organic part of tooth structure. Devices such as DIAGNO-dent and FACE are designed based on fluorescent effect. QLF is a device that uses combination of camera and fluorescence systems. Soprolife, LIFEDT and Vista-scan are other devices based on fluorescent effect. The Canary device uses heat and light to scan teeth for the presence of dental caries; this system is a Laser-based system.

There are at least two devices that detect caries based on electrical conductivity/impedance. Electronic Caries Monitor is based on electro-conductivity. The Caries Scan is another device that uses electrical impedance of tooth structure to detect caries.

Another device is available that uses infrared light to produce cross section images of biological tissues. Optical Coherence Tomography is a non-ionizing imaging technique.

This lecture will discuss advantages and disadvantages of these new devices. Also basic concepts of these devices will be presented.

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1- Dental Materials Research Center, Department of Operative dentistry, School of Dentistry, Isfahan University of Medical Sciences, Isfahan, Iran.

## Material selection for all-ceramic restorations

Fathpour K<sup>1</sup>

Full ceramic Restorations are tooth colored restorations that offer many advantages to dental practice such as high esthetic restoration, preservation of tooth structure and bonding to tooth structure. Appropriate technique and material selection are necessary steps for successful treatment.

Ceramics as restorative material have two disadvantages:

When material esthetics and translucency increase, material brittleness will also increase.

Shrinkage of material during fabrication of restoration.

Another limitation of ceramics as restorative material is flexural strength. Ceramic systems can be divided into two main categories: single component and two component ceramics.

Feldspathic porcelains and reinforced glass ceramics are single component ceramics. Two component ceramics use high strength copings that will be veneered by a layer of more esthetic porcelain. These ceramics include glass infiltrated ceramics, pressed ceramics and fully sintered ceramics.

Material selection for full ceramic restorations depends on esthetic demands and mechanical strength needs in the dental arch during function. These two parameters should be assessed for each patient individually to choose appropriate technique and material.

Many commercial products of these ceramics are available that present different chemical, optical and mechanical properties.

This lecture will discuss different properties of these ceramics and presents some guideline to select appropriate ceramic according to different clinical situations.

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1- Dental Materials Research Center, Department of Operative Dentistry, School of Dentistry, Isfahan University of Medical Sciences, Isfahan, Iran.

## **Minimally invasive dentistry: New approach in caries prevention and treatment**

Feiz A<sup>1</sup>

The prevention of tooth decay and the treatment of lesions and cavities are ongoing challenges in dentistry. In recent years, biomimetic approaches have been used to develop Nano-materials for inclusion in a variety of oral health-care products. Examples include liquids and pastes that contain nano-apatites for biofilm management at the tooth surface, and products that contain Nano-materials for the remineralization of early submicrometer-sized enamel lesions. However, the treatment of larger visible cavities with Nano-materials is still at the research stage. Here, we review progress in the development of Nano-materials for different applications in preventive dentistry and research, including clinical trials and biomimetic synthesis of enamel and repair of microcavities.

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1- Dental Materials Research Center, Department of Operative Dentistry, School of Dentistry, Isfahan University of Medical Sciences, Isfahan, Iran.

## **A review of biomaterials and their role in regenerative dentistry**

Foroughi MR<sup>1</sup>

Khoroushi M<sup>2</sup>

Khademi AA<sup>3</sup>

In recent decades, tissue engineering science has entered seriously into modern medical science and dentistry is not exception. Tissue engineering composed of components scaffold, stem cell and growth factor. Biomaterials play an important role in this science. One of the important components that are directly associated with biomaterials are scaffolds which has a porous structure for cell growth, vascularization and tissue regeneration. The functions of these structures are appropriate handling, adequate porosity, biodegradability, good mechanical properties and capability of supporting vessels. Biomaterials in the forms of natural and minerals involved in the construction of scaffolds that can be effective as an important part of regeneration of exposed tissues engineering. According to this the scaffold must have biological and mechanical properties. Therefore, in most cases multi-component biomaterials provided in the form of composites that made scaffold in order to provide a suitable way to support the proliferation, growth and differentiation of stem cells to create tissue. In this review article we try to introduce the performance of biomaterials in formation of scaffolds and their impact on tissue regeneration.

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1- Dental Materials Research Center, School of Dentistry, Isfahan University of Medical Sciences, Isfahan, Iran.

2- Dental Materials Research Center, Department of Operative Dentistry, School of Dentistry, Isfahan University of Medical Sciences, Isfahan, Iran.

3- Torabinejad Research Center, Department of Endodontics, School of Dentistry, Isfahan University of Medical Sciences, Isfahan, Iran.

## Rehabilitation of worn dentition

Ghasemi E<sup>1</sup>

Patients who have many missing teeth or severe deterioration of most teeth may require a full mouth reconstruction using a combination of restorations, veneers, crowns, bridges, dental implants or partial dentures. The oral cavity is a dynamic environment where changes constantly occur, sometimes quickly but more often slowly over time. Management of worn dentition using fixed or removable prostheses is complex and among the most difficult cases to restore. Assessment of the vertical dimension is important for the management, and careful comprehensive treatment plan is required for each individual case. Articulated study casts and diagnostic wax-up can provide important information which is helpful for the evaluation of treatment options.

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1- Dental Materials Research Center, Department of Prosthodontics, School of Dentistry, Isfahan University of Medical Sciences, Isfahan, Iran.

## **Challenges in conservative dentistry; Who is responsible?**

Ghasemi H<sup>1</sup>

Conservative dentistry as a modern concept that aims to preserve tooth structure as much as possible has a recognized place in the scientific dental literature. Generally this concept is accompanied with the responsibility of dentist for the preservation of tooth structure referring to the new material and techniques for restoring tooth with minimal invasion. In the real situation, however, it is not clear how dentists use this concept in their practice and what barriers they perceive in this regard. On the other hand, is it enough to consider dentist as the only responsible for tooth preservation and dental health? What is the responsibility of the individual and health system in this context? In this presentation, we try to look at the concept of conservative dentistry beyond only the biologic factors and expand it to the health determinants in higher levels. This will give an opportunity to better understand determinants of dental health and to better portrait the role of the individual, dentist, and health system for tooth maintenance based on a holistic approach to health.

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1- Department of Community Oral Health, Shahid Beheshti University of Medical Sciences, Tehran, Iran.

## **Knowledge, attitude and performance of dentists in fluoride application**

Ghasemi H<sup>1</sup>

**Introduction:** the effectiveness of fluoride in caries control has established evidence and it is strongly recommended to be applied by dentists for individuals and communities.

**Material and Methods:** in this cross-sectional study in the year 1394, dentists in a national dental congress in Tehran answered to a self-administered questionnaire. The questionnaire included questions regarding dentists' knowledge, attitude, and performance in application of fluoride products. The Chi-square-test served as statistical evaluation.

**Results:** of total 269 completed questionnaires, mean age of the respondents was 39.7 year, 55% were men, and 84% were general dental practitioners. More than half of the respondents have private office, about 60% reported that there is no guideline for fluoride prescription in their practice, and more than 80% reported no participation in continuing education courses about fluoride in last six months. Of the respondents, more than 80% believed that fluoride is effective in caries prevention and water fluoridation is a beneficial method for caries control. About one third of the respondents reported that they have prescribed fluoride complements for themselves, their families and children less than 12 years. For the patients with more than 12 years, this performance has been reported by 10% of the dentists. Thirty-six percent of the dentists reported that they do not prescribe fluoride complements due to its toxic effects. No statistical significant differences have been shown in attitude and performance of the dentists based on their demographic and practice-related factors.

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1- Department of Community Oral Health, Shahid Beheshti University of Medical Sciences, Tehran, Iran.

## Root resorption: diagnosis and treatment

Ghoddusi J<sup>1</sup>

Root resorption is an inflammatory process in which dental pulp stem cells differentiate to the clastic cells. This process may occur internally or externally. Inflammation is the major cause of root resorption, however, in some cases, etiologic factors are unknown. Although inflammation is a major cause, not all inflamed pulp tissues cause root resorption. Since root resorption has no clinical symptoms, it is usually diagnosed incidentally; in checkup radiographs. The treatment is based on the removing of inflamed pulp or periodontal tissues, which is the cause of resorption, through root canal therapy. Resorptions which connect the dental pulp to the periodontal ligament space have the worst prognosis because the complete removal of inflamed tissue and sealing the perforated region is not possible completely. In this presentation, we will discuss several cases of internal and external root resorption and its treatment.

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1– Department of Endodontics, School of Dentistry, Mashhad University of Medical Sciences, Mashhad, Iran.



## **Conservative periodontal treatment, improving public general health**

Haerian A<sup>1</sup>

Health delivery systems and the method of payment can affect medical research. In the 60s and 70s studies were carried out to compare the surgical and non-surgical treatment of periodontitis in United States as well as European countries, specially, northern Europe, which is, being continued for decades. The main motive for these studies was a simple health economy principal. If a treatment can be performed in less time with less cost and occasionally by lower educated personnel, there is no need for complex and expensive treatments. Although, it is obvious that expanding researches is necessary for improving our knowledge and discovering new materials and techniques for the promotion of public health. The results of the mentioned studies showed that, there was no difference between surgical and non-surgical treatment for moderate periodontitis. It should be noted that regular visits by the patients, which is possible via a powerful and established health care system is mandatory for conservative treatment success. The prevalence of periodontal disease and the effect of this disease on general health on one hand and the high amount of time and treatment costs on the other hand may discourage a portion of the society from continuing, or even, starting treatment. In Iran, the Ministry of Health and Medical Education is the administrator of public health in training the required medical staff and providing health services, therefore if teaching and providing conservative periodontal care is paid enough attention, it could be an important step in improving public general health.

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1- Department of Periodontics, Shahid Sadughi University of Medical Sciences, Yazd, Iran.

## **Conservative reconstruction of posterior maxilla and mandible**

Haghighat A<sup>1</sup>

In treating patients with posterior atrophic bone in mandible and maxilla, aggressive surgical methods such as autogenous and biomaterial grafting should be avoided and Transpositioning should never be done. Donor site morbidity, resorption of grafting material, sensory alteration of mental nerve and sinusitis are the negative points of these procedures. The use of short implants in the posterior atrophic ridge will decrease treatment time and patient discomfort, which is beneficial for dentist and patient.

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1- Dental Implants Research Center, Department of Oral and Maxillofacial Surgery, School of Dentistry, Isfahan University of Medical Sciences, Isfahan, Iran.

## **Implant placement in post-extraction sites: treatment options**

Hasheminia D<sup>1</sup>

One important thing that is important when the tooth should be replaced with implant is determination of the time of implant insertion. There are four ways in this regard: immediate implant placement, early implant placement with partial soft tissue healing, early implant placement with partial bone healing and late implant placement. In this presentation I will explain the indications of each of these approaches and recommend specific solution for anterior region of the maxilla.

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1- Dental Implants Research Center, Department of Oral and Maxillofacial Surgery, School of Dentistry, Isfahan University of Medical Sciences, Isfahan, Iran.

## Preventing orthodontics complications

Kalantar Motamedi AM<sup>1</sup>

Although our intension in preventive dentistry is to help patients for eliminating later comprehensive treatments, but most of the times our mistakes, which are mostly in accordance with that of mentioned in our famous references, are more harmful to the patients than being beneficial. One of these situations is crowded erupting lower incisors; in this case, dentists usually decide to strip mesial slope of primary cuspids or even extract them. In this presentation, several untreated cases with crowded incisors and well-aligned teeth at age 12 will be shown. Second common problem revolves around frenum, its time and technique of surgical removal. In addition, serial extraction that is a very complicated subject with several mistakes will be discussed. Finally, prompt intervention in guidance of eruption, elimination of blockages, improving the time-table of eruption, and parafunctional habits are the other subjects of the current presentation that will be discussed in case of having enough time.

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1- Department of Orthodontics, School of Dentistry, Khorasgan Azad University, Isfahan, Iran.

## **Porcelain veneers; connection of esthetic and conservative dentistry**

Kazemian M<sup>1</sup>

Today trend of esthetic dentistry is toward conservative treatments with minimal preparations. Porcelain laminate veneers usually are a conservative method for smile makeovers. In this lecture we discuss the key role of porcelain veneers in many esthetic situations. Technical issues about very thin veneers with minimal or no preparation will also be covered.

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1- Department of Operative Dentistry, School of Dentistry, Khorasgan Azad University, Isfahan, Iran.

## Clinical application of MTA

Khademi AA<sup>1</sup>

MTA was introduced by prof. Mahmoud Torabinejad and Colleagues at Loma Linda University in 1993 and approved by FDA in 1997. The major component of MTA is Portland cement, is a mixture, of tricalcium aluminate, and tetra calcium allumino ferrite. MTA has been used in both surgical and non-surgical applications including: Root end filling, direct pulp capping and vital pulp therapy, perforation repairs in roots or furcation, apexification, etc. Since 2002, White MTA has been marketed and matched more closely to that of the color of teeth.

Advantage of MTA are as follows; Biocompatibility, excellent sealing properties, high PH, setting in the presence of moisture, dentinogenicity, osteogenic potential, cementum apposition induction, regeneration of periodontal ligament.

Disadvantages are cost, technique sensitive requires operator expertise, delayed setting time. In this lecture different cases treated by MTA will be discussed.

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1- Torabinejad Dental Research Center, Department of Endodontics, School of Dentistry, Isfahan University of Medical Sciences, Isfahan, Iran.

## **Effect of several bleaching agents on teeth stained with a resin-based sealer**

Khalesi S<sup>1</sup>

**Introduction:** To evaluate the effect of peroxide-based bleaching agents on teeth stained with AH26 sealer (Dentsply DeTrey, Konstanz, Germany), using digital images and computer analysis.

**Material and Methods:** Thirty-five maxillary central incisors were root filled, and the internal walls of the access cavity were coated with AH26 sealer. Internal bleaching commenced 4 months after the root fillings. In three experimental groups (n = 10), the teeth were bleached for 21 days using 45% carbamide peroxide (CP) gel, 45% sodium perborate + carbamide peroxide (SP + CP) or sodium perborate + distilled water (SP + W). No bleaching was undertaken in the control group. Digital images of each specimen were made before treatment, 4 months after endodontic treatment and 2 weeks after bleaching. Color differences ( $\Delta E$ ) were calculated by determining  $L^*a^*b^*$  values using digital images and imaging software. Differences between the original color and sealer stained teeth, between sealer-stained and bleached teeth and between original color and bleached teeth were calculated. Data were analyzed using one-way ANOVA and Duncan tests ( $\alpha = 0.05$ ).

**Results:** Color differences between baseline and sealer staining were in the range of 8.1–9.9, but differences between the groups were not significant. After bleaching, the degree of lightening was essentially identical for the carbamide peroxide and sodium perborate + carbamide peroxide groups, but was significantly greater ( $P < 0.05$ ) in these two groups than in the sodium perborate + water group.

**Conclusions:** for bleaching AH26 sealer-stained teeth, carbamide peroxide gel and carbamide peroxide gel mixed with sodium perborate were equally effective and

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1- Torabinejad Dental Research Center, Department of Pathology, School of Dentistry, Isfahan University of Medical Sciences, Isfahan, Iran.

## **The effect of surface treatment on the wettability and bioactivity of Ti-6Al-4V dental implant**

Khodaei M<sup>1</sup>

Meratian M<sup>2</sup>

Savabi O<sup>3</sup>

Fathi MH<sup>2,4</sup>

It has been tried to investigate the effect of heat treating surface modifications on surface properties of Ti6Al4V implant. Regarding to application of this alloy for bone healing purposes, and its excellent mechanical, chemical and physical (corrosion) properties in human tissue, in recent investigations, it has been tried to surface properties of titanium optimized. The surface of as received titanium in the form of plate with 1 millimeter thickness after surface modifications, were investigated by some equipment such as contact angle measurement (wettability), scanning electron microscopy (SEM), and in vitro bioactivity assessment by immersion in simulated body fluid (SBF). Results indicate that surface modifications treatment lead to improvement of surface properties of alloy. Also surface properties comparison of modified titanium indicate that the heat treatment at 500 °C were more successful than 350 °C.

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1- Center for Advanced Engineering Research, Majlesi Branch, Islamic Azad University, Isfahan, Iran.

2- Department of Materials Engineering, Isfahan University of Technology, Isfahan, Iran.

3- Torabinejad Dental Research Center, Department of Prosthodontics, School of Dentistry, Isfahan University of Medical Sciences, Isfahan, Iran.

4- Dental Materials Research Center, Isfahan University of Medical Sciences, Isfahan, Iran.



## **Conservative esthetic approaches of tooth color improvements comparing to tooth whitening: A review**

M. Khoroushi<sup>1</sup>

In recent decades, tissue engineering science has entered seriously into modern medical science and dentistry is not exception. Tissue engineering composed of components scaffold, stem cell and growth factor. Biomaterials play an important role in this science. One of the important components that are directly associated with biomaterials are scaffolds which has a porous structure for cell growth, vascularization and tissue regeneration. The functions of these structures are appropriate handling, adequate porosity, biodegradability, good mechanical properties and capability of supporting vessels. Biomaterials in the forms of natural and minerals involved in the construction of scaffolds that can be effective as an important part of regeneration of exposed tissues engineering. According to this the scaffold must have biological and mechanical properties. Therefore, in most cases multi-component biomaterials provided in the form of composites that made scaffold in order to provide a suitable way to support the proliferation, growth and differentiation of stem cells to create tissue. In this review article we try to introduce the performance of biomaterials in formation of scaffolds and their impact on tissue regeneration.

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1- Dental Materials Research Center & Dept. of Operative Dentistry, School of Dentistry, Isfahan University of Medical Sciences, Isfahan, Iran.

## **Proposal for development of new protocol on early childhood caries (ECC)**

Khoshnevisan MH<sup>1</sup>

ECC lesions in children under 71 months old can be considered as one of the major public health problem worldwide. High prevalence of ECC has been reportedly concentrated in low income countries and low SES communities. Untreated ECC leads to extensive destruction of primary dentition. Data shows low prevalence of ECC in Japan (24.4% -2005-3 yr.) and high prevalence in the Philippines (97.1% -2006-6 yr.). Consequently, low quality of children's life, lack of physical development in height and weight, lack of ability to learn and increase in the cost of treatment are conceivable. ECC is a multifactorial chronic condition as suggested by many different disease models. Early bacterial colonization, dental plaque level, diet high in sugar, flow of saliva and its buffering quality, availability of optimum fluoride level, daily oral hygiene practice, and early/regular dental visit are some of the prominent factors involved. Children with ECC have higher risk of dental caries in permanent dentition and if untreated may cause early tooth loss in adulthood. Although, majority of children develop ECC under age 3, no child visits a dentist during this period. On the contrary, these children meet pediatricians or general physicians about 13 times on average during the same period. Therefore, medical team can play a major role in early ECC detection and prevention. Fortunately, dental caries is preventable if adequate preventive programs are available. The health system must provide the opportunity for all children to enjoy healthy dentition for lifetime. In this presentation, the need for a new guideline for intervention at the community, individual and tooth levels will be proposed with WHO perspectives.

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1- Director, WHO Collaborating Center for Training and Research in Dental Public Health, Director, Preventive Dentistry Research Center. Dental Research Institute, SBMU. Community Oral Health Department, College of Dentistry, Shahid Beheshti University of Medical Sciences (SBMU), Tehran, Iran.

## CO<sub>2</sub> lasers to destroy defiance of nanobacteria

Kolahi J<sup>1</sup>

Nanobacteria are mysterious particles that have spurred one of the biggest controversies in modern microbiology.

The apatite mineral around the nanobacteria serves as a primary defense shield against various chemicals and extremely harsh condition. It is combined with a very slow metabolism of nanobacteria. These two items would be the likely explanation for the sever resistance of nanobacteria.

The Hypothesis: The CO<sub>2</sub> laser is a continuous wave gas laser and emits infrared light at 9,600-10,600 nm in an easily manipulated focused beam that is well absorbed by water and hydroxyapatite. Hence, it seems logical to postulate that CO<sub>2</sub> laser can be used successfully to destroy defensive external hydroxyapatite layer of nanobacteria.

Evaluation of the Hypothesis: Main criticism with this hypothesis is differential radiation of nanobacteria. It is well known that CO<sub>2</sub> laser has high water absorption and consequently can cause unwanted damage to human host tissues.

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1- Independent Research Scientist, Founder and Managing Editor of Dental Hypotheses, Isfahan, Iran.

## Conservative esthetic bridges

Malekipour MR<sup>1</sup>

Shirani F<sup>2</sup>

Multiple treatment options are available for replacement of missing teeth. Use of conventional fixed partial denture is criticized because modern dental practice revolves around the principle of preservation of tooth structure. So in such cases when implant is not indicated resin bonded fixed partial denture is the best treatment option. This lecture presents step by step using of resin bonded bridges (FRC Bridges) for treatment of patients with missing incisors in esthetic zones.

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1- Department of Operative Dentistry, School of Dentistry, Khorasgan Azad University, Isfahan, Iran.

2- Dental Materials Research Center, Department of Operative Dentistry, Isfahan University of Medical Sciences, Isfahan, Iran.

## **Diastema closure: A conservative non-prep method**

Mazaheri H<sup>1</sup>

Diastema closure with direct method is an easy, economical and effective way to achieve esthetics in patients. There are, however, indirect methods to solve this problem, but they necessitate tooth preparation and are more costly for patients. Knowledge about different types of diastema, cause of their formations and when the treatment has to be done, their prognosis and treatment plan and also, proper way to close diastema, will all enable dentists to treat patients with confidence. However, performing this procedure depends upon dentist's talent to create tooth with acceptable proportions, form and symmetry and to eliminate probable deviation that may exist in crowns of the teeth. Direct method has many advantages besides being conservative: Less visits, in a way that several anterior diastema can be treated in only one visit, acceptable fees, independence from laboratory, no subsequent complications, etc. Also, other problems can be solved during Treatment such as: rotations of the teeth, a tooth not being straight and straightening up crowns on teeth. Also any problems that might occur such as chipping of incisal edges can be corrected easily with spending very little time and energy.

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1- Dental Materials Research Center, Department of Operative Dentistry, Isfahan University of Medical Sciences, Isfahan, Iran.

## **Review of clinical applications of CBCT in dental practice**

Mehdizadeh M<sup>1</sup>

Two-dimensional (2D) imaging modalities have been used in dentistry since the first intraoral radiograph was obtained in 1896. Since then, dental imaging techniques have advanced with the introduction of tomography and panoramic imaging. Tomography made it possible to isolate areas of interest within the scope of a Radiographic examination, while panoramic imaging utilizes principles of tomography, making it possible to visualize the maxillofacial structures in a single comprehensive image. More recent advances in digital diagnostic imaging have lead to lower radiation doses and faster processing times without affecting the diagnostic quality of the intraoral or panoramic images. However, 2D images possess unique inherent limitations (including magnification, distortion, and superimposition) that can cause misrepresentation in structures. Conventional CT systems offer similar advantages (in addition to providing information about soft tissue); however, image acquisition requires much higher levels of ionizing radiation and a longer scanning time. In addition, the larger size of conventional CT units makes them less than ideal alternatives for dental offices.

This article presents a literature review related to clinical applications of CBCT in dental practice.

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1- Dental Implants Research Center, Department of Oral and Maxillofacial Radiology, Isfahan University of Medical sciences, Isfahan, Iran.

## **Novel cements in endodontics and pulp regeneration**

Mirmohammadi H<sup>1</sup>

The quest to search for an ideal material is never ending especially in the field of dental material science. Since the evolution of dentistry, various materials are hypnotized, formulated and applied both in vivo and in vitro and standardized in order to obtain maximum benefit from the material. Till now in the field of material sciences, no ideal material is generated as the gold standard, since all the formulated materials have pros and cons. In the field of endodontic novel cements (so-called bio-ceramic materials) have emerged recently. Many of these materials have introduced to overcome the problems of working in a humid environment, considering the hydrophilicity property of the used materials. However, futuristic application of these cements for their various clinical applications and success needs a high level of research. Further studies are required to confirm biocompatibility, cost effectiveness, and physical property of these novel cements are superior when compared with other cements. This presentation will introduce novel cements and their clinical applications.

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1- Dental Materials Research Center and Department of Operative Dentistry, School of Dentistry, Isfahan University of Medical Sciences, Isfahan, Iran. Researcher, ACTA, Amsterdam, The Netherlands.

## **A conservative view on dental caries classifications**

Mortazavi S<sup>1</sup>

Dental caries is the result of the synchrony of a number of factors. Through complicated interactions of these factors demineralization of the enamel surface starts and through time the depleted enamel transforms to the end stage of the disease; cavity. Based on the etiology and definitions dental caries is a continuum from a very early demineralization to a deep cavity with the exposure of pulp. In all the steps of diagnosis, classification, prevention and treatment plan this continuum should be taken into consideration. Advances in technology and science of dentistry have provided facilities for detection of dental caries as soon as the disease onsets. Based on the aims, different types of dental caries classifications have been developed. These objectives on an individual basis mainly encompass future follow up of the diseases or assessing the risk of dental caries incidence or progress. On the epidemiologic aspects dental caries classifications are mostly used to assess the prevalence and disease trend. Due to the continuous nature of the disease in both individual and community fields adoption of scales, scores or codes to the different patterns of the disease specially from the very early stages is critical. In conservative dentistry availability of more flexible and extended scores will give the practitioner the ability to have a more reliable treatment plan to save dental natural tissues. So far WHO DMFT and relatively recently ICDAS have met these criteria the most. The implications of a conservative based dental caries classification and different types of classifications will be discussed in this presentation.

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1- Torabinejad Dental Research Center, Department of Pediatric Dentistry, Isfahan University of Medical Sciences, Isfahan, Iran.



## **Finite element analysis of customized bio-ceramic implants produced by rapid prototyping manufacturing**

Mousavi SA<sup>1</sup>  
Rismanchian M<sup>1</sup>  
Kargar V<sup>1</sup>  
Foroughi MR<sup>2</sup>

The Rapid prototyping (RP) and CAD/CAM approach for dental prostheses and implants manufacturing applications had proved to be feasible and promises potential benefits as demonstrated by the numerous researches conducted. The aim of this research was designing and analyzing of precise customized conical bone level bioceramic dental implant to reduce the removal of healthy bone, eliminate the need for bone grafting, and promote effective planning of implantation and fixation. By the early 1980s, finite element method had become well established as a tool for basic research and design analysis. This research has been undertaken related to finding suitable bioceramics' such as porcelain jacket crown (PJC) material and mechanical properties that adhere to the requirements of successful bone growth by rapid prototyping manufacturing technique. Four types of forces were applied on RP and normal bone level ITI designed implant were: tension of 60 N, compression of 120 N, bending of 10 N, and torque of 3Nm to derive design curves were applied on straight 3 cm implants in Abacus software. Fixation analysis of new PJC implant that produced by rapid prototyping involved by FEA, determine the rapid growth of strength of the propose fixation joint in mandibular bone in comparison to ITI straight titanium Implants. (P<0.05).

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1- Dental Implants Research Center, School of Dentistry, Isfahan University of Medical Science, Isfahan, Iran.

2- Dental Materials Research Center, School of Dentistry, Isfahan University of Medical Sciences, Isfahan, Iran.

## Direct composite veneers

Mousavinasab SM<sup>1</sup>

There are several methods in restoring anterior teeth having defects such as malformation, discoloration, enamel defects and caries including porcelain or resin composite veneers.

In restoring teeth resin composites can be applied directly or indirectly. In indirect method the teeth need to be prepared with a definite reduction and clear margins. Also impression making and laboratory process are of particular importance.

In direct method a more limited, conservative preparation is possible and factors affecting restoration success are more under control of dentist. Also bond strength is more reliable and restoration is completed in one session but needs a variety of composite materials and operator skills.

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1- Dental Materials Research Center, Department of Operative Dentistry, Isfahan University of Medical Sciences, Isfahan, Iran.

## **Combination of chin graft and PRF instead of iliac crest bone grafting for alveolar cleft repair**

Movahedian Attar B<sup>1</sup>

**Introduction:** Although iliac crest bone graft is considered as the gold standard in alveolar cleft reconstruction in cleft patients, alternative methods have been developed to eliminate or reduce the morbidity of the patient. Platelet rich fibrin (PRF) is a second-generation product of plasma which had positive results in reconstruction of bone defects. Thus further clinical investigation in this area is required.

**Material and Methods:** Based on inclusion and exclusion criteria, 9 patients with unilateral alveolar cleft were enrolled. The volume of pre-treatment alveolar cleft was measured by CBCT. During surgical procedure, alveolar defects were filled with a combination of allograft, symphysis bone segments (autograft) and PRF. Six months later, the volume of alveolar defects were measured again, and compared with the initial volume. P value less than 0.05 were considered as significant.

**Results:** From 9 patients, 5 were males and 4 were females. Patients were aged between 8 and 15 years. The mean volume of defects before treatment was  $1.03 \pm 0.71$ . After treatment, the mean was reduced to  $0.17 \pm 0.26$ .

**Conclusion:** According to the results of the study, it seems that the combination of allograft, autogenous bone segments from chin area with PRF has successful results in closing the defects of alveolar cleft and the patients experience lesser morbidity in comparison to the patient which iliac crest bone graft.

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1- Dental Implants Research Center, Department of Oral and Maxillofacial Surgery, School of Dentistry, Isfahan University of Medical Sciences, Isfahan, Iran.

## **Bioesthetic concept; An ultra conservative approach to esthetic dentistry**

Navab S<sup>1</sup>

Ghahremani A<sup>2</sup>

There is a considerable tendency to esthetical treatment in people around the world nowadays. Oral and facial esthetic treatments have a great role in today's cosmetic therapies. Especially esthetic dentistry is charming more dentists to obtain certain skills to offer better treatments to their patients. There is no doubt that great improvements in dental materials – specially advanced dental ceramics and new adhesive materials and concepts – give us a better chance to treat in a more effective and also pleasant way. But new concepts for esthetic dentistry such as Bioesthetics pay more attention to tooth structure both histologically and biomechanically. Considering the enamel, dentin and enamel – dentin junction and their influence in natural teeth strength and beauty introduces a new era of esthetic dentistry. A respectful approach to teeth in esthetic treatments is one of the wonderful results of this concept. So this way we can offer a minimally aggressive treatment to our patients. The outcome results will be fantastic and we will discuss different aspect of this concept. Beside the theory of histology and biomechanics of natural teeth we will review the new generations of dental ceramics and bonding systems and their affects on treatment options. In advance the role of ceramist and criteria for choosing the ceramic and its influence on clinical protocols will be discussed. We attempt to lighten great possibilities to achieve predictable results for our colleagues and hope to renew their minds about advances in esthetic dentistry.

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1- Prosthodontist and Implantologist, ICOI Diplomat, Tehran, Iran.

2- Master ceramist, Tehran, Iran.

## Porcelain inlay / onlay

Nemati S<sup>1</sup>

At first the advantages and disadvantages of an onlay is mentioned, Second, some general considerations like divergent cavity preparation, rounded internal line angles and the amount of occlusal reduction is discussed. In the 3rd step the contraindication of an Onlay like bruxism, heavy occlusal forces deep sub gingival preparations, inability to maintain isolation are highlighted. So it will be obvious that the indications like large cavities, endodontically- treated teeth fracture line and failure previous large restorations are coming up. Block out the undercuts with a RMGIC and impression and then provisional restoration are then discussed. Finally cementation process with a dual curing resin cement are shown and the lecture ends up with some clinical cases.

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1- Department of Operative Dentistry, School of Dentistry, Tehran Azad University, Tehran, Iran.

## Porcelain Laminate Veneer

Nemati S<sup>1</sup>

In this lecture we have an over look on porcelain laminate veneers (PLV) as a conservative treatment to achieve esthetic in dentistry PLVs are a well-known treatment worldwide. Firstly a brief definition of feldspathic porcelain (the most vital appearance) and the empress porcelain as well as some explanation about silane coupling agent is given. Then the advantages and disadvantages of PLV are mentioned along with the Contra-indications like bruxism and short teeth and parafunctional habits and the indications like masking discolorations, aligning teeth, or changing smile. A definition about static and dynamic area of visibility and tooth preparation (standard and window prep) with close up slides are then discussed. After that Impression and provisional restorations and then silanization and cementation with a light cure luting resin cement are explained. Finally some failures such as wrong tooth preparation, wrong cementation, etc. are sorted.

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1- Department of Operative Dentistry, School of Dentistry, Tehran Azad University, Tehran, Iran.

## **New guidelines in fluoride therapy**

Nilchian F<sup>1</sup>

Fluoride has several caries-protective mechanisms of action. Topically, low levels of fluoride in plaque and saliva inhibit the demineralization of sound enamel and enhance the remineralization of demineralized enamel. Fluoride also inhibits dental caries by affecting the metabolic activity of cariogenic bacteria. When used appropriately, fluoride is both safe and effective in preventing and controlling dental caries. Decisions concerning the administration of fluoride are based on the unique needs of each patient. There is evidence from meta-analyses that fluoridated toothpaste is effective in reducing dental caries in children with the effect increased in children with higher baseline level of caries, higher concentration of fluoride in the toothpaste, greater frequency in use, and supervision.

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1- Dental Materials Research Center, Department of Oral Public Health, School of Dentistry, Isfahan University of Medical Sciences, Isfahan, Iran.

## Dental stem cell banking

Nourbakhsh N<sup>1</sup>

Talebi A<sup>2</sup>

Recent studies have shown that SHED has the ability to develop into more types of body tissues than other types of stem cells. Scientists believe that these stem cells behave differently than post-natal (adult) stem cells. SHED cells multiply rapidly and grow much faster than adult stem cells, suggesting that they are less mature, so they have the potential to develop into a wider variety of tissue types. Today's banking of these cells is the interest of many companies around the world. At present there are eight tooth banks and dentists are the key elements. According to IUMS proposal which had been suggested to the stem cell committee, in present lecture we discuss basic techniques required for dental stem cell banking and its advantages comparison to the cord blood banking.

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1- Torabinejad Dental Research Center, Department of Pediatric Dentistry, School of Dentistry, Isfahan University of Medical Sciences, Isfahan, Iran.

2-Department of Pathology, School of Medicine, Isfahan University of Medical Sciences, Isfahan, Iran.



## **Caries risk assessment – A review**

Pakdaman A<sup>1</sup>

In developing countries, reduction of tooth decay in children and adolescents has been reported in recent decades due to new strategies of preventive dentistry. Still tooth decay is prevalent in high-risk groups. Design and implementation of preventive programs is costly and time-consuming and hence at the international level, emphasize is on the detection of high-risk individuals to control risk factors and implement long-term programs. The purpose of the present study was to review the caries risk assessment systems in target groups. The main databases as Google, Google Scholar, Scopus, PubMed were searched. The results indicated that there are various systems on risk assessment in adults and children with different definition on caries and time period. Emphasize is on the detection of individuals with low SES, being minority, having systemic disease and living in low fluoride areas and to apply preventive methods and regular care.

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1- Department of Public Oral Health and Community Dentistry, School of Dentistry, Tehran University of Medical Science, Tehran, Iran.

## CBCT in Endodontics

Parirokh M<sup>1</sup>

One of the reasons result failure in endodontic therapy is unreasonable case selection and improper diagnosis prior to commence the treatment. In the past, dentists and particularly endodontists were mostly relying on periapical radiography and sensibility tests as diagnostic tools. However, these tools have had some limitations. The limitations of two dimensional radiographs such as periapical radiography result increasing errors in determining treatment prognosis. Nowadays, using cone beam computed tomography (CBCT) incredibly raises diagnostic ability of dentists and endodontists. Recent investigations have shown that using CBCT could detect up to 38% more periapical lesion compared to the conventional periapical radiography. In addition, in a study, the treatment plans of some practitioners that had been determined with periapical radiography had changed following observing CBCT of the same cases. Therefore, employing CBCT and teaching its interpretation have been included in educational curriculum of dental schools in pioneer countries. It should keep in mind that improper ordering of CBCT may not only impose cost but also increase the amount of unnecessary x-ray beam to the patients. Therefore, understanding indications of ordering CBCT and ability of interpreting it can increase the quality of treatment plan as well as preventing unjustified ordering. In this presentation, indication and primary roles in interpretation of CBCT will be described.

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1- Department of Endodontic, Kerman Dental School, Kerman University of Medical Sciences, Kerman, Iran.

## **Tissue adhesive: indications in oral and maxillofacial surgery**

Samandari MH<sup>1</sup>

Cyanoacrylate has been used in medicine and dentistry for many years. In the 1960s; Dr. S.N. Bhaskar had used cyanoacrylate as effective periodontal dressing. They were used extensively during the Vietnam war to dress wounds on the battle field. The formulation, n- butyl and 2-octyl, have been used extensively in both medicine and dentistry. In maxillofacial surgery, they used dressing in facial esthetic surgery and wound closure. In oral surgery, they were used in free gingival grafts – securing the grafted tissue, socket preservation – alter placing implant and attaching flap after surgery. In advanced surgery, using These tissue adhesive can improve the technique's outcome.

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1- Dental Implants Research Center, Department of Oral and Maxillofacial Surgery, School of Dentistry, Isfahan University of Medical Sciences, Isfahan, Iran.

## **Bonding and resin cements; Cementation**

Samimi P<sup>1</sup>

Modern dental adhesives are classified to three groups: 1. Etch and rinse adhesive systems 2. Self etch adhesive systems 3. Universal bonding systems. During bonding to tooth structure, mineral content of enamel and dentin are exchanged with resins that leads to formation of a layer called hybrid layer. Low hydrophilicity and high degree of polymerization of hybrid layer are favorable because better marginal seal and less microleakage will occur.

It is shown in different studies that dental adhesives that do not apply hydrophobic resin as a separate step are more prone to microleakage than two step mild self etch and three step etch and rinse systems. Also, adhesives with higher PH acidity show lower bond strength to tooth structure.

Cementation of indirect restorations with adhesive techniques offers advantages to restoration and tooth structure. In some cases crown preparation height and occlusal tapering are less than ideal. Using adhesive techniques can compensate decreased retention and resistance in such situations. By using adhesive technique, it is possible to bond conservative restorations such as laminate veneers, full veneers, inlays and onlays to tooth structure. For this procedure it is necessary to use resin cements. Resin cements are classified to conventional and self-adhesive resin cements according to bonding procedure. Also the mode of curing is different in resin cements: light curing, self-curing and dual curing cements. Based on ceramic system used to fabricate the indirect restoration and thickness of the restoration, proper resin cements should be chosen to cement the restoration.

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1- Dental Materials Research Center, Department of Operative Dentistry, School of Dentistry, Isfahan University of Medical Sciences, Isfahan, Iran.

## Short implants: A conservative approach to implant dentistry

Savabi O<sup>1</sup>

Nejatidanesh F<sup>2</sup>

Savabi G<sup>2</sup>

High success rate of dental implants and implant-supported prosthesis are well documented. However when there are severe resorptions and bone height reduction, replacing the missing teeth with an implant-supported prosthesis may need sinus bone grafting in the maxilla and onlay bone grafts in the mandible. These types of treatment are invasive and requires more time and cost. Short dental implants are alternative minimally invasive treatment modality. The present lecture reviews the current literature on the use of short implants. Whenever possible and well indicated, short implants can be used as a safe and conservative option for edentulous areas with bone height and volume limitations

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1- ITI fellow, Torabinejad Dental Research Center, Department of Prosthodontics, School of Dentistry, Isfahan University of Medical Sciences, Isfahan, Iran.

2- Dental Materials Research Center, Department of Prosthodontics, School of Dentistry, Isfahan University of Medical Sciences, Isfahan, Iran.

## Intelligent approach in adult orthodontic treatment

Schussler M<sup>1</sup>

In most cases, the combined orthodontic and surgical treatment of patients with skeletal anomalies requires protracted orthodontic pre-treatment. The method we will present aims to reduce the pre- and postoperative stress on the patient by shortening the orthodontic phase of treatment.

Based on the facial soft tissue and bone corrections required, the operation is first planned on a plaster model. Together with the orthodontist, it is then decided whether the skeletal positioning should be carried out immediately with the help of occlusion splints, or whether preoperative tooth movement should be carried out. In the case that an immediate operation is acceptable and possible, synthetic onlays are adhesively mounted in the premolar and molar region on the day before the operation. At the same time, the fixed orthodontic treatment apparatus is put on. The occlusion of the skeletal positioning then takes place over these onlays. The necessary orthodontic tooth movements are then made postoperatively in the corrected mandible position, which is now functionally and aesthetically improved. The synthetic onlays which were originally inserted are then changed or removed step by step.

The method we present reduces the stress on the patient due to orthodontic treatment to 6-8 months. The conventional approach often results in 24 months of treatment. The patient regards it as a significant advantage if the aesthetically unpleasing facial proportions are corrected first, and the occlusion is subsequently optimized. The shortening of the duration of the orthodontic treatment is also justified, amongst other things, by the fact that orthodontic movements no longer have to work against the musculature. We report on 12 patients, and an experience of the method gained over 3 years. The treatment concept presented depends upon a close, professional relationship of trust between the orthodontists and Maxillo-facial surgeons. Only in this way can the broad range of indications for this method be limited. It is particularly possible in the case of the class III type of skeletal anomalies to decrease the stress on the patient, since preparatory orthodontic measures often deteriorate the conditions for occlusion before a conventional operation can take place.

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1- Faculty associate at the University of Heidelberg, Heidelberg, Germany.

## Risk-based caries management

Saied-Moallemi Z<sup>1</sup>

In the contemporary approach of dental care, dentist should identify and treat patients by risk rather than treating all patients the same. In the historical development of dentistry, treatments shift from dental extraction to the surgical approach including drilling and filling, and ultimately, to the medical approach that considers minimal interventions for treating dental caries. The new approach of treatment respects the health, function, and esthetic of oral tissues. In this modern concept, dentists consider dental caries as a balance between pathological and protective factors. Therefore, treating the caries is not just drilling and filling tooth, but all required preventive and operative procedures should be applied for a patient according to his/her risk and possibility, severity, and progress of disease. In this presentation, management of dental caries in three levels of interventions will be discussed based on the risk assessment of dental caries in patients.

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1- Torabinejad Dental Research Center, Department of Oral Public Health, School of Dentistry, Isfahan University of Medical Sciences, Isfahan, Iran.

## Oral health literacy as a determinant for oral health

Saied Moallemi Z<sup>1</sup>

Haghighi M<sup>2</sup>

**Introduction:** Oral health literacy (OHL) is one of the most important determinants of oral health. This study aimed to evaluate OHL among citizens in Isfahan, Iran.

**Material and Methods:** This cross-sectional study was conducted on 758 adults living in Isfahan city, who were selected by a simple random sampling. A structured self-administered questionnaire collected data on OHL, oral health behavior, and multiple potential sources for oral health information. A question asked the self-assessed oral health of participants. Age, sex, education served as socio-demographic factors. T-test, ANOVA, Chi2, Spearman, and multivariate linear regression were applied. Verbal Consents were achieved.

**Results:** Of participants, 53% had adequate OHL. The mean (SD) of OHL was 11.1 (4.3) of a total of 17. Woman, elder adults, and those with higher education scored higher for OHL ( $p < 0.05$ ). The Score of OHL was higher among people who reported favorable oral health behaviors ( $p = 0.006$ ). In addition, Participants with higher OHL evaluated a better oral health for themselves. Dentists, radio-television, and internet showed the highest rank among different sources for oral health information.

**Conclusion:** The study showed an insufficient OHL among Isfahan citizens. Oral health policy makers should have considered this important oral health determinant when planning oral health promotion programs.

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1- Torabinejad Dental Research Center, Department of Oral Public Health, School of Dentistry, Isfahan University of Medical Sciences, Isfahan, Iran.

2- Post-graduate dental student, Dental Student's Research Center, School of Dentistry, Isfahan University of Medical Sciences, Isfahan, Iran.



## Conservative dentistry with a new approach to stem cells

Shafieian R<sup>1</sup>

Abachizadeh H<sup>2</sup>

In dentistry, tissue engineering is also considered to be a new frontier in the regeneration of missing oral tissues/organs. For example, various degrees of alveolar bone resorption occur after tooth loss/extraction because of periodontal disease, severe caries, root fractures or accidental trauma. In addition, the bone resorption in the residual ridge, particularly in the mandible, continues throughout life in many edentulous patients. The severe bone resorption in edentulous areas makes it difficult to restore the missing teeth with dental implants or denture treatment. Therefore, stem cell and tissue engineering therapies are expected to provide a novel capability to regenerate large defects in periodontal tissues and alveolar bone, and to ultimately replace the lost tooth itself. This review focuses on the types and derivation of stem cells in dentistry from the viewpoint of clinical availability. We also discuss appropriate stem cell sources in dentistry including stem cell derived from orofacial structures, dental pulp stem cells (DPSC), stem cells from exfoliated deciduous teeth (SHED), etc. In addition, current state of stem cell research and clinical trials in dentistry will be discussed briefly.

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1- Prosthodontist, Department of Anatomy and Cell Biology, School of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran.

## Repair of replacement

Shirani F<sup>1</sup>

Malekipour MR<sup>2</sup>

Although the replacement of a restoration is commonly preferred by most dentists, repairing it may be the more conservative treatment option. During a replacement, a significant amount of healthy tooth structure is disturbed when the preparation area is enlarged, and negative effects on tooth longevity have been observed. In addition, replacing a restoration has the drawbacks of being time-consuming, running the risk of converting it to a larger restoration, and the possibility of injuring the dentine–pulp complex. In contrast, repairing a failing restoration is a part of the minimally invasive dentistry philosophy, which seeks to ensure the preservation of healthy teeth, early detection of carious lesions, no or minimal surgical intervention, and keeping the teeth functional for life and in the last decade, repair of restorations has become more and more popular. The aim of this lecture is therefore to review the clinical aspects of repair of restorations by considering different restorative materials– resin-based composites, amalgam, glass-ionomer cements, ceramics or metals. Furthermore, the paper outlines criteria for decision making when to treat a defect restoration with refurbishment, repair, replacement or no treatment.

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1- Dental Materials Research Center, Department of Operative Dentistry, Isfahan University of Medical Sciences, Isfahan, Iran.

2- Department of Operative Dentistry, School of Dentistry, Khorasgan Azad University, Isfahan, Iran.

## How to evaluate a smile clinically?

Skinazi GLS<sup>1</sup>

Is there anything more subtle than a smile? Is it reasonable to measure it?

Our eye is a sensitive plate able to determine and interpret the value of all the different anatomic components of a smile. But we can measure both, the surface of every component, and their percentages of participation in the lower part of the face.

This lecture presents an evaluation method of the smile which consists of three interconnected elements:

- 1- The outline of the profile 'Nose-Mouth-Chin' relocated in an original trapezoid frame.
- 2- The co-proportions between surfaces: 'Lips, Teeth, Visible Gingiva, Black Zones'.
- 3- A list of ten negative factors which alter the smile.

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1- Department of Orthodontics H.D.R. University Paris-Descartes, Co-Editor of: J.C.O./ Seminars in Orthodontics, Paris, France.

## **Extractions are they still pertinent nowadays?**

Skinazi GLS<sup>1</sup>

We can reduce the rate of extractions for orthodontic reasons if:

We understand the typology and preview the growth pattern of our patients...

We are able to work well in an interdisciplinary way...

We accept to desacralize the 6-year-molars, as important as they can be...

We master the crown reshaping techniques...

We are able to keep out the financial interest of third parties...

Although, the overall numbers of extractions are decreasing, they are sometimes unavoidable, especially in severe space discrepancies. To summarize: Yes to extractions! but by a highly competent practitioner, to transform the loss of one or several teeth, into gains in function, aesthetics and prophylaxis.

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1- Department of Orthodontics H.D.R. University Paris-Descartes, Co-Editor of: J.C.O./ Seminars in Orthodontics, Paris, France.

## **Attitude and performance of parents regarding professional fluoride therapy in Isfahan**

Tahani B<sup>1</sup>

Heidari A<sup>2</sup>

**Introduction:** The aim of this study is to evaluate the knowledge and attitude of school children parents about professional fluoride therapy in Isfahan.

**Material and Methods:** In this cross sectional study using a proportional multi stage cluster sampling, 637 school children parents were selected. A questionnaire including demographic section, questions about parents' experience, their knowledge and attitude about fluoride therapy was designed and piloted. The mean and frequency of responses were calculated and analyzed using ANOVA, regression, chi-squared and correlation coefficients statistical tests.

**Results:** The mean of fluoride therapy knowledge was  $3.3 \pm 2.0$  out of 9 (16% had good knowledge accordingly). The mean of attitude questions was  $33.7 \pm 5.8$  (42.3% had negative attitude). The mean of knowledge was significantly higher in academic educated parents (P-value=0.023) and among those who received their knowledge by their dentist (P-value=0.003). Regression model showed that parents' level of attitude was significantly correlated with their educational level (Odds= 1.5, CI95%= 1.2-2.1) and their mean of knowledge (Odds= 1.4, CI95%=1.3-1.5).

**Conclusion:** Based on the low level of knowledge regarding professional preventive care in this study, some oral health educational programs should be considered for parents. Based on the positive effectiveness of knowledge acquired through dentists' and mass media consultations, it might be effective to request them to consider such educations more seriously.

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1- Torabinejad Dental Research Center, Department of Oral Public Health, School of Dentistry, Isfahan University of Medical Sciences, Isfahan, Iran.

2-Dental Students, Dental Students' Research Center, School of Dentistry, Isfahan University of Medical Sciences, Isfahan, Iran.

## **New guidelines in fissure sealant**

Tahani B<sup>1</sup>

Since fluoride exposure is mostly on smooth surfaces and more than 50 percent of dental caries under 20 years old children occur in the dental grooves, using the fissure sealants as another way of prevention is considered. It is well documented that sealants are more effective than topical fluoride in occlusal caries prevention. Reduce of the incidence of dental caries in children and adolescents after doing resin-based fissure sealants on permanent teeth (first molar) has been reported from 86 percent in the first year to 78.6% in 2 and 58.6% in 4 years. This article presents up-dated evidence-based clinical recommendations for use of pit-and-fissure sealants developed by ADA, APD and AAPD in the field of fissure sealant therapy are presented. The review will address the following clinical questions: Under what circumstances should sealants be placed to prevent caries? Does placing sealants over non-cavitated lesions prevent progression of the lesion? Are there conditions that glass ionomer cements could be used as sealants? Which techniques could improve sealants' retention and effectiveness and what are the proposed effectiveness of pit and fissure sealant therapy in long terms?

It is recommended that use of resin-based sealants on the permanent molars of children and adolescents is effective for caries prevention and when placed over existing caries, sealants lower the number of viable bacteria.

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1- Torabinejad Dental Research Center, Department of Oral Public Health, School of Dentistry, Isfahan University of Medical Sciences, Isfahan, Iran.

## **Application of low level laser in oral and maxillofacial disease**

Tavangar A<sup>1</sup>

Low level laser therapy (LLLT) is laser treatment in which the energy output is low enough so that the temperature of the treated tissue does not rise above 36.5° or normal body temperature.

Laser therapy has been successfully used in dental clinic. The methodology is simple, low cost and can be integrated to conventional treatment. The therapeutic effects of LLLT can be summarized: Anti-inflammatory, Analgesic, Tissue repair. The LLLT helps the organism get back its equilibrium, biomodulating the inflammatory response, and allowing a quicker cure. So LLLT may be used as a supporting auxiliary therapy in treatment of oral lesions (Recurrent Aphthous stomatitis, Herpetic ulcer ,OLP...), Orofacial pain (Trigeminal Neuralgia, TMD pain) ,stimulation of saliva (xerostomia) and other orofacial disorder.

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1- Dental Materials Research Center, Department of Oral and Maxillo-facial Medicine, School of Dentistry, Isfahan university of Medical Sciences, Isfahan, Iran.

## Prevention of facial asymmetry in growing patients

Tehranchi A<sup>1</sup>

Significant facial asymmetry causes both functional as well as esthetic problems. The etiology includes hereditary factors of prenatal origin, acquired diseases, and traumatic and functional or developmental deformities of postnatal origin. Assessment of facial asymmetry consists of a patient history, physical examination, and medical components of soft tissue, dental and skeletal differences contributing to facial asymmetry are evaluated. Frequently dental malocclusion, canting of the occlusal level and midline shift are found. Management of facial asymmetry due to dental prematurities and maxillary constriction, Torticollis are first aims at correcting the underlying disorder as soon as been detected. Temporomandibular joint injuries following the trauma to the chin are among the most common life-threatening accidents in childhood. When the fractured proximal condylar fragment remains in the glenoid fossa, the serious complication is ankylosis, followed by insufficient jaw movement. The resultant restricted mandibular movement caused by ankylosis leads in loss of the functional matrix of bone and muscle interaction, which could ultimately result in growth failure. Inadequately treated or even overtreatment of these condylar fractures may lead to growth retardation or growth excess. Patients with bilateral ankylosis develop retrognathia, short posterior facial height and openbite with possible upper airway obstruction and severe convex facial profile. In the case of unilateral ankylosis, the patient also develops a mandibular asymmetry. Maintaining the mandibular function of the affected side is a mainstay of prevention strategies. For those growing patients who develop ankylosis, early surgical correction is highly recommended. Simple condylectomy in childhood is not adequate treatment because it does not address the ramus height asymmetry and the incidence of post-operative complications such as re-ankylosis is high. Hybrid functional therapy is recommended following surgery. For patients, who present subsequent facial deformity and occlusal disharmony following long standing temporomandibular joint ankylosis, a number of treatment modalities are available including orthognathic surgery (BSSO), distraction osteogenesis (DO) with or without help of autologous bone or bone replacement materials. The surgery consists of simultaneous release of the ankylosed joints, advancement of the mandible and possibly insertion of posterior mandibular costochondral graft. This presentation tends to discuss the prevention and management of asymmetry in growing patients.

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1- Department of Orthodontics, School of Dentistry, Shahid Beheshti University of Medical Sciences, Tehran, Iran.



## The dynamics of the periapical lesion

Warnsinck CJ<sup>1</sup>

This presentation is based on a literature study for the Dutch Journal of Dentistry (Nederlands Tijdschrift voor Tandheelkunde), that will be published late 2015. In this presentation the factors which lead to an effective endodontic treatment and to an in-effective endodontic treatment with a persistent periapical lesion will be described. Other questions that will be discussed in this presentation are: what will happen with the dimension of an untreated periapical lesion on the long term? What is the risk for pain if the periapical lesion persists? How high is the chance for survival for an endodontic treated tooth with a persistent periapical lesion? What is the connection between a persistent periapical lesion and systemic diseases? These questions will be answered based on findings by a literature review.

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1- Departments of Endodontology and Oral Kinesiology, Academic Center of Dentistry Amsterdam (ACTA), the Netherlands.

## **Is crown-lengthening a conservative and acceptable periodontal treatment?**

Yaghini J<sup>1</sup>

Crown-lengthening surgery can be a viable option for facilitating restorative therapy or improving esthetic appearance. When planning a crown-lengthening procedure, the dentist should evaluate the patient's complete periodontal condition and disclose all possible treatment options to the patient. In cases involving the possibility of a negative esthetic outcome, compromise to the support of the dentition involved in the surgical procedure or both, extraction and implant therapy or conventional prosthetic therapy may be a more conservative solution.

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1- Dental Implants Research Center, Department of Periodontics, School of Dentistry, Isfahan University of Medical Sciences, Isfahan, Iran.

***POSTER***



<b>Authors</b>	<b>Title</b>
Abtahi Reihane	A prospective clinical study on blood mercury levels following endodontic root-end surgery with amalgam
Abtahi Reihane	Histologic and histomorphometric assessment of implants and periapical tissues when placed in the sockets of extracted teeth, teeth with periapical lesions, and healed lesions: A canine study
Abtahi Reihaneh	Effect of phentolamine mesylate on duration of soft tissue local anesthesia in children
Alikhanifard Narges	Preparation and characterization a novel nano composite membrane for GTR / GBR applications
Andalib Fahimeh	An overview on statues of ozone therapy in the prevention and treatment of dental caries
Asgari Seyed Navid	Effect of different fiber post surface treatments on its bond strength to composite resin
Bahreinian Zahra	Dental radiography in patients with cerebral palsy
Bakhtiari Abolhasan	The new non-invasive methods in dental carries treatments to red use dental lesions
Ghadiri Moghadam Nafiseh	The effect of surgery without stitches on pain and swelling after mandibular impacted third molar surgery
Hasanzadeh Mahya	Comparison of calcium hydroxide with mineral trioxide aggregate in apexification of immature teeth
Hasheminia Sayed Mohsen	Comparison of apical seal after root canal treatment , following application of four root canal irrigation solution , in single canal human teeth : studying the color leakage under negative pressure
Hashemzade Zahra	Comparison of nano-hydroxyapatite and sodium fluoride mouthrinse for remineralization of incipient carious lesions
Hashemzade Zahra	Assesment of white spot treated with (ICON) and flouride gel
Hosseini Somaye	Methods to reduce damage to adjacent teeth during Class II cavity preparation
Jafari Pozveh Nasim	Radiographic caries diagnosis
Jebali Ali	Nanometric restorative materials : a new field of dentistry
Kachouei Marziye	White spot lesions prevention and treatment in orthodontic patients, a review
Karbasi Mitra	CBCT applications in dentistry
Kazemi Amirhossin	Manufacturing and evaluation of forsterite/graphene oxide nano-composite in order to modify the surface of dental implants
Khademi Heidar	Evaluation of the effectiveness of Iralvex Gel on the recurrent aphthous ulcer healing

<b>Authors</b>	<b>Title</b>
Khalesi Saeideh	Risk factors of head and neck carcinoma; a review
Khozeimeh Faezeh	Evaluation of the chemical composition and antimicrobial activity of essence of eucalyptus and cum-in and three species of lactobacilli: an in vitro study
Kiyani Sima	Laser status in conservative periodontal therapy
Kolahi Jafar	Immediate CAD/ CAM custom fabricated dental implants
Kolahriz Davood	Application of fibrous structures as guided bone regeneration (GBR) membranes
Malek Ahmadi Behnaz	Structural characteristics of guided tissue/ bone regeneration (GTR/GBR) membranes
Masoudi Rod Maryam	Controlled release of dexamethasone from PGS / PCL / $\beta$ -TCP nano- composite membrane for alveolar bone regeneration techniques, GBR
Mokhtari Hamidreza	Design, production and evaluation of biodegradable titania nanotube-chitosan-bioactive glass nano-composite coating for dental implants
Mousavi Seyed Ali, Kargar	Finite element analysis of small titanium dental ball abatement implant with different mechanical criteria of failure
Nafisi Fard Malihe	Resin infiltration technique is a micro –invasive treatment to arrest non-cavitated caries lesions
Naghsh Narges	Periodontal surgery using microscope
Nazeri Rahman	The effect of filtration and slice thickness on cone beam computed tomography images in proximal caries detection, an ex- vivo study
Nazeri Rahman	Effect of autoclave cycles on surface characteristic of S-File using scanning electron microscopy
Pak Khesal Mina	Performance evaluation of "Caries management by risk assessment" in dental school clinics
Ravaghi Arash	How to make porcelain veneers ( Geller technique ); geller cast technique
Rostami Shirin	A comparative study of the enamel surface hardness after remineralization of white lesions using CPP -ACP, fluoride, and the combination of the Two
Saberi Zahra	Review of some herbs for treatment of recurrent aphthous stomatitis (RAS)
Sahraneshin samani Mahsa	Advanced materials and treatments for improving minimally invasive dentistry :How to select the right material
Seifi Nasim	Conservative restorations in children and adolescents
Shafiean Reihane	PRP therapy as a novel method for recovery of canine osseous defects

<b>Authors</b>	<b>Title</b>
Shekarchizade Esfahani Neda	Regeneration or replacement? A case report and review of literature
ShiraziMaryam	Conservative orthodontic treatment with self ligated brackets, claims versus reality
Taremi Zahra	Cosmetic improvements by resin infiltration techniques in teeth with enamel lesions
Tavangar Atefeh	Comparative evaluation of low level laser (LLL) and topical cortico steroid in treatment of patient with erosive-ulcerative oral lichen planus
Valizadeh Haghi Hale	Bioglass coating of zirconia to enhance resin bond strength
Valizadeh Sara	Resin-bonded fixed partial dentures: Yes or No