Short-term therapy involving scaling and root planing combined with the Nd:YAG laser significantly improves clinical signs associated with periodontal inflammation, compared to scaling and root planing alone.

**Background:** There have been many studies published measuring outcomes of laser-assisted phase 1 periodontal therapy. Results have been equivocal. It is suggested that this is because of differing and sometimes inappropriate parameter usage.

**Objective:** To carry out a properly designed study to determine the benefit of laser application in proper protocol when combined with scaling and root planing (SRP).

**Design:** Split-mouth, masked, randomized, controlled clinical study comparing short-term outcomes of treatment with laser irradiation and SRP versus SRP alone.

**Participants:** 13 males and 17 females aged 26 to 70 years having ≥6 pockets of 4 to 8 mm in depth.

**Methods:** A baseline examination was done, recording probing depth (PD), gingival index (GI), and plaque index (PI). Gingival crevicular fluid (GCF) measurements were taken before the procedure. Left and right sides were randomly assigned. All teeth underwent SRP. The test side was treated with an Nd:YAG 1064-nm laser and was water-cooled. Energy settings were 80 mJ at 350-µm pulse widths, at a rate of 50 Hz. A 600-µm fiber was used in constant moving contact with the epithelial lining in the long axis of the tooth for 60 to 120 seconds.

**Results:** At 1 week postoperatively, the PI, PD, and GCF volumes were all significantly lower. The GI level was also lower, but it was not statistically significant. Three-month follow-up was significantly better in PD, GI, PI, and GCF after treatment with the Nd:YAG laser plus SRP compared to SRP alone. Improvement for all periodontal variables was greater in laser-treated sites. There was no apparent thermal damage to root surfaces.

**Conclusions:** 3-month follow-up studies indicated there was sufficient evidence to show that use of the Nd:YAG laser in addition to SRP in the parameters tested produced better results in reducing periodontal inflammation than did use of SRP alone.

**Reviewer's Comments:** The authors did a good job of testing this laser at the proper parameters and in an actual clinical protocol that has been shown useful. They demonstrated knowledge of the principles of laser physics that was translated into a clinical technique that makes sense and justifies testing. (Reviewer-Charles R. Hoopingarner, DDS).

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Keywords: Cytokines, Scaling, Nd:YAG Laser, Root Planing

Print Tag: Refer to original journal article
Laser-Treated Root Surfaces Provide Better Fibroblast Attachment

Comparison of Er,Cr:YSGG Laser and Hand Instrumentation on the Attachment of Periodontal Ligament Fibroblasts to Periodontally Diseased Root Surfaces: An In Vitro Study.

Hakki SS, Korkusuz P, et al:

J Periodontol 2010; 81 (August): 1216-1225

Laser irradiation may be helpful in increasing successful rates of periodontal ligament attachment.

**Background:** Complete removal of organized biofilm, calculus, and diseased cementum is crucial for successful periodontal treatment. After removal of dental deposits and scaling and root planing, periodontal ligament (PDL) cells must move into the sulcular space and attach to the root surface. They must multiply and differentiate, synthesizing extracellular matrix proteins needed to produce functional attachment tissues, which span the 2 mineralized tissues: alveolar bone and cementum. This attachment is key to successful regenerative procedures.

**Objective:** To examine effects of the erbium, chromium:yttrium-scandium-gallium-garnet (Er,Cr:YSGG) laser and hand instrumentation on attachment of PDL fibroblasts to periodontally involved root surfaces.

**Methods:** 24 single-rooted periodontally involved teeth and 6 healthy extracted teeth were included in the study. Forty-five root slices were obtained and assigned to 5 test groups: (1) untreated healthy group (positive controls), (2) untreated periodontally diseased group (negative controls), (3) hand instrumentation group (scaled with Gracey curettes), (4) Er,Cr:YSGG irradiation group (done at a short pulse setting at 1.5 watts), and (5) Er,Cr:YSGG with same power setting but done with a long pulse. Groups were scaled and irradiated at 1.5 mm for 40 to 60 seconds as indicated by group selection. After rinsing, all slices were autoclaved in phosphate-buffered saline (PBS) and then examined under light microscopy at 40X magnification. They were then covered with appropriately processed PDL cells collected from extracted teeth at 80,000 cells/30 mm². Cells were then dye infused, washed, and transferred for confocal scanning. Root surfaces were examined by scanning electron microscopy, and MTT counts were obtained. The numbers, vitality, and shape of fibroblasts were measured at 12 hours and at 3 and 5 days.

**Results:** While the light microscopy examination revealed changes in cementum surfaces, such as roughening and irregularity, there did not appear to be any melting or carbonization in the short-pulse laser I group, while there was some carbonization in approximately one third of the long-pulse laser II group. The results indicated that laser-treated specimens provided a better environment for cell adhesion and growth, with the short-pulse group being more favorable than the long-pulse group, the scaled group, or even the healthy root surface control group. The diseased group showed significant reduction in PDL cell number over the positive control and other groups.

**Conclusions:** Both laser groups provided a suitable surface for fibroblast survival on previously diseased root surfaces. Untreated periodontally diseased root surfaces reduced formation of PDL fibroblasts, and surface structure of short-pulsed laser irradiated roots provided the best conditions for attachment of PDL fibroblasts compared to long pulse, hand instrument, or even untreated healthy root surfaces. The parameters used also increased the number of cells present, which could differentiate into cells necessary for periodontal regeneration.

**Reviewer's Comments:** The whole technique was set up to actually mimic clinical practice and therefore becomes much more relevant to the clinical practitioner. (Reviewer-Charles R. Hoopingarner, DDS).

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Keywords: Diseased Root Surfaces, Fibroblasts, Periodontal Ligament, Attachment

Print Tag: Refer to original journal article
Biotechnological advances, such as DNA analysis of saliva samples for terminal diseases, raise ethical issues and will potentially change the way dentistry is delivered in the future.

**Background:** Oral fluids are being used to test for biomarkers of multiple diseases. Unfortunately, advances in oral fluid testing may potentiate misuse of genetic information.

**Objective:** To discuss possible medicolegal and ethical challenges with use of oral fluid testing.

**Design:** Expert opinion regarding personal property, privacy, and autonomy. **Summary:** Retail genomics, a service to help consumers decode their own genetic DNA and assess their risk for systemic diseases, is now being offered by multiple companies through saliva sample analysis. Tissues, such as blood, and body parts, such as kidneys, are considered property and contain certain legal protections. Even though saliva is neither considered a "tissue" or a "body part," it provides valuable information about individuals, which deems them worthy of protection. Therefore, using saliva samples for medical screening, development of products, and research marketing raises multiple ethical questions about protection of personal property. Privacy is also an issue with saliva samples. Because of salivary genetic content, use of this body fluid may allow genetic discrimination of the donor by employers or insurance companies. Finally, the ethical principle of autonomy could be violated through saliva sample analysis. Autonomy, the duty or obligation to show due respect to persons, encompasses both privacy and property, as well as informed consent. For example, a clinician would disrespect a patient's autonomy if they did not inform the patient that their saliva sample (property) could be used for compensated research purposes and potential future profits. Additionally, the act of granting or denying others access to information about themselves (ie, genetic information from a saliva sample) is an exercise to the right of privacy, which correlates with the principle of autonomy. In addition, a patient must (a) understand that his/her sample could be used for investigational purposes; (b) be provided safeguards against misuse of his/her confidential information; and (c) voluntarily provide or decline a saliva sample based on this information (informed consent). The authors argue that consumers should be empowered to make decisions about their own genetic information through appropriate counseling by a health care worker prior to providing a saliva sample.

**Conclusions:** Biotechnological advances in oral fluid testing may reshape future provisions of dental care by requiring dentists to inform patients of their autonomy and property and privacy rights, and allow for a more thorough patient continuum of care by bringing health and dental professionals together.

**Reviewer's Comments:** This is a very thought-provoking article. Even though a saliva sample may provide biomarkers for systemic diseases or conditions, use of this sample raises medicolegal and ethical issues that dentists may have to face in the future. (Reviewer-Kelly A. Halligan, DDS).

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Keywords: Ethics, Salivary Diagnostic Testing

Print Tag: Refer to original journal article
Before placing hydrofluoric acid on a tooth that you wish to bond, be aware that contaminated dentin can reduce bond strength.

**Background:** Hydrofluoric acid can be used for intraoral repair of defective porcelain and composite restorations by improving the micro-retentive surface. It is considered the clinical standard to repair porcelain restorations. Unfortunately, contamination of other teeth with hydrofluoric acid cannot always be avoided.

**Objective:** To investigate the bonding effectiveness to hydrofluoric acid–contaminated dentin by testing microtensile bond strength, scanning electron microscopy (SEM), and transmission electron microscopy (TEM).

**Design:** Bench-top study using extracted teeth.

**Methods:** 15 non-caries third molar teeth were used, of which dentin surfaces were subjected to 5 different etching procedures: group A, 37.5% phosphoric acid (Kerr Gel; control group); group B, 37.5% phosphoric acid followed by 3.0% hydrofluoric acid (DenMat); group C, 37.5% phosphoric acid followed by 9.6% hydrofluoric acid (Pulpdent); group D, 3.0% hydrofluoric acid followed by 37.5% phosphoric acid; group E, 9.6% hydrofluoric acid followed by 37.5% phosphoric acid. After the bonding procedure (OptiBond FL, Kerr) a 5-mm composite resin buildup (Clearfil AP-X, Kuraray) was made using a silicon mold. After 1 week of storage in 0.5% chloramine solution, specimens were prepared for microtensile bond testing and SEM and TEM analysis. Data were analyzed using ANOVA and post hoc Tukey’s HSD ($P<0.05$).

**Results:** In the control group, mean microtensile bond strength was significantly higher than in any hydrofluoric acid–prepared group. No significant differences in microtensile bond strength were found between the 3.0% and 9.6% hydrofluoric acid groups. Also, the sequence of application (phosphoric then hydrofluoric or visa versa) did not show any significant effect. SEM and TEM analysis showed a mineral deposition that blocks phosphoric acid and the subsequent adhesive resin to interact properly.

**Conclusions:** Due to its adverse effect on bond strength of composite to dentin, contact of hydrofluoric acid (3.0% or 9.6%) to dentin should be avoided.

**Reviewer's Comments:** I found this article clinically relevant, but the sample size was small. Also, I disagree with the authors when they say, "Contamination of tooth substrate with hydrofluoric acid cannot always be avoided." I believe proper use of rubber dams and using good delivery techniques prevent any unintended exposure to dentin or other tissues or structures that could be harmed. (Reviewer-Timothy J. Halligan, DMD).

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Keywords: Hydrofluoric Acid, Dentin, Scanning Electron Microscopes, Transmission Electron Microscopy

Print Tag: Refer to original journal article
Postoperative bleeding after an extraction may be due to an underlying, undiagnosed disease condition such as hypothyroidism.

**Background:** Hemophilia A and B and von Willebrand's disease (vWD) are hereditary disorders that affect patients. Although acquired vWD (AvWD) is rare, it presents a clinical pattern similar to the congenital disorder, with later onset in life in patients with no previous history of abnormal bleeding.

**Objective:** To present 2 case reports where postoperative and intraoperative bleeding were initial signs of AvWD and were due to an undiagnosed hypothyroid disorder. **Case 1:** Upon regular extraction of the lower left second molar tooth, a 48-year-old male experienced significant hemorrhaging from the site. Surgical packs and sutures were used to achieve hemostasis eventually, but at review, the patient had extensive bruising around the jaws, and a hematology referral was made. The patient informed the hematologist of recent lethargy. Pale skin and delayed ankle reflexes were noted. Lab tests showed a decrease in both von Willebrand's factor antigen concentration and its activity levels. Factor VIII was normal. AvWD was suspected, and lab tests for hormone levels indicated low free thyroxine and increased thyroid-stimulating hormone (TSH). These data presented a strong case for primary hypothyroidism, and thyroxine therapy was begun. Five months postoperatively, the patient's thyroid function and coagulation test results were normal. **Case 2:** A 37-year-old healthy male presented for extraction of upper left first premolar and second molar, and the upper right second molar. His past medical history included a childhood tonsillectomy/adenoidectomy with no complications. The patient did have a simple extraction 6 months ago that had persistent bleeding. After simple extraction of the teeth under local anesthesia, sockets were packed with Surgicel and were sutured. Due to continuous oozing from the sites overnight, sockets were repacked the next day. Antibiotics were prescribed, along with tranexamic acid mouthwash. At the follow-up appointment, the patient reported that the oozing finally stopped a few days later. A hematology referral was made, and it was noted that the patient was pale, overweight, lethargic, and had thinning of the eyebrows. After lab tests, it was concluded that the patient had a von Willebrand-type coagulation disorder and primary hypothyroidism, so thyroxine therapy was initiated. After 7 months, blood values returned to normal.

**Conclusions:** Diagnosis of hypothyroidism is often based on clinical suspicion and then diagnosed based on laboratory results. Taking an adequate medical/bleeding history is critical in patients, especially those undergoing surgery, and clinicians should be aware that abnormal bleeding may be signs of an underlying disease condition.

**Reviewer's Comments:** This article provides valuable insight on the importance of taking a detailed medical history, as well as bleeding history, on patients who will undergo dental procedures requiring surgery. The abnormal bleeding may be a sign of a new, serious undiagnosed medical condition. (Reviewer-Gargi Mukherji, DDS).

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Keywords: Postextraction Hemorrhage, Hypothyroidism, von Willebrand's Disease

Print Tag: Refer to original journal article
Preclinical training models may be effective in teaching dental students proper local anesthesia techniques.

**Background:** Achieving good anesthesia in dentistry is important since many dental procedures require local anesthetics. It is vital to give dental students a good basic knowledge in anesthetics, as well as teach them proper anesthesia techniques.  

**Objective:** To determine whether a preclinical teaching model can aid students' opinions about their first injection, and to determine whether the recipient of the injection is affected by the student's preclinical training experiences.  

**Participants/Methods:** 65 dental students gave their first injection to a classmate: 22 were given preclinical training on a model and 43 did not receive preclinical training. The Frasaco working model AG-3 (Germany), which simulates the ascending ramus of the mandible, was used for preclinical teaching. Multiple metal strips connected to a buzzer made a noise when the needle hit proper mandibular, mental nerve block, and infiltration injection sites. All students were given four 45-minute sessions on didactic courses pertaining to local anesthesia. In this study, Articaine (1.8 mL with 1/100K epinephrine) was used for the inferior alveolar nerve blocks. Students’ questionnaires were filled out independently, and the recipient of the injection was unaware of students’ previous preclinical training model experiences.  

**Results:** After analyzing data from questionnaires, the results showed that use of a preclinical training model did not affect the student's own opinion when he/she administered the first injection on his/her classmate. However, recipients of mandibular injections reported a significant lower level of pain sensation during needle insertion and more profound anesthesia in the lip (tingling sensation). Recipients also felt that the person administering the injection was more at ease and had more confidence.  

**Discussion:** Although the training model had anatomical limitations such as no pterygomandibular plica or adequate representation of the oral mucosa, use of preclinical training models can have benefits in dental education. Use of human cadavers or virtual reality models may be used in the future to aid students and clinicians in teaching. Another limitation mentioned in the article included the fact that perhaps students may have discussed their additional training with other classmates, and this may cause the recipient of the injection to report results on the questionnaire with a personal bias.  

**Conclusions:** According to these authors, use of a preclinical training model for proper local anesthesia techniques can be very beneficial for dental education and should be explored.  

**Reviewer’s Comments:** This article provides valuable insight on local anesthesia teaching techniques. Use of a preclinical training model in teaching local anesthesia administration to dental students can be very helpful. In addition, new methods of teaching, including use of cadavers or virtual reality models, may be an asset in improving dental education and should be researched further. (Reviewer-Gargi Mukherji, DDS).
Prevention Is Key to Management of Dental Erosion

Assessment and Management of Dental Erosion.
Wang X, Lussi A:

Dent Clin N Am 2010; 54 (July): 565-578

Tooth erosion is a multifactorial disease that must be addressed with both dental and systemic therapeutic approaches.

**Background:** Loss of tooth structure due to erosion may be increasing, especially among children, adolescents and young adults. An early diagnosis and appropriate strategies to prevent further damage are becoming increasingly important.

**Objective:** To provide a review of the diagnosis, risk factors, preventive measures, and restorative correction of tooth erosion.

**Design:** Expert literature review, no specific search strategy specified.

**Methods:** 80 peer-reviewed articles, mainly research reports and review articles, were included. The authors evaluated evidence and protocols for the etiology, diagnosis, prevention, and management of dental erosion.

**Summary:** Dental erosion is best diagnosed by clinical appearance, including smooth, silky-glazed, and sometimes dull enamel, with absence of perikymata and intact enamel along gingival margins, and rounding of cusps and "elevated" restorations. In cases of severe erosion, entire occlusal surfaces may be lost. Identifiable risk factors for dental erosion include nutritional (acidic foods and beverages), reduced salivary buffering capacity, frequent dietary exposure to acids and holding dietary acids in the mouth, and regurgitation of acids during strenuous exercise or as a result of gastroesophageal reflux disease (GERD), anorexia, or bulimia. The most important preventive measures are reductions of acid exposures of the mouth, excellent oral hygiene before the erosive challenge, use of soft-bristled toothbrushes and low-abrasive toothpastes, and management of medical disorders such as GERD (eg, eating several small meals daily instead of one large meal in the evening).

**Conclusions:** Preventive measures should be used in patients at risk of dental erosion. Reasons for restorative treatment in patients with severe erosive problems include loss of structural integrity of the tooth, hypersensitivity of exposed dentin, unacceptable esthetics, and pulp exposures. When the occlusion is affected, some patients may even require orthodontic and prosthetic rehabilitation.

**Reviewer's Comments:** Dental erosion remains challenging because, unless underlying causes are addressed, restorative therapy will fail due to continued loss of tooth structure. (Reviewer-Arthur H. Jeske, DMD, PhD).

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Keywords: Dental Erosion, Risk Factors, Diagnosis, Prevention

Print Tag: Refer to original journal article
Another Study Confirms Significantly Higher Incidence of TMD Among Females

Symptoms of Temporomandibular Disorders in the Population: An Epidemiological Study.
Gonçalves DAdG, Dal Fabbro AL, et al:
J Orofac Pain 2010; 24 (Summer): 270-278

Symptoms of temporomandibular disorder (TMD) are primarily joint noise and pain, and are prevalent in the urban adult population. Consider females with ≥2 symptoms likely to have documented TMD.

Background: Although temporomandibular disorders (TMDs) and temporomandibular joint (TMJ) disorders are encountered frequently, especially in the adult population, diagnostic criteria are not universally agreed upon, making true measures of the prevalence of these disorders difficult to achieve.

Objective: To estimate the prevalence of TMD (single and multiple symptoms) based on age and gender in a representative cohort of an urban, South American population.

Design: Population-based, cross-sectional study focusing on symptoms of a disorder related to age and sex of participants.

Methods: A demographically representative target population was identified within a large urban center (São Paulo, Brazil), and a random sampling strategy for telephone contacts within a defined area was applied. One person per household was contacted, provided informed consent, and was interviewed. Inclusion criteria for participation were age 15 to 65 years, capable of understanding and responding to questions appropriately, and agreement to participate. Five questions were asked about TMD/TMJ, including TMJ sounds, TMJ pain, masticatory muscle pain, jaw fatigue, limited jaw opening, and difficulty with lateral jaw movements. Participants were also asked about their gender, presence of symptoms within the past month, and only the most recent (within the past month) data were considered for assessment of TMD status.

Results: 1230 individuals completed the survey, approximately equally divided among males and females. The largest age groups were 31 to 40 years and 21 to 30 years, followed by 41 to 50 years. Overall, the risk of TMD increased with age, but the trend was not statistically significant. TMJ sounds (23.7%) were the most prevalent symptom, followed by TMJ pain (16.3%). For TMJ pain, prevalence was significantly higher for females (relative risk, 2.09). Fewer than 10% of respondents reported either limited mouth opening or difficulty with lateral jaw movements. Also, 39.2% reported at least 1 TMD symptom, and 17.6% reported 2 symptoms. TMD pain was reported by 25.6% of subjects, with no differences between males and females.

Conclusions: TMD and TMJ dysfunction are highly prevalent in the adult population, and are more frequent in women than in men. Further studies are needed to determine risk factors.

Reviewer’s Comments: This study appears to be consistent with other epidemiologic studies of TMD and TMJ disorders with regard to distribution of symptoms by age and sex. One advantage of this study was that it identified prevalence based on combinations of symptoms, rather than using a less-specific approach of assessing only one type of complaint. (Reviewer-Arthur H. Jeske, DMD, PhD).

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Keywords: Epidemiology, Facial Pain, Prevalence, Temporomandibular Joint

Print Tag: Refer to original journal article
Air-Abrasion, Not Silanization, Key to Bonding Certain Fiber-Reinforced Posts

The Effect of Surface Treatment of Fiber-Reinforced Posts on Adhesion of a Resin-Based Luting Agent.

Choi Y, Pae A, et al:

J Prosthet Dent 2010; 103 (June): 362-368

When using radiopaque, translucent fiber-reinforced posts, air abrasion, rather than silanization, may be the best pretreatment of the post when it is to be luted with a resin-based cement.

**Background:** Prefabricated fiber posts offer several advantages to the dentist in the restoration of endodontically treated teeth, including reduced costs when compared to custom cast post-and-cores and improved esthetics, lack of corrosion, and easy removal if necessary.

**Objective:** To evaluate the influence of various pre-cementation surface treatments of fiber-reinforced posts on their bond strength to a resin-based luting agent.

**Design:** In vitro, laboratory evaluation with standardized testing instrumentation.

**Methods:** 68 radiopaque, translucent, fiber-reinforced posts (D.T. Light-Post, Bisco) were cleaned according to the manufacturer's instructions and embedded in a polyester resin, with the top of the post exposed and surrounded by a metal ring. Posts were divided into 4 groups, and the tops of 3 groups were exposed to various surface treatments including (1) silanization, (2) air-abrasion, or (3) air-abrasion followed by silanization. A fourth group served as a control and was not treated. Following surface treatment, metal rings around the posts were filled with a dual-cure, resin-based luting agent (Variolink II) and then light-cured for 40 seconds. Metal rings surrounding exposed portions of posts were subjected to bond strength testing with an Instron device, and bond strengths were calculated in megapascals.

**Results:** Air-abrasion resulted in significantly higher bond strengths between the resin-based luting agent and posts when compared with the other 3 groups. There was no significant difference in bond strengths between the silanized group, the abraded-silanized group, and the control group.

**Conclusions:** Air-abrasion significantly enhances bond strength between fiber-reinforced posts and a dual-cure, resin-based cement.

**Reviewer's Comments:** The outcomes of this study are consistent with what we know about air-abraded surfaces, but they are not necessarily in agreement with outcomes from similar studies. This is probably due to a lack of silane-reactive groups in the posts that were tested, and a limitation of the study is that scanning electron micrographs were not used to characterize bond failures. Finally, different air-abrasion techniques will likely cause variations in outcomes too. (Reviewer-Arthur H. Jeske, DMD, PhD).

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Keywords: Fiber-Reinforced Posts, Adhesion, Resin-Based Luting Agents

Print Tag: Refer to original journal article
Is Articaine Replacing Lidocaine as the Gold Standard?

The Efficacy and Safety of Articaine Versus Lignocaine in Dental Treatments: A Meta-Analysis.
Katyal V:


The scientific evidence now favors 4% articaine over 2% lidocaine for blocks and infiltrations, but controversy regarding the risk of nerve injury will likely persist.

**Background:** Since its introduction in the U.S. about 10 years ago, 4% articaine with 1:100,000 epinephrine has been compared with other, much older dental local anesthetics, including 2% lidocaine with 1:100,000, the prototype preparation in the amide class. With the accumulation of randomized controlled trials (RCTs), systematic reviews and meta-analyses of local anesthetic efficacy and adverse events can be performed to provide dentistry with the best level of scientific evidence on which to base selection of agents.

**Objective:** To assess the evidence for the efficacy and safety of 4% articaine versus 2% lidocaine.

**Design:** Systematic review and meta-analysis of pooled data from RCTs.

**Methods:** A single author searched 4 electronic databases for relevant studies, based on the QUOROM (Quality of Reporting of Meta-Analyses) statement. Included studies were RCTs reported from 1950 to 2009 that compared the efficacy of 4% articaine with 1:100,000 epinephrine, and 2% lidocaine with 1:100,000 epinephrine, for routine dental procedures involving the permanent first molar, and that determined onset of anesthesia, post-injection pain up to 3 days following administration, and other adverse events. Included studies were determined to have consistent designs and outcomes measures. A statistically appropriate meta-analysis was used to compare data from RCTs.

**Results:** 9 RCTs were included in the review and meta-analysis. No subgroup analyses were performed (comparing outcomes for gender, dental arch, or route of injection/infiltration versus nerve block). Overall, 4% articaine resulted in statistically significantly better efficacy (relative risk, 1.31), with no significant differences in adverse events.

**Conclusions:** 4% articaine with 1:100,000 epinephrine can be recommended over 2% lidocaine with 1:100,000 epinephrine based on both efficacy and safety.

**Reviewer's Comments:** This review is quite noteworthy and appears to clearly establish 4% articaine as a preferred dental local anesthetic, particularly as it combines outcomes from nerve blocks and infiltrations. Dentists with continued concerns about nerve injury associated with use of 4% preparations for nerve blocks should carefully consider this study, but they may also elect to reserve use of 4% articaine for infiltrations, for which it is demonstrably effective. (Reviewer-Arthur H. Jeske, DMD, PhD).

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Keywords: Articaine, Lignocaine, Dental Anesthesia, Infiltration, Nerve Block

Print Tag: Refer to original journal article
A new technique using a custom-made photo-cured gingival barrier facilitates restoring Class V cavities with resin composite.

**Background:** Restoring teeth with Class V restorations often present challenges due to the difficulty of adequate isolation of the operating field, resulting in contamination. Class V restorations have a high index of loss of retention, marginal excess, and secondary caries related to microleakage at the tooth-composite interface. When the composite is cured at the polymerization step, gaps may develop that will allow for penetration of acids and bacteria into the restoration. This can lead to marginal staining, sensitivity, and secondary caries.

**Objective:** To demonstrate a technique for restoring Class V cavities using a photocured Mylar matrix technique. **Case Report:** A 32-year-old patient with noncarious cervical lesions on teeth numbers 2, 3, and 4 was selected. These lesions extended subgingivally, and use of a rubber dam would not have been practical. Enamel margins were beveled, cleaned with a non-fluoridated prophylaxis paste, color-matched for a proper shade, etched, rinsed, and dried. The Mylar matrix was positioned and fixed into place with a wedge. Placement involved inserting it into the gingival sulcus, and then another wedge was used to secure the matrix on the other proximal surface. A photo-cured gingival barrier injected around the Mylar matrix provided stabilization, and it was then attached to the area next to the cavity with a filled self-etch adhesive. Flowable resin was next inserted to cover the gingival wall. Teeth were restored with an incremental insertion of the microfill and nanofill, a technique used to minimize gap formation on the gingival wall.

**Results:** Flowable restorative resins have a lower viscosity and increased elasticity, so less microleakage and better adaptation occurs at the gingival wall interface of the composite and the tooth. Using incremental placement of the composite, starting in the dentin, is recommended to reduce the contraction gap during polymerization. The last increment would involve bonding of enamel to the composite, a bond that is stronger than that seen with composite-dentin bonding. Excess material is minimized with a good fitting matrix, thereby reducing the amount of finishing and polishing.

**Conclusions:** This technique is an option to be considered when restoring Class V cavities where use of a rubber dam is not an alternative. It facilitates isolation of the operative area, thereby reducing contamination and allowing space for placement of a flowable and microfilled resin, resulting in a more durable restoration without microleakage.

**Reviewer’s Comments:** This is a credible approach to use to achieve isolation. Frequently, gingival bleeding and excessive salivation contaminate the operating field during composite placement, and the author’s approach manages this common problem. The technique is easily applied, as it uses the same principles of proper wedging and matrix placement that are used traditionally, but makes some modifications. (Reviewer-Edward N. Friedman, DDS).

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Keywords: Class V Resin Composite, Alternative Technique, Finishing/Polishing

Print Tag: Refer to original journal article
Patients Receiving Implants Don’t Demonstrate Superior Nutritional Status

Nutritional Effects of Implant Therapy in Edentulous Patients - A Systemic Review.

Sánchez-Ayala A, Lagravère MO, et al:

Implant Dent 2010; 19 (June): 196-207

Although there were no nutritional differences, patients treated with implant therapy demonstrated greater satisfaction, masticatory ability, and food selection than patients provided with non-implant supported dentures.

Background: The use of implants is proposed for edentulous patients for several reasons. A more stable and retentive prosthesis is possible, which increases their proprioception and masticatory forces. These patients frequently need to increase their food cooking time to soften it, and this will lead to the loss of essential nutrients. As a result, it is thought the patients’ nutritional status would be diminished due to their inability to chew many foods. Therefore, food selection can be modified to include more crunchy and healthy foods such as fruits and raw vegetables, instead of a diet of processed, softer foods. Alveolar ridge preservation and esthetic enhancements also are seen in patients treated with implant-borne or implant-supported dentures.

Objective: To present all the relevant studies that have evaluated, with valid scientific methodology, the possible physical and nutrient intake improvement of edentulous subjects rehabilitated with removable and supported or retained implant denture, without restriction of suprastructure modalities, compared with those wearing conventional removable dentures.

Methods: The authors reviewed 5 relevant studies to evaluate the nutrient intake changes that occurred in edentulous patients rehabilitated with conventional removable dentures, implant-retained, or implant-supported dentures. Clinical trials measured nutrient intake of the subjects. Difficulty in mastication for edentulous patients is very common, especially in cases of unstable mandibular dentures. For that reason, implants are treatment planned and placed, improving mastication and making it possible to chew a wider variety of foods. Dietary, caloric, and fiber intake; body weight; risk of malnutrition; and nutrient intake were all measured for the subjects in these groups.

Results: The implant-retained and implant-supported groups had improved food selection, masticatory and speaking ability, as well as more comfort and esthetics. They had less difficulty adequately chewing their food than the conventional denture group. They scored higher in the rating of overall oral health relating to their quality of life. However, the unexpected finding was that there was no significant difference in their nutritional states. This is not to say that their nutritional states were as good as would be seen in patients with a natural dentition, where masticatory capacity is much greater.

Conclusions: Edentulous patients with conventional dentures did not demonstrate a significant difference in their nutritional uptake from patients provided with implant-supported complete dentures. Most educated subjects, despite their denture status, will seek to obtain good nutrition.

Reviewer’s Comments: One would assume that the patients receiving the implants would demonstrate a superior nutritional status. The size of the sample studied is limited, as the article reaches its conclusion based on the study of just 5 cases, and no specific data about the effect of the variables of their education or socioeconomic status were discussed. Still, the authors conclude that good or bad food choices by the individual, despite denture status, are significant. This is a valid observation, as even in individuals with a natural dentition, poor food choices will result in nutritional deficiencies. (Reviewer-Erward N. Friedman, DDS).

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Keywords: Denture, Dental Implant, Nutrition, Systematic Reviews

Print Tag: Refer to original journal article
Sustained low-level clenching forces injure and induce more pain in the masticatory muscles than high-level clenching.

**Background:** Tooth clenching is a risk factor for masticatory muscle pain. Multiple studies on masticatory muscles with prolonged clenching have produced conflicting results as to cause of pain and temporomandibular dysfunction.

**Objective:** To clarify if prolonged clenching performed at different force levels induces pain and/or soreness in the masticatory muscles, using a repeated-measures controlled study. The authors hypothesized that sustained low-level clenching versus high-level clenching overloads and injures the masticatory muscles.

**Participants/Methods:** 10 healthy female volunteer dental students participated in 5 experimental sessions, which consisted of measuring pain, fatigue, bite force, and the pressure-pain threshold (pressure value at which the perceived sensation changed from pressure to pain) of the anterior temporalis and masseter muscles while, and 1 day after, performing a submaximal clenching task at 7.5%, 10.0%, 15.0%, 25.0%, or 40.0% of their maximum force, and then measuring maximum clenching force for 30 seconds. Fatigue and pain in the masticatory muscles were assessed by means of a visual analog scale, while biting force was measured via placement of transducers on the mesiobuccal cusps of the participant's lower first molars. The pressure-pain threshold of the anterior temporalis and masseter muscles were assessed by holding a tip surface on the most voluminous parts of the muscles on the preferred side 4 times at each site with 5-second intervals between trials. The peak force reached during maximum clenching was assessed 3 consecutive times for 1 to 2 seconds with 30-second rest intervals, and the results were averaged.

**Results:** Unbearable pain was the most frequent reason for participants to stop the clenching task, with the most pain reported in the masseter muscles (31 of 43 sessions). The pain and fatigue perceived immediately after the clenching tasks dropped markedly 1 day after clenching. While perceived pain did not differ across force levels 1 day after the clenching tasks, fatigue differed significantly between force levels 1 day after these tasks, with the highest intensities after the 7.5% and 10.0% tasks. Additionally, the baseline mean clenching force (434.0 N) was significantly reduced after the 7.5% and 10.0% tasks. The pressure-pain threshold of the masseter muscle was significantly reduced immediately and 1 day after the 7.5% task as well as 1 day after the 10.0% task, while the pressure-pain threshold for the temporalis was significantly reduced only 1 day after the 7.5% task.

**Conclusions:** Prolonged low-level clenching in healthy young women induced fatigue and decreased pressure-pain thresholds of the masseter and temporalis muscles.

**Reviewer's Comments:** This is one of the first studies to investigate sustained contractions of jaw muscles until task failure at force levels lower than 10% of maximum clenching force, and only studied participants with no pre-existing pain, occlusion, or temporomandibular conditions. (Reviewer-Kelly A. Halligan, DDS).

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Keywords: Tooth-Clenching, Bite Force Masticatory Muscles, Fatigue, Pain

Print Tag: Refer to original journal article
Concerns of Parents With Autistic Children -- Things You Should Know

Rada RE:

J Am Dent Assoc 2010; 141 (August): 947-953

With increasing diagnoses of autism and with the confusion in the scientific and pseudoscientific literature, it is important that dentists be versed in both in order to communicate properly with patients and their families.

**Background:** There has been an exponential increase in the diagnosis of autism spectrum disorder, from its initial description in 1943 to today. It is a developmental, neuropsychiatric disorder appearing in early childhood. The spectrum includes autistic disorder, Asperger syndrome, and pervasive development disorder not otherwise specified. Children frequently have allergies, immune system problems, gastrointestinal disturbances, and seizures. Two distinct theories explaining the origin of autism are related to either environmental or genetic causes. Parental concerns for dental treatment modalities may be related to one or the other theory.

**Objective:** To conduct a literature review to answer parents' questions about autistic children's dental treatment.

**Discussion:** Autistic children may present with behavior management problems. Parents may question treatment modalities with questions garnered from parent forums from biomedical and alternative medical literature (AML) that may include anecdotal, non-peer-reviewed reports. Parents' concerns about mercury (amalgam) have led some to chelation therapy, so the dentist may discuss the advantages and disadvantages of alternative treatments. Fluoride, according to the AML, may inhibit critical antioxidant enzymes and has been linked to excitotoxic reactions within the brain. In highly cariogenically susceptible individuals, this presents a problem regarding the child's dental health. A discussion regarding a child's ability to brush and spit may be helpful and discussion about refined carbohydrate intake as well as a discussion of the local benefits of fluoride varnishes with very minimal fluoride exposure systemically. If parents still do not accept the above, then more frequent dental monitoring should be recommended. Regarding gluten, casein, and other dental materials, it would be beneficial to know material content and to offer alternatives. There is a website that dentists can access regarding dental material contents. Although there is nothing in the literature regarding negative effects of acetaminophen, ibuprofen may be offered as an alternative. Parents may be leery of the use of nitrous oxide due to reports of morbidity and mortality in children due to extensive procedures in the operating department in children with vitamin B12 deficiency. Dentists may recommend alternative sedation if required or anesthesia testing or behavioral guidance techniques.

**Conclusions:** Dentists treating patients who have autism may need to provide more than standard patient care, as the use of time-tested dental treatment and prevention modalities may be questioned or refused by parents.

**Reviewer's Comments:** When patients present to a dental office with concerns and questions regarding procedures, we need to understand the basis for their questions. Parents of autistic children may have questions regarding mercury, fluoride, gluten, casein and dental materials, antibiotics, acetaminophen, and nitrous oxide. The basis for their questions may be from scientific, peer-reviewed journals or from pseudoscientific journals. By determining the basis of the parents' questions, we may come to a better, more amenable understanding and therefore provide the best possible treatment outcome for the child. (Reviewer-Ralph J. Bozza, DDS).

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Keywords: Autistic Disorder, Dental Care for People With Disabilities, Special Care Dentistry

Print Tag: Refer to original journal article
Resin-based endodontic sealers provide acceptable long-term outcomes and appear to offer good tissue tolerance if accidentally extruded.

**Background:** With favorable physical characteristics, resin sealers are gaining increasing popularity for use with gutta percha to bring about a complete seal of endodontically treated roots.

**Objective:** To obtain 8-year post-treatment outcomes from a group of endodontically treated teeth. The authors used a methacrylate resin-based sealer (EndoREZ), in conjunction with laterally condensed gutta percha, as a sealant.

**Design:** Retrospective case review.

**Participants/Methods:** Patients from an ongoing observational study of endodontically treated teeth were evaluated. Root canals had been prepared using a traditional crown-down technique for radicular access and then a step-back method for final preparation. Working lengths were established 1 mm short of the apex. Patients who had been treated endodontically with the resin-based sealer were recalled for clinical and radiographic evaluation. Success of the treatments at follow-up was determined by radiographic evaluation of the periodontal ligament, reduction in size of the pre-existing periapical radiolucency by at least 50%, or if no radiolucency was originally present, none was observed at follow-up. Successful root canal treatment was also assessed by an absence of clinical symptoms.

**Results:** From the original patient pool, 112 patients with 212 root canals with a resin-based endodontic sealer were evaluated. Patients ranged in age from 12 to 75 years, and both sexes were approximately equally represented (55% female, 45% male). Ninety teeth (80.35%) were deemed adequately filled, while 16.9% exhibited obturation short of the working length. Overall, all patients were comfortable after 8 years, and based on the study criteria, the success rate of endodontic treatment that included the EndoREZ sealer was 86.5%.

**Conclusions:** EndoREZ, used with lateral condensation of gutta percha, is a clinically acceptable root canal sealing material, and was apparently well tolerated by tissues in cases of accidental extrusion beyond the radiographic apex. EndoREZ in conjunction with gutta percha performed similarly to conventional endodontic sealers during a period of up to 8 years.

**Reviewer's Comments:** Within the limitations of this study, EndoREZ compares acceptably with other types of root canal sealers. However, whether a practitioner adopts this material will depend on a variety of factors, including demands of the placement technique, preferences for handling characteristics, and others. The evidence from this study does not compellingly argue for a replacement of other sealers with this product. (Reviewer-Arthur H. Jeske, DMD, PhD).

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*Keywords:* Endodontic Therapy, EndoRez, Methacrylate-Based Sealers, Root Canal Filling

*Print Tag: Refer to original journal article*
When combining sodium hypochlorite and chlorhexidine as antimicrobial endodontic irrigants, flushing with distilled water or saline is recommended.

**Background:** When used to irrigate root canal systems during endodontic treatment, the combination of 2.5% sodium hypochlorite and 2.0% chlorhexidine may offer better antimicrobial actions than one of these used alone, although the combination can result in the formation of a precipitate that may compromise outcomes.

**Objective:** To characterize the precipitate formed by the interaction of sodium hypochlorite and chlorhexidine and to describe methods to prevent its formation.

**Design:** In vitro laboratory test using human tooth roots.

**Methods:** The roots of 40 single-rooted, extracted permanent teeth were prepared using a conventional filing technique and were divided into 4 groups. During instrumentation, the canals in the first (test) group were irrigated between each file size with 1 mL of 2.5% sodium hypochlorite followed by flushes with 5 mL of 17% EDTA, 5 mL 2.5% hypochlorite, and a final flush with 5 mL of 2.0% chlorhexidine gluconate. In a second group, 5 mL of 100% isopropyl alcohol was used in the place of the hypochlorite; in a third group, saline was substituted. A fourth group used 5 mL of distilled water. After the canals were dried, the roots from each group were sectioned and examined with a stereomicroscope, and nuclear magnetic resonance imaging was used to determine the chemical composition of any precipitate that was formed.

**Results:** In the test group that used 5 mL of hypochlorite followed by chlorhexidine, an orange-brown precipitate consisting of parachloraniline was present. In the saline and distilled water-flush groups, less precipitate was present, and no precipitate was present in the root that was flushed with absolute isopropyl alcohol between the hypochlorite and chlorhexidine irrigations.

**Conclusions:** Sodium hypochlorite and chlorhexidine can interact to form an undesirable precipitate during endodontic preparation. The precipitate can be prevented using an absolute alcohol rinse or minimized by using saline or distilled water for flushing. However, the use of isopropyl alcohol as an endodontic flushing fluid is not an established clinical procedure at this time.

**Reviewer's Comments:** As the authors of this study correctly point out, the precipitate resulting from the combination of hypochlorite and chlorhexidine irrigation of root canals can compromise outcomes, and at this time, it is probably best to minimize this possibility by thoroughly flushing with saline or distilled water. (Reviewer-Arthur H. Jeske, DMD, PhD).

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Keywords: Chlorhexidine, Intracanal Irrigants, Sodium Hypochlorite, Parachloraniline

Print Tag: Refer to original journal article
While chlorhexidine and xylitol may be safe and effective strategies for caries reduction in children, adults may not derive the same benefits.

**Background:** According to the author of this article, the key to modern caries management resides in counteracting the rapid acidification of the plaque biofilm during the intake of fermentable carbohydrates, primarily due to *Streptococcus mutans*.  

**Objective:** To review the evidence for some of the more common antimicrobial measures used to control the caries potential of the biofilm.  

**Design:** Expert review of published studies.  

**Methods:** The author evaluated outcomes from peer-reviewed, scientifically designed studies that reported on the use of antibacterial methods to counteract caries development and progression. Areas evaluated included primary versus secondary prevention, salivary diagnostics, antiseptics, replacement therapy and probiotics, and dietary control and sugar substitutes.  

**Results/Conclusions:** 55 primarily high-quality scientific reports were included in the literature review. For primary versus secondary caries prevention, there is a lack of evidence for caries-control methods (ie, hindrance of progression of existing lesions). With regard to salivary diagnostics, the benefits for caries prevention and control are not clearly substantiated, although salivary flow rate appears to be an important diagnostic feature, with caries buffering capacity having only a weak association with caries activity. For antimicrobial/antiseptic approaches, systematic reviews indicate a modest caries preventive effect of 10% to 26% prevented fractions for chlorhexidine gels. However, because of somewhat contradictory evidence, chlorhexidine mouth rinses cannot be recommended for caries prevention. Triclosan copolymer (present in Colgate Total® dentifrice) has been shown to reduce root and crown caries in adults in 3-year follow-up studies. Finally, for dietary control and sugar substitutes, xylitol has been shown to decrease acid production by the biofilm and to promote remineralization by stimulation of salivation. While there is fair evidence that this can be used to promote the use of xylitol in children and young adults, there are few studies and a lack of evidence for this effect in adults and elderly patients. The authors also concluded that preventive programs should include as many strategies as possible, but should always be combined with fluoride treatments.  

**Reviewer's Comments:** As this article clearly indicates, replacement of fluoride applications with newer, antibacterial measures cannot be recommended at this time, and more research is needed before we can adopt exclusively non-fluoride approaches. (Reviewer-Arthur H. Jeske, DMD, PhD).

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Keywords: Caries, Chlorhexidine, Lactobacilli, *Streptococcus mutans*, Saliva, Xylitol, Probiotics  

Print Tag: Refer to original journal article
In patients with symptomatic joints without signs of internal derangement, clinicians should consider other possible causes such as osteoarthritis, synovitis, or referred pain.

**Background:** Temporomandibular joint (TMJ) dysfunction is common, affecting up to 28% of adults. Disk displacement, also called internal derangement, is one of the main causes of this dysfunction with clinical symptoms of pain, joint sounds, and abnormal function. This derangement has been thought of as one of the main causes of secondary inflammatory changes and progressive articular cartilage changes leading to osteoarthritis. Magnetic resonance imaging (MRI) of the TMJ has been proven to be 95% accurate in determining disk position relative to the condyle and 93% accurate in determining osseous changes. However, a lack of correlation between MRI findings of disk displacement and the extent of pain/dysfunction has been reported.

**Objective:** To evaluate whether MRI findings of various degrees of disk displacement can be correlated with the presence of clinical signs and symptoms in patients with a clinical disorder of the TMJ.

**Design/Methods:** Retrospective study. Imaging was performed in 144 TMJs in 72 patients. Displacement of the posterior band in relation to the condyle was quantified as mild or significant.

**Results:** Disk displacement was found in 54% of the symptomatic joints and 22% of the asymptomatic joints. Among the symptomatic joints, 37% had disk displacement with reduction and 17% had disk displacement without reduction. In the non-reduction group, 79% had significant displacement (10 to 11 o'clock position relative to condyle) of the posterior band and 21% had mild displacement (8 to 9 o'clock position). Of the 60 clinically asymptomatic joints, 78% had no signs of disk displacement on MRI, whereas 22% had disk displacement with reduction. None of the asymptomatic joints had disk displacement without reduction.

**Conclusions:** Disk displacement on MRI correlated well with clinical symptoms in cases of significant disk displacement and in cases of disk displacement without reduction. When disk displacement with reduction was mild, there was no statistically significant difference between symptomatic and asymptomatic joints, which suggests that other causes should be considered.

**Reviewer's Comments:** This article points out that when the patient has symptomatic joints without signs of internal derangement, the clinician must consider other possible causes such as osteo-arthritis, synovitis, joint effusion, or referred pain. The one significant limitation of this study and recognized by the author was that it was retrospective in nature. A prospective controlled study would have been more beneficial. (Reviewer - Timothy J. Halligan, DMD).

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Keywords: Temporomandibular Joint, Internal Derangement, Disk Displacement

Print Tag: Refer to original journal article
Does MRSA Live in Your Mouth?

Methicillin-Resistant Staphylococci Carriage in the Oral Cavity: A Study Conducted in Bari (Italy).
Buonavoglia A, Latronico F, et al:

Oral Dis 2010; 16 (July): 465-468

Oral flora in the mouth harbor numerous types of bacteria, including Staphylococci. Methicillin-resistant Staphylococci (MRS) may also find a home in the oral cavity.

Background: The oral cavity is a reservoir for many opportunistic pathogens that may play a role in oral disease. Recently, community-acquired (CA) as opposed to hospital-acquired (HA) infections are on the rise. Thus, Staphylococci have the ability to colonize and spread from a hospital environment to the community and then to healthy individuals.

Objective: To study the oral spread of Staphylococci and methicillin-resistant Staphylococci (MRS) in patients from private dental offices and to determine any risk factors for MRS transfer.

Design/Participants: Observational cross-sectional study including 60 patients divided into 2 groups (healthy/group A) and those with pyogenic granulomas/abscesses (group B).

Methods: Questionnaires were given to individuals to determine the presence of risk factors (previous hospitalization, use of mouth wash, previous antibiotic treatment, etc). Also, a swab from the oral mucosa was collected from group A and pus from granulomas/abscesses was collected from group B. Bacteriologic analysis was conducted using protocols to culture Staphylococci, and MRS was identified by polymerase chain reaction methods and detection of the mecA gene. Antimicrobial susceptibility tests were conducted to determine resistance/susceptibility of the different Staphylococci strains.

Results: Of 60 subjects, 36 responded to the questionnaire and provided swabs. About 20% of the individuals were Staphylococci carriers. Only one individual was from group A, whereas the other 6 were from group B. Only one individual was a MRS carrier out of the 36 samples, and none of the S aureus was methicillin-resistant. The antimicrobial susceptibility test revealed that MR S epidermidis was resistant to >2 classes of non–beta-lactam antimicrobials. Previous risk factors did not correlate with the status of the carriers. Results: Multiple individuals were Staphylococci carriers and those patients who had abscesses in the mouth were more likely to have Staphylococci colonization. In addition, 3 strains of the 7 staphylococcal isolates were S epidermidis, which has been known to produce biofilm and adapt well to dental plaque. The MR isolate was from the group that had a pyogenic infection and was multiresistant due to possible previous use of antibiotics.

Conclusions: The results underline the potential role of the oral cavity as a reservoir of Staphylococci.

Reviewer’s Comments: The article provides valuable knowledge about the presence of Staphylococci in the oral cavity. Although the size of the sample in this study was very small, the methods used to conduct the bacteriological analysis, antimicrobial susceptibility, and identification of MRS was noteworthy. The oral flora may serve as a home to MRS and further studies and research are warranted to study these pathogens.

(Reviewer-Gargi Mukherji, DDS).

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Keywords: Oral Cavity, Staphylococci, Methicillin-Resistance

Print Tag: Refer to original journal article
The fees associated with implants and their prosthetic rehabilitation should not depend solely on the number of implants and fixed units needed. The fees should be dependent on the risks related to the treatment.

**Discussion:** Implant dentistry is a popular way to replace edentulous spaces in the oral cavity. Often, implants are faster, simpler, and more cost-effective; however, the method may have complications since adequate bone height is difficult to find, especially in the posterior maxilla and mandible. Usually fees associated with implants are dependent on the number of teeth replaced and number of implants, with no association to potential risk of failure. Mechanical stresses play a critical role in the success of implant prosthesis. For example, early implant loading may have more than a 3 to 6 times greater failure rate. Whereas, according to Dr Misch, if the bone is allowed to integrate for >4 months, the surgical success rate is >98%. Mechanical factors related to biomechanical factors include bruxism, which may cause porcelain fracture; loosening of abutments; etc. In addition, marginal crest bone resorption may occur due to biomechanical stress since implants do not have periodontal membranes. Furthermore, posterior cantilevers cause immense amounts of stress to the implant restoration. Bone augmentation with appropriate healing time is needed, although the procedure is sometimes unpredictable, more uncomfortable, and another expense for the patient. Also, as more bone is added (for example, sinus bone graft), dentists may choose to add more implants in those areas, thus further increasing the cost of the implant prosthetic system. Dentists need to accept the fact that maxillary implants have a higher failure rate than mandibular implants due to the weaker bone quality in the maxilla. In addition, implants placed in the maxilla are shorter and have more stress due to less surface area, and maxillary restorations are subjected to more excursive forces. Also, esthetic concerns for patients are most often associated with maxillary teeth, and often crowns or implants need to be redone.

**Conclusions:** Maxillary arch restorations need bone augmentation to eliminate posterior cantilevers. The fees for implant restorations with fewer implants with/without cantilevers may need to be more than one with multiple implants with/without cantilevers. The soft bone in the posterior maxilla is often subjected to higher biomechanical stress and risks. In addition, esthetic concerns of patients are more often related to maxillary teeth as opposed to mandibular teeth. These are reasonable justifications as to why fees should be related to the risk of treatment rather than the simple number of implants and prosthetic units.

**Reviewer’s Comments:** The proposal for increased fees for patients related to risk of treatment rather than simply the number of implants needed is an idea that dentists need to consider. The article does present some strong points to support this statement. Proper communication to patients for adequate understanding of these concepts will be necessary. (Reviewer-Gargi Mukherji, DDS).

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Keywords: Implants, Bone Grafts/Augmentation, Biomechanical Stress

Print Tag: Refer to original journal article
Background: The art of tattooing and body piercing has been practiced for centuries. Recently, the number of oral piercings has increased and has become more popular in society. In the oral cavity, the most common location of the piercings includes the tongue and lips. These oral piercings may cause a series of complications including swelling, pain, speech difficulties, dentin hypersensitivity, root caries, gingival recession, tooth fracture, upper airway obstruction, etc. Thus, it is imperative that dental professionals inform patients of the deleterious effects of oral piercings.

Objective: To evaluate the periodontal status and risk factors for gingival recession in people with tongue piercings.

Methods: Cross-sectional study with 60 individuals (with tongue piercings) and 120 controls (non-users) from Brazil (age 13 to 28 years from a low socioeconomic status). Clinical assessment of tooth fracture and periodontal health including 6-point probing depths, bleeding on probing, and clinical attachment levels was evaluated. In addition, data from a questionnaire to assess behavior such as smoking, functional habits (rattling of the piercings against teeth, etc) and characteristics of tongue piercings (material) were collected. Patients who had taken antibiotics within the last 90 days or had used medicines that could affect gingival tissue were not included in the study.

Results: About 75% of patients rattled their piercings, and tooth fracture occurred in about 20% of cases after insertion of the piercings (this result may be skewed due to a memory bias). Average gingival recession in the mandibular anterior lingual region was significantly higher (55%) than in controls (10%). The case-control study demonstrated that about 36.7% of subjects had complications such as swelling/infection/inflammation after the piercings were placed, and anterior lingual recession correlated with the use of tongue piercings. The present study did not show any notable differences in the occurrence of periodontitis between the 2 groups. In addition, the study found that the use of piercings, age, male gender, and anterior bleeding on probing were strongly associated with gingival recession in the anterior mandibular lingual area.

Conclusions: Tongue piercings are strongly related to recession of the gingiva in the anterior lingual mandibular region.

Reviewer's Comments: The article provides valuable insight on the oral implications and risks of tongue piercings. Dental professionals need to educate patients about the deleterious effects and complications that may arise due to placing these piercings in the mouth. (Reviewer-Gargi Mukherji, DDS).

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Keywords: Tongue Piercing, Tooth Fracture, Gingival Recession

Print Tag: Refer to original journal article