

Bring Your Avatar to the Dentist

Virtual reality distraction for pain control during periodontal scaling and root planning procedures

Furman E, Jasinevicius RJ, Bissada NF, Victoroff KZ, Skillicorn R & Buchner M.

JADA.2009.140(12):1508-1516

Some might see virtual reality set-ups — such as Second Life or Gaia Online — as pure entertainment. But they may provide drug-free pain relief at the dentist.

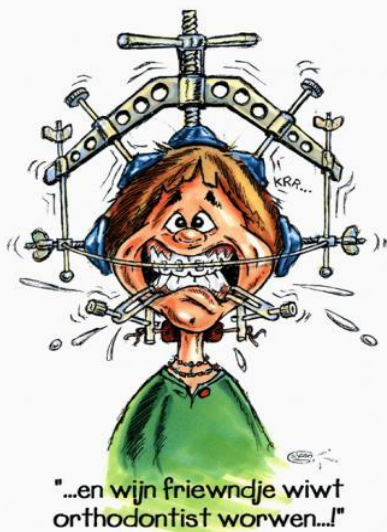
Researchers from Case Western Reserve University's dental school enrolled 38 adults in a study. All of them needed scaling and root planing. It is usually done without anesthesia, but it can be painful. Scaling and root planing is done with metal hand instruments that scrape the tooth to remove bacteria and deposits from the root surface. Each person in the study needed scaling and root planing in all four areas of the mouth: upper left, upper right, lower left and lower right. Each area was treated completely before commencing treatment with the next area. For two treatments, people were assigned to have some form of distraction. Each treatment took about 20 minutes. The distractions were:

- Being immersed in a virtual botanical garden in the virtual-reality program Second Life. Each person had an avatar — a graphic representation of himself or herself. People controlled the avatar with a mouse. The avatar could walk or fly through the garden, exploring it. There were sounds in the garden, such as chirping birds and waterfalls.

For the other two treatments, there were no distractions. People received the treatments and distractions in variable order. Some watched the movie first, some had no distraction first, and some got the virtual reality first. After each treatment, people answered questions about their pain level, time spent thinking about the treatment and general discomfort.

Both the movie and virtual reality reduced time spent thinking about the treatment, general unpleasantness, discomfort and pain. Virtual reality appeared to be better than the movie at reducing discomfort and pain. During the virtual reality segment, people reported less than half as much pain as with no distractions. Two-thirds of the people in the study said they preferred the virtual reality segment to any other. One-third preferred the movie. Only one patient preferred no distraction.

The researchers had everyone in the study watch the same movie and the same virtual reality environment. They would like to explore if the virtual reality distractions could be even more effective if people are able to customize their experience. Previously, virtual reality has been shown to be effective during burn treatment and gastric procedures too.



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JOURNAL CLUB

APRIL 2010

Editor's Note..... As the dawn of 2010 unveiled and the last hours of 2009 bowed, we realized that the time for reflections has come. We glorified at our achievements and valued our commitments. We pat each others' back for our hardwork as we aspire to face the challenges of the New Year with greater ardour and zest. A new year often brings with it promises of a better year and greater success. We set our new resolutions and try our best to achieve them.

Our Info Update started off as a humble publication with a mere 4 page some three years ago. We struggled to get contributions, knowingly that every one of us is scurrying and running to perform our daily tasks. Yes... I'm afraid we are still scurrying and running. Nevertheless some of us between the scurrying and running still managed to contribute. Thank you. Without your effort and contribution, Info Update would have ceased to exist.

Many articles are published in the journals every year. We welcome those that are updated, relevant and related to our work. Browse through the pages and assimilate the information put forth. Use it *shamelessly* but with sound clinical judgments where appropriate. Enjoy reading...

Last but not least, our best wishes to all for yet another successful year ahead.

Dr. Naziah Ahmad Azli

Interesting topics....

.....Even fluoridation has brought much dental health benefits, there are unwanted side-effects, namely fluorosis. The level of fluorosis appears to be related to the level of concern of the children and their parents about tooth aesthetic.....page 6

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Enjoy Your Reading.....

Barriers to Dental Care for Children in Virginia With Autism Spectrum Disorders

Brickhouse TH, Farrington FH, Best AI M., Ellsworth C W

(J. Dent. Child. 2009. 76:188-93)

Autism spectrum disorders (ASD) impact the brain's normal development and are accompanied by significant impairments in social interaction and communication, which can range from mild to severe. ASD children often have deficits in language and social interaction and display a lack of eye contact, repetitive behavior, and the need for a rigid routine. Repetitive body motions, echolalia, hyperactivity, and low frustration thresholds are some of the challenges dental practitioners face in treating this population. These children present a unique challenge for the dental community. In the United States, about 8 percent of the special needs children population had unmet dental needs in 1994 and 1995.

A survey was carried out in the state of Virginia on 188 families who cares for at least 1 ASD child. The purposes of the study were to assess the utilization of dental services among autistic children and identify barriers that affect their access to dental care. According to the study, about 15 percent of ASD children had never been to the dentist, 15 percent were unable to receive care when needed, and 25 percent had been refused treatment. The study also found that 30 percent of them had never visited a dentist or had not visited one within the past year, and 24 percent did not have a dentist for periodic oral health care. Inability to find a dentist with the skills or willingness to work with disabilities was the most frequent reason cited for not having a regular dental provider.

Increased understanding of this population's utilization of dental care and barriers that prevent access to dental services is important in identifying opportunities for improving the oral health of autism children. By determining the obstacles families face in obtaining dental care for autistic children, health care professionals can work to minimize the difficulties they encounter.

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Layout

Pn. Naziah Md Jasir

The American Academy of Pediatric Dentistry recommends routine dental care at intervals no longer than 1 year, resulting in about 30 percent of ASD children in the state of Virginia have unmet dental needs. Children with ASD who display difficult behavior are less likely to have a dentist for a routine care, have longer intervals between dental appointments, and receive care when needed. The children from a household income in the \$20,000 to \$49,000 bracket were significantly less likely to have a regular dental provider and access care when needed.

Summarized by: Dr. Demon Tugang

Funny Cartoons



"Oh it hurt Doc, but I'm not going to scream until I get the bill."

Factors associated with initial stability of miniscrews for orthodontic treatment

Hoi-Jeong Lim, Chun-Sun Eun, Jin-Hyoung Cho, Ki-Heon Lee and Hyeon-Shik Hwang

American Journal of Orthodontic and Dentofacial Orthopedics.2009
136 (2):236-241

Anchorage control in orthodontic practice has typically been a difficult and unpredictable challenge. The modification of prosthodontic dental implants and the development of a new implant system-miniscrews, have improved the condition.

Miniscrews have the advantages of low cost, simple surgical placement, and ease of removal. They are small enough to be placed in any space in the alveolar bone, even interdental areas. However the stability of the miniscrews is questionable because they can loosen during treatment. The success rate of stability of miniscrews is significantly associated with these variables: age, sex, skeletal pattern, crowding pattern, periodontitis, temporomandibular disorder symptoms, mandibular plane angle, location of the implant, and inflammation.

The purpose of this study was to investigate the success rate of miniscrew placement in terms of initial stability overall and according to various associated factors. In addition, the study evaluates the influence of each factor on stability to determine if successful miniscrew placement is possible.

The maxilla had a higher success rate than the mandible because it has thicker and denser cortical bone than the mandible. However, if compaction occurs in the mandible, this might result in bone necrosis and cause miniscrews to loosen. The reasons might be denser bone in the mandible and over-heating of the bone during drilling.

Midpalatal and maxillary buccal molar areas had higher success rates than other areas. This is because midpalatal area is a keratinized mucosa area. Thus, various designs can be applied using the miniscrews placed in this area without any concern of loosening. The possibility of loosening the miniscrews is higher in children as compared to adults.

The diameter and length of miniscrews were not significantly associated with stability in the study. However, miniscrew with a small diameter and adequate length should be placed for minimizing dental root trauma. However, initial stability cannot be guaranteed as it consists of non-randomized consecutive patients with small sample size as well as incomplete data about the specific type of miniscrew in some areas.



Summarized by: Dr. Choo Mun Kwan

*“The size of your success is measured by the strength of your desire;
the size of your dream; and how you handle
disappointment along the way”*

Psychological Impacts Of Dental Fluorosis Among Malaysian School Children

Mohd Nor M, Sheiham A, and Tsakos G.
Malaysian Dental Journal. 2008. 29(1):20-24

Seventy percent of Malaysians have access to optimally fluoridated water supplies (0.7 ppm). Although fluoridation has brought much dental health benefits, there are unwanted side-effects, namely fluorosis. The level of fluorosis appears to be related to the level of concern of the children and their parents about tooth aesthetic.

The aim of this study was to assess the prevalence, severity, the psychological and social impacts of fluorosis among school children and their parents in the Kuala Pilah area, Negeri Sembilan, Malaysia. A convenience sample of 431 students aged 16-17 years old from three secondary school in Kuala Pilah, were selected and assessed for the presence of dental fluorosis using Dean's Index. Questionnaires were administered to all the dental fluorosis students and selected matched students with no fluorosis as a control group for this case control study. Questionnaires were also sent to the parents of both groups.

The prevalence of dental fluorosis was 27.8% (82% of the fluorosis cases were questionable to mild and 18% had moderate to severe fluorosis).

The prevalence of psychological impacts among students with dental fluorosis and those without fluorosis was 16.1% and 8.5% respectively. More girls with fluorosis (35.7%) had psychological impacts compared to boys (25.0%). Out of the fluorosis cases who had psychological impacts relating to difficulty smiling and showing teeth, 35.7% were girls and 25% were boys.



Other impacts included 2.7% in carrying out school work and 3.6% in going out with friends. About 12.8% of parents of children with fluorosis reported that it affected the children's quality of life.

There were considerable psychological impacts on smiling and showing teeth among Malaysian teenagers with dental fluorosis and some parents were concerned about it. However the impacts were mild and do not have a major impact on student's lives. Only a small percentage of subjects with fluorosis reported having psychological and social impacts.

Summarized by:
Dr Noor Rashidah binti Saad

Limited evidence Exists that Glass Ionomer Restorations in Permanent Teeth Offer a Lower Risk of Developing Carious Lesions at Margins Compared with Amalgam Restoration

A critical summary of Mickenautsch S, Venugopal V, Leal SC, Oliveira LB, Bezerra AC, Bonecker M, Absence of carious lesion at margins of glass-ionomer and amalgam restorations: a meta analysis. Eur J Paediatric Dentistry 2009, 10(1):41-46

Flores-Mir C, John M & Matthews D

JADA.2010.141:193-194)



In this study the clinical question was whether the use of glass ionomer restorations in primary and permanent teeth results in fewer carious lesions at margins when compared with amalgam restorations. The reviewers searched seven databases for randomized or quasi-randomized controlled studies that included studies written in English, Portuguese or Spanish published through January 2008. Finally data were extracted from six articles that reported on eight studies with diversified qualities. The results are presented in three separate fixed-effect meta-analysis.

Based on the eight studies, subjects were followed from two to eight years in parallel group and split-mouth study designs. Usage of hand excavators or drills prior to placement of glass ionomer was reported. A total of 2341 teeth with glass ionomer restorations and 1998 teeth with amalgam restorations were evaluated.

Significantly fewer carious lesions were observed on single-surface glass ionomer restorations in permanent teeth after six years than in amalgam restorations. No differences between the restoration materials were recorded at the margin of restorations in primary teeth after three and eight years.

There is limited evidence to show that in permanent teeth there is less recurrent caries at the margins of single-surface glass ionomer restorations than in amalgam restorations. There is also limited evidence showing that there is no difference in carious lesion on the margins in primary teeth with multiple surface restorations.

Given the strengths and weaknesses of the systematic reviews and the evidence presented, it seems unlikely that glass ionomer restorations have no secondary caries prevention effect when compared with amalgam restorations. However considerable uncertainty exists as to the magnitude of the effect. Glass ionomer restorations may be used more frequently in primary teeth but its use in permanent teeth needs to be put into perspective. In this case, glass ionomer's secondary caries prevention potential should not be the only factor to be considered.

Summarized by: Cik Salmiah bt. Dun

Patient: How much to have this tooth pulled?

Dentist: With pain \$200 and without pain \$100.

Patient: Well, without pain it's cheaper. Pull it WITHOUT pain.

Without anesthesia neither anything, the dentist begins to

extract the tooth, when the patient outcry: Aaaahhhhhhhh !!!!!

Hey, WITH pain it costs \$200 !!!, replies the dentist.

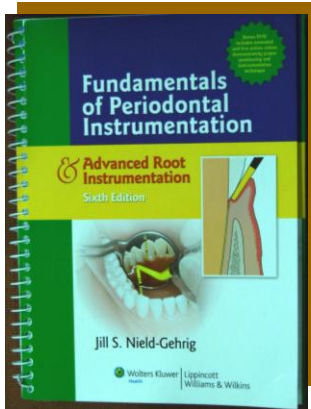
*Just for
laughs...*

Book Review

Fundamentals of Periodontal & Advanced Root Instrumentation

Jill S. Nield-Gehring

Sixth Edition 2008. Lippincott Williams & Wilkins.



This book gives a basic but detailed instructional guide to the *fundamentals* of periodontal instrumentation that takes students from the basic skills to the advanced techniques. The foremost instructional goal of *fundamentals* is to make it easy for students to learn and the faculty to teach. The textbook features include modules outlines, learning objectives, a step-by-step format, critical thinking activities and other related features that facilitate learning and teaching. Skill evaluation checklists are also added to promote self evaluation and to help students develop the ability to assess their own level of competence rather than relying on instructor confirmation of skill attainment.

This book is divided into six major content areas, namely basic skills, elements of instrument strokes, patient assessment, debridement with hand-activated instruments, advanced instrumentation techniques and supplementary instrumentation.

The writer's work is well organized, carefully prepared volume, which covers all conceivable aspects of *Periodontal Instrumentation & Advanced Root Instrumentation*. In addition to the excellent and well written text, there are numerous illustrations, showing proper techniques of every skill application. This book is strongly recommended to students because it teaches them how to become a knowledgeable and effective operator.

Written by: Pn. Naziah Md Jasir

Studies have shown that the safety limit of 6.1°C above normal pulpal temperature can be applied. Temperature approaching 45°C can cause pain. If the remaining thickness of the dentine is 0.5 mm, it will take approximately 16.5 seconds to reach 6°C. In a Class III or Class IV composite restoration, the mean temperature rise during curing is about 5.4°C in vivo, with a peak exotherm at 30 seconds after curing. Therefore, an ideal lining material should have a low thermal conductivity to prevent the rise of temperature in the pulp.

Thermal insulating efficiency is a function of material's thickness divided by the square root of its diffusivity. Insulating efficiency is directly related to the thickness of the materials. This study shows that the thermal conductivity (in ascending order) are DBS < CAOH < RMGP < Dentine < ZOE. This means that dentine bonding system has the lowest thermal conductivity and ZOE has the highest. Although DBS has the lowest thermal conductivity, it is unable to provide adequate thickness' as a liner. RMGP appears to have more superior properties as compared to ZOE as lining material. The benefits of RMGP are:

- Chemically bond to tooth structure. Thus, prevent hydrodynamic fluid flows that associated with post operative pain and sensitivity.
- Fluoride releasing properties. This can prevent secondary caries.
- More operator-friendly. Easier to manipulate.

The thermal insulating properties in lining materials are not of great significance as only extreme temperature applied for long times would be harmful to the pulp. DBS and RMGP are the most efficient thermal insulators. In addition, it has the ability to seal the dentinal tubules.

Summarized by: Dr. Ooi Ee Fen

Thermal Conductivity through Various Restorative Lining Materials

Little PAG, Wood DJ, Bubb NL, Maskill SA, Mair LM & Youngson CC

Journal of Dentistry.2005. 33:585-591

Lining materials are used for pulp protection from thermal, mechanical and chemical insulation in restorative dentistry. Traditional teaching advocated thick lining to ensure adequate protection from thermal insult. Many types of lining materials are available in the market, with Zinc Oxide Eugenol (ZOE) as the most popular material. Other materials include glass ionomer cement (GIC), resin modified glass polyalkenoates (RMGP), calcium hydroxide (CAOH) and various dentine bonding system (DBS).

.....continue next page



"Nurse, get on the internet, go to SURGERY.COM, scroll down and click on the 'Are you totally lost?' icon."