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Journal

OCTOBER 2012

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OF THE CALIFORNIA DENTAL ASSOCIATION

Journal

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ASSOCIATION MEDIA & PUBLISHING

AADE American Association of Dental Editors

CDA JOURNAL, VOL 40, Nº10

Denied

KERRY K. CARNEY, DDS

An empty gymnasium, alone on the basketball court, the winter morning light illuminating the space and the ringing sound of the basketball rebounding from the floorboards; it is almost like being in a cathedral. The only other sounds are the squeaking rubber soles and the swish and pop of the ball escaping the net.

That image takes me back to a past of team play, competition, and fun. Of course, playing offense garnered all the glory but playing defense — that brought out the evil genius. The best was defending in such a way that the opponent felt secure enough to take a shot only to find, from out of nowhere, a defensive hand on the ball, swatting it away. That shot was denied. That sort of denial is very satisfying when you are playing defense.

But the other day, I had another kind of "denial," a much-less satisfying denial. I received the Explanation of Benefits (EOB) for a patient for whom we had completed a full-coverage crown following an endodontic procedure. The patient's insurance denied payment for the crown. I was dumbfounded. The specialist had received payment for the endodontic procedure, but the crown was denied.

What had I done wrong? I questioned my diagnosis and treatment plan. I reviewed the chart in detail to see what I had missed. Where had I gone wrong?

The EOB stated "benefits are not available since submitted documentation does not demonstrate a favorable long-term prognosis. The dentist is not contracted in the 100, 200, or 300 Network. The patient is responsible for the difference between the dentist's submitted fee and the amount your plan pays."

The specialist had received payment for the endodontic procedure, but the crown was denied.

Who made this determination? Who is this guy? And why did he deny the treatment?

I thought about calling Greg Alterton, CDA practice analyst, because he writes the Dental Benefit Plans column in the CDA *Update*. I needed advice. Turns out the person I needed to consult was Patti Cheesebrough, CDA's dental benefit specialist. She is an advocate for members and gets results when issues arise with dental benefit plans.

Patti listened to my quandary and guided me to the "Payment Denial for Lack of Medical Necessity," sample appeal. This is a resource that is available online at the CDA Practice Support Center (cdacompass.com).

What a great resource. The template is specific and frames a detailed appeal. It began by commiserating with the medical director of the plan about guarding against "inappropriate uses of resources/services and supplies." It proceeded to elucidate how in this case, there was a medical necessity based on the standard of care that required rendering the disputed care.

Risks, benefits, alternative treatment, and costs were enumerated and the specific history of the case was described in detail. Extensive consultations took place with the patient and the endodontic specialist before the treatment plan was decided. (The specialist contributed a letter independently corroborating the history and decision-making process.)

The final four paragraphs were the most fun to write.

The medical director was requested to provide the detailed rationale for their determination based on the standard of care. The name and specialty of the dentist adviser who reviewed and denied the case and his/her board-certified status was also requested. It cited appropriate Health and Safety Code paragraphs for the requests. It made reference to the possible need for an external review for a final determination in the appeal claim and inquired if the patient would need to go to an external review to solve the question.

It went on to point out that federal law requires that the specific reasons for the denial must be provided to my patient, "including the scientific or clinical judgment for the determination, applying the terms of the plan to my patient's medical circumstances, as well as any internal rule, guideline, protocol, or other similar criterion that was relied on in making this decision." (I think I heard the medical director shifting in his/her seat.)

It specified the qualifications of the person who will review the claim: a named fiduciary of the plan, a new person, not a subordinate of the person who made the original adverse determination. It also stipulated that a new health care professional

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with appropriate training must be consulted.

A few more legal paragraphs were cited and the letter closed with a request for the payment to be provided. The letter concluded with a listing of the entities to be copied on this communication. (I think I heard the medical director mumbling something about dentists.)

Not long after, we received a cordial letter from the grievances and appeals analyst of the Grievances and Appeals Department of the plan. The analyst wrote, "We received your request to reconsider the services rendered in your office. ... [the plan] has completed its review of this appeal. After careful consideration, it was determined that this claim will be approved. You will receive an updated Explanation of Benefits (EOB) within the next seven to 14 business days. ... If you have any questions regarding this decision, you may contact customer service. ... Thank you for your patience while this matter underwent review."

Our patients understand their financial responsibility for services rendered. We would have received payment for the crown from our patient anyway. It just did not seem right that the plan that our patient pays premiums for should deny payment for a benefit they normally cover.

Our office worked on our patient's behalf and helped her get what she deserved.

CDA worked on our behalf to help us make it happen. Reading the grievances and appeals analyst's response reminded me of just one more good reason to be a member of CDA. (I think I just heard the swish and pop of the basketball net.) ■■■■

The *Journal of the California Dental Association* welcomes letters.

We reserve the right to edit all communications and require that all letters be signed. Letters should discuss an item published in the Journal *within the past two months or matters of general interest to our readership. Letters must be no more than 500 words and cite no more than five references. No illustrations will be accepted. Letters may be submitted at www.editorialmanager.com/jcaldentassoc. By sending the letter to the* Journal, *the author certifies that neither the letter nor one with substantially similar content under the writer's authorship has been published or is being considered for publication elsewhere, and the author acknowledges and agrees that the letter and all rights of the author with regard to the letter become the property of the California Dental Association.*

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Truth Decay

DAVID W. CHAMBERS, PHD

Truth decay is a chronic, communicable disease and very common these days. It isn't exactly lying: It is just making sure that other's expectations are as favorable to our own interests as we can possible get away with. The epitome is the consent decree. Companies that have broken the law agree to pay a fee, without admitting any wrongdoing, in order that their conduct not be held against them or admitted into evidence in the future. It is like purchasing reputation insurance after the fact. The cost of such coverage in America seems to be declining.

Surprising to many, "Thou shalt not lie" is not one of the Ten Commandments. There is a biblical prohibition against perjuring oneself in a trial, but deceiving one's enemies is good strategy and misrepresenting the value of goods is sound

CONTINUES ON 783

Correction

The Technical Index was inadvertently left out of an article by Timothy T. Brown, PhD, which appeared in the March 2012 issue of the *Journal of the California Dental Association*.

The online version of the March issue has been revised to include the Technical Index for "Access to Dental Care and the Capacity of the California Dental Care System." The Technical Index appears on Pages 258a through Page 259.

The *Journal* apologizes to Dr. Brown for the omission.

Secondhand Smoke Worsens Flu for Hospitalized Children

Researchers have found that children with secondhand tobacco smoke exposure who are hospitalized with influenza have more severe illness, according to a new study published online in the *Journal of Pediatrics*.

To assess whether children with influenza who are exposed to secondhand tobacco smoke would have more severe illness than those not exposed, researchers abstracted charts from pediatric inpatients with confirmed influenza from 2002 to 2009 for demographics, medical history, and smoke exposure, according to the study.

Using intensive care, intubation, and length of stay in the hospital as severity indicators, researchers found children with chronic conditions and secondhand smoke exposure required more intensive care and had a longer length of stay (10.0 vs 3.5 days) than children not exposed to secondhand smoke with chronic conditions, according to the report.

In addition, "In multivariate analyses controlling for potential confounding factors, children with SHS exposure were 4.7 times more likely to be admitted to intensive care and had a 70 percent longer length of stay," the authors wrote, noting that "potential confounding factors included demographics and the presence of asthma or chronic conditions."

For more details, see the full report at jpeds.com/article/S0022-3476(12)00731-7.

CDA JOURNAL, VOL 40, Nº10

Patients who received tissue repair cells had greater bone density and quicker bone repair than those who received traditional guided-bone regeneration therapy.

New Therapy May Offer Hope for Craniofacial Reconstruction

Using stem cells to regrow craniofacial tissues — mainly bone — has been shown to be quicker, more effective, and less invasive than traditional bone regeneration treatments, according to results of a recent clinical trial.

Researchers from the University of Michigan School of Dentistry and the Michigan Center for Oral Health Research partnered with Ann Arbor-based Aastrom Biosciences Inc. for the first human study of its kind, according to a news release from the university.

Twenty-four patients requiring localized reconstruction of jawbone defects participated in this longitudinal trial, the authors wrote, and patients either received experimental tissue repair cells (called ixmyelocel-T) or traditional guided-bone regeneration therapy.

Six or 12 weeks following treatment, clinical and radiographic assessments of bone repair were performed.

"Bone biopsies were harvested and underwent quantitative microcomputed tomographic and bone histomorphometric analyses. Oral implants were installed, subsequently restored, and functionally loaded with tooth restorations," the authors wrote.

The research team found that patients who received tissue repair cells had greater bone density and quicker bone repair than those who received traditional guided-bone regeneration therapy, the university stated. Plus, the experimental group required less secondary bone grafting when getting their implants.

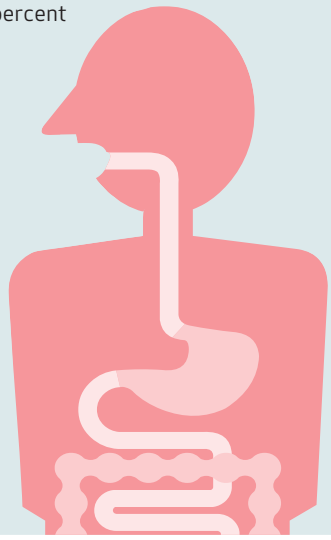
"In patients with jawbone deficiencies who also have missing teeth, it is very difficult to replace the missing teeth so that they look and function naturally," said Darnell Kaigler, principal investigator. "This technology and approach could potentially be used to restore areas of bone loss so that missing teeth can be replaced with dental implants."

The study is published in the journal *Cell Transplantation*.

Study: Minimally Invasive Esophageal Cancer Treatment Can Provide Faster Recovery

In a study using 115 patients with resectable esophageal cancer, researchers compared traditional open esophagectomies with minimally invasive esophagectomies and found those in the minimally invasive surgery group to be almost three times less likely to develop pulmonary infections and more likely to have significantly shorter hospital stays.

According to the study, published in *The Lancet*, the team of researchers randomly assigned 56 patients to receive traditional open esophagectomies and 59 patients to receive minimally invasive esophagectomies. Twenty-nine percent of patients in the open surgery group had pulmonary infection in the first two weeks compared with just 9 percent in the minimally invasive group. In addition, "34 percent of patients in the open esophagectomy group had pulmonary infection in-hospital compared with 12 percent in the minimally invasive group," the authors wrote.



Researchers also found that those patients who received the minimally invasive procedure also had considerably less blood loss and a better short-term quality of life at six weeks after undergoing surgery, according to an article on the study in the *Journal of the American Dental Association*.

"A shorter hospital stay in the minimally invasive group … indicates a faster postoperative recovery," the authors wrote. "Importantly, we noted no compromise in the quality of the resected specimen, no significant difference in the number of lymph nodes retrieved, or in the number of reoperations and postoperative mortality between the groups."

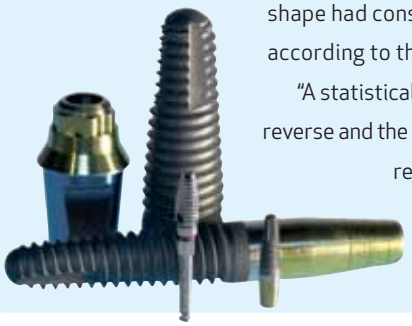
Source: *The Lancet* 379(9829):1887-92, May 19, 2012.

Thread Shape Effect on Pullout Strength of Miniscrews

Researchers have studied the effects of variations in thread shape on the axial pullout strength of orthodontic miniscrews, according to a recent report, and found the buttress reverse thread shape to provide the greatest pullout strength. The researchers utilized a total of 35 miniscrews, seven of each design being considered, and performed pullout tests on a synthetic bone support.

"We used self-tapping and self-drilling miniscrews having a diameter of 2 mm and a thread shaft length of 12 mm (the longest and the largest supplied by the manufacturer)," the authors wrote.

Using a buttress reverse thread shape as the control design, the authors tested this against four experimental designs, each manufactured with a modification in thread shape while maintaining all other characteristics. The thread designs of the experimental groups were buttress, 75-degree joint profile, rounded, and trapezoidal, and the researchers found that the control group with a buttress reverse thread shape had consistently higher pullout strength values than did the other designs, according to the study.



"A statistically significant reduction in pullout force was found between the buttress reverse and the buttress thread miniscrews," authors noted, concluding that "the buttress reverse thread shape provided the greatest pullout strength."

See the full report in the *American Journal of Orthodontics and Dentofacial Orthopedics* 142(2):186-90.

Dental Coalition Pushes for Evaluation of Sugar-Sweetened Beverages

Sixteen dental organizations have requested that the U.S. Surgeon General report on how the consumption of sugar-sweetened beverages can affect oral health.

In a letter to Health and Human Services Secretary Kathleen Sebelius, the coalition asked for a report on relationships between specific dietary practices and oral diseases, according to a news release from the American Dental Association, an organization included in the coalition.

"We strongly urge you to commission a report that, at a minimum, evaluates scientific literature on the extent to which sugar-sweetened beverage consumption affects oral health," said the coalition letter to the administration's chief health officer.

"We also ask that you put forward a science-based definition of 'soft drinks' and/or 'soda pop.' The definition should account for the natural sugar(s), added sugar(s), carbonation and acid(s) in these beverages. It should also distinguish 'soft drinks' from beverages many consider healthy despite their sugar and acid content (e.g., fruit juices, milk, etc.)," the coalition wrote.

"From a dental perspective, a steady diet of sugary foods and drinks, including juice and sports drinks, can damage teeth. A report from the Surgeon General will shine a light on this issue and, hopefully, generate fact-based policies around which the oral health community can coalesce."

In addition to the ADA, organizations urging the study include Academy of General Dentistry, American Academy of Periodontology, American Association for Dental Research, American Association of Dental Consultants, American Association of Endodontists, American Association of Oral and Maxillofacial Surgeons, American Association of Public Health Dentistry, American Association of Women Dentists, American College of Prosthodontists, American Dental Education Association, American Dental Hygienists' Association, American Society of Dentist Anesthesiologists, Association of State and Territorial Dental Directors, Hispanic Dental Association and National Dental Association.

For more information, visit ada.org/news/7391.aspx.

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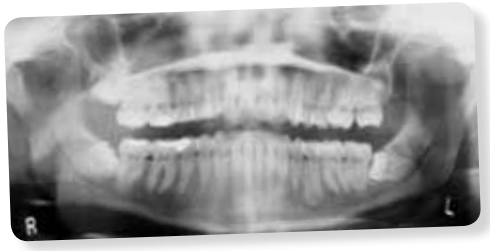

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Drop in Cigarette Use, Other Tobacco Use Up, Says CDC

A new report says sharp increases in total adult consumption of pipe tobacco (used for roll-your-own cigarettes) and cigarette-like cigars since 2008 have offset declines in total cigarette consumption.

The U.S. Centers for Disease Control and Prevention study found that from 2000 to 2011, total consumption of all smoked tobacco products decreased 27.5 percent and total cigarette consumption decreased 32.8 percent.

However, the total consumption of noncigarette-smoked products increased more than 123 percent, according to the report. From 2000 to 2011, the largest increases were in consumption of pipe tobacco (up 482 percent) and large cigars (up 233 percent), a CDC news release stated.

"The data suggest that certain smokers have switched from cigarettes to other combustible tobacco products, most notably since a 2009 increase in the federal tobacco excise tax that created tax disparities between product types," study authors wrote.

The study used U.S. Department of the Treasury data to calculate consumption for all forms of smoked tobacco products and found per capita cigarette consumption declined more than 40 percent while per capita consumption of noncigarette-smoked tobacco products increased nearly 97 percent, the report stated.

"The Surgeon General's Report released this past March shows that getting young people to either quit smoking or never start smoking is the key to ending the tobacco epidemic, because 99 percent of all smokers start before they're 26 years old," said Tim McAfee, director of CDC's Office on Smoking and Health, in the news release.

See the study in the CDC's *Morbidity and Mortality Weekly Report*, Aug. 3, 2012/61(30);565-569.

Panoramic Radiographs Can Be Early Predictor of Maxillary Canine Impaction

A new study shows panoramic X-rays can offer practitioners a better means of predicting maxillary canine impaction.

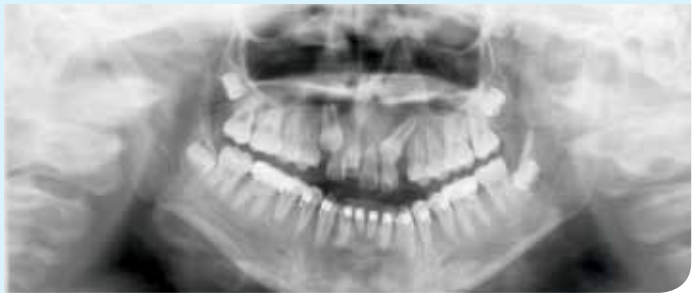
The retrospective study was conducted at a dental hospital in Hong Kong with panoramic radiographs. According to the report, geometric measurements were made on 384 panoramic radiographs of patients with a unilaterally impacted maxillary canine (group 1) to characterize its presentation and compare them with the unaffected antimere (group 2).

"Treatment of impacted maxillary canines frequently requires surgical intervention, which can involve substantial complications," authors wrote. "Thus, it is desirable to identify a reliable method for the early diagnosis of canine displacement."

The study found a "clinically discernible difference" of 4 mm in patients 8 years and older between the mean distance of the tip of the impacted canine (group 1) and that of the antimere (group 2) from the occlusal plane. Furthermore, there was a statistically significant difference at the age of 9 years and beyond between the two groups according to the position in different sectors and according to the mean angle made with the midline.

"Diagnosis of maxillary canine impaction is possible at 8 years of age by using geometric measurements on panoramic radiographs," the authors concluded.

Source: *American Journal of Orthodontics and Dentofacial Orthopedics* 142(1)45-51, July 2012.



Human Teeth as Tough as Shark Teeth

Researchers studying the teeth of two different shark species found that the hardness of shark teeth and human teeth is comparable, both for dentin and enamel/enameloid.

According to the study, published in the *Journal of Structural Biology,* the teeth of two different shark species, Isurus oxyrinchus (shortfin mako) and Galeocerdo cuvier (tiger shark), and a geological fluoroapatite single crystal were "structurally and chemically characterized," the authors wrote.

"In contrast to dentin, enameloid showed sharp diffraction peaks which indicated a high crystallinity of the enameloid," the report stated, and "the lattice parameters of enameloid were close to those of the geological fluoroapatite single crystal."

The researchers found that the inorganic part of shark teeth consisted of fluoroapatite with a fluoride content in the enameloid close to the fluoride content of the geological fluoroapatite single crystal. Using thermogravimetry, "water, organic matrix, and biomineral in dentin and enameloid of both shark species were determined," authors wrote.

Nanoindentation and Vicker's microhardness tests showed that the shark teeth enameloid was approximately 600 percent harder than the dentin and that the hardness of shark teeth and human teeth was comparable.

"In contrast, the geological fluoroapatite single crystal was much harder than both kinds of teeth due to the absence of an organic matrix," authors concluded.

Source: *Journal of Structural Biology* 178(3):290-99, June 2012.

TRUTH DECAY, CONTINUED FROM 777

business. American tourists are told, "It is your fault that your pockets were picked." Tragically, this caveat emptor attitude lingers with regard to rape, racism, and welfare. A close cousin of truth decay is paternalism. In a world where "father knows best," it is good to be the father.

When I was an experimental psychology major in college, we made a galvanic skin response version of a lie detector device. It worked well, except for one guy who always managed to defeat it. His strategy: for any question, he always added something: "Have you ever been unfaithful to a girlfriend?" became "Have you ever been unfaithful to a girlfriend names Ester?" I am afraid that is what Congressman Weiner did recently when he denied posting explicit photos, or professional athletes accused of doping, or dentists with misleading advertising claims or supersized treatment plans.

Veracity is not one of the four cardinal principles of bioethics. It was added by the American Dental Association, primarily to cover relationships among professionals, and it is by far the longest section of the Code of Professional Conduct. The code is specific in interdicting the following: "Dentists shall not represent the care (fees or advertisements) being rendered to their patients in a false or misleading manner"; "A dentist who recommends and performs unnecessary dental services or procedures is engaged in unethical conduct"; "The dentist has an independent obligation to inquire into the truth and accuracy of (manufacturers') claims and verify that they are founded on accepted scientific knowledge and research." "It is unethical for a dentist to increase a fee to a patient because the patient is covered under a dental benefits plan" and "The use of fellowships in advertising to the general public may be misleading."

The truth of our words and actions

does not depend on logic; we must look to whether others can live by our words.

The nub:

❶ Truth has soft edges. Aim for the center, not the boundaries

❷ Avoiding lies is not the same thing as telling the truth.

❸ The truth is what others need to know to move forward with their lives.

David W. Chambers, PhD, is professor of dental education, Arthur A. Dugoni School of Dentistry, San Francisco, and editor of the *Journal of the American College of Dentists.*

This procedure progressed with the use of computer-guided techniques and dental implants can now be precisely placed in an hour or less.

Case Study: Computer-Guided Implant Successful in High-Risk Patient

A case study published in the *Journal of Oral Implantology* reports on the use of computer-guided implantation in a 54-year-old patient with a very narrow ridge of bone, which makes drilling for implant placement difficult, a news release stated. Authors of the case study described how implantation without cutting a flap or reducing bone height, while still permitting immediate placement of the already fabricated prosthesis, was achieved.

"The typical dental implant approach that was introduced in the early 1980s requires two surgeries and the use of a removable bridge or denture for a half year or more," the authors wrote. This procedure progressed with the use of computer-guided techniques and dental implants can now be precisely placed in an hour or less. According to the news release, dentists can use virtual planning to create a surgical template and fabricate a prosthesis for immediate placement and the patient experiences minimal postoperative pain and swelling with the less invasive procedure.

However, this technology can be limited due to local anatomical factors and to place the implant in the best position, the patient must have suitable bone at the desired implant site. Proper seating of computer-guided titanium drilling sleeves can be difficult to achieve if the patient's crestal bone is too high or narrow, the news release stated.

Previously, this clinical situation required opening a flap and reducing bone before placing the dental implants. However, "this case report of a patient exhibiting very narrow residual ridges due to severe resorption describes a new computer-guided procedure using a single surgical template maintaining bone height and immediate restoration without a mucoperiosteal flap," the authors wrote.

According to the news release, drilling sequences were changed to allow deeper penetration and an alternative implant-seating mount was used. In this case, a successful computer-guided implant was accomplished, regardless of the patient's high-risk factors for implant failure.

"The success of this technique is the result of innovative modifications in the software as well as instrumentation," the authors concluded.

The full article, "Guided Flapless Surgery With Immediate Loading for the High Narrow Ridge Without Grafting," can be found in the *Journal of Oral Implantology* 38(3):279-88, June 2012.

UPCOMING MEETINGS

2012	
Oct. 18–23	ADA 153rd Annual Session, San Francisco, ada.org
Oct. 26–28	California State Association of Endodontists biennial meeting, Newport Beach, Calif., 415-577-2760
Nov. 4–10	U.S. Dental Tennis Association, Tuscon, Ariz., 800-445-2524 or dentaltennis.org
2013	
Feb. 7–9	20th anniversary Conference and Exhibition, Academy of Laser Dentistry, Palm Springs, laserdentistry.org
April 7–13	U.S. Dental Tennis Association, TOPS'L Resort, Destin, Fla., 800-445-2524 or dentaltennis.org
April 11–13	*CDA Presents the Art and Science of Dentistry, Anaheim*, 800-CDA-SMILE (232-7645), cdapresents.com
Aug. 15–17	*CDA Presents the Art and Science of Dentistry*, San Francisco, 800-CDA-SMILE (232-7645), cdapresents.com
Oct. 31–Nov. 5	154th Annual Session, New Orleans, ada.org/session
Nov. 3–9	U.S. Dental Tennis Association, Big Island, Hawaii, 800-445-2524 or dentaltennis.org

To have an event included on this list of nonprofit association continuing education meetings, please send the information to Upcoming Meetings, CDA Journal, 1201 K St., 16th Floor, Sacramento, CA 95814 or fax the information to 916-554-5962.

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CDA JOURNAL, VOL 40, Nº10

Effectiveness of Root Planing With Diode Laser Curettage for the Treatment of Periodontitis

JOSEPH ZINGALE, DDS, MPS; LISA HARPENAU, DDS, MS, MBA; DAVID CHAMBERS, EDM, MBA, PHD; AND WILLIAM LUNDERGAN, DDS, MA

ABSTRACT This study investigated the effectiveness of scaling/root planing using closed approach, closed approach with laser-curettage, closed approach with laser-curettage/laser-sealing, and an open approach (papilla reflection/flap closure) in treating moderate-advanced chronic periodontitis. All treatments resulted in a reduction in probing depth and bleeding upon probing. The closed approach therapies: SRP, laser-curettage/SRP, and laser-curettage/SRP/laser-sealing resulted in less gingival recession than the open approach (papilla reflection/flap closure). If esthetics are a concern, laser-curettage is a viable option.

AUTHORS

Joseph Zingale, DDS, MPS, is an associate professor in the Department of Periodontics at the Arthur A. Dugoni School of Dentistry in San Francisco. *Conflict of Interest Disclosure: None reported.*

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The development of dental lasers has stimulated widespread clinical research to determine advantageous application in a complexity of circumstances. Hard- and soft-tissue instruments, primarily Er:YAG, Nd:YAG, and CO_2 lasers, have been evaluated for their ability to disinfect treatment sites, detoxify contaminated root surfaces, remove calculus and carious root/tooth structure, and biostimulate surrounding tissues to enhance wound repair.[1-12] However, a review of the literature has shown variable results with the use of Er:YAG, Nd:YAG, and CO_2 lasers. While some studies showed improved soft-tissue adhesion to laser-

exposed root surfaces, others showed negative effects such as charring of the root, undesirable roughness and microfractures, and glazing of cementum.[13-20] All of these effects could decrease the healing potential.

The diode laser is primarily a soft-tissue instrument that can be used for procedures such as crown lengthening, gingivectomies, gingivoplasties, frenectomies, and preimpression sulcus exposure. Without injuring the root surface, the diode laser disinfects the gingival sulcus and provides a working field, which is essentially hemorrhage-free.[21,22] In addition, the diode laser more completely de-epithelializes the gingival sulcus when compared to the use of hand instruments.[23,24]

Treating diseased root surfaces with a diode laser alone does not improve cell adhesion to the surface, but combining curettage to remove the ulcerated epithelial lining, reducing sulcus contamination, and cleaning root surfaces by root planing might improve the rate and extent of repair.[25,26] Preventing or slowing epithelial invasion into a wound area appears to enhance regeneration. Studies are ongoing to determine the full extent of repair.[4,15,27-36]

Controlling pocket depths in excess of 5 mm is difficult as complete calculus removal may be less than 40 percent, and reducing the presence of pathogenic organisms through a medication-free alternative is desirable.[37-39] Being able to root plane and curet in a blood-free environment further enhances the clinician's visualization and may increase the proficiency in removing offending root deposits.[40-41]

The objective of this study was to determine the effectiveness of scaling/root planing using a closed approach, gingival papilla reflection with scaling/root planing and flap closure, laser curettage with scaling/root planing, and laser curettage with scaling/root planing followed by laser sealing of the pocket in treating moderate to advanced chronic periodontitis.

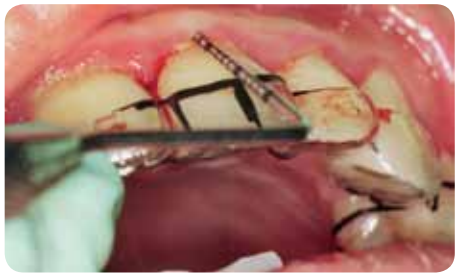

FIGURE 1. Stent reference for measuring probing depth and clinical crown length.

FIGURE 2. Soft-tissue diode laser.

Materials and Methods

Subjects

The clinical protocol was approved by the Institutional Review Board at the University of the Pacific in Stockton, Calif. In order to qualify, potential subjects were required to meet specific inclusion and exclusion criteria. Subjects were required to be in good health and 21-70 years-old (inclusive), have moderate-severe chronic periodontitis, have at least five probing depths (PD) measuring 5-9 mm with bleeding on probing (BOP), and have a recent full set of radiographs (including vertical bitewings). Potential subjects were excluded if they had systemic diseases such as blood cell abnormalities or HIV/AIDS, required antibiotic premedication for invasive dental procedures, had rampant dental caries, were undergoing orthodontic treatment, were using home bleaching trays, or had an intraoral or perioral piercing. Potential subjects also were excluded if they were regularly taking anticoagulants, seizure control medication, calcium channel blockers, and/or regularly taking medication which would interfere with the periodontal inflammatory process (e.g., ibuprofen (>400 mg) aspirin (>81 mg)), anti-resorptives, antibiotics, Periostat, anti-microbials). Diabetic patients, even if they were in good control, were excluded due to potential variation in healing responses. However, patients with a history of smoking were included in the study. Twenty-five subjects meeting these criteria were selected from the dental school's recall and/or new patient population at the University of the Pacific Arthur A. Dugoni School of Dentistry in San Francisco.

A separate consent form was designed and used that explained the procedures and listed possible sequelae that could occur during treatment. Risks included those associated with root planing and minor periodontal surgery such as transitory hot/cold sensitivity, additional space between the teeth, slight postoperative bleeding (< 5 mm), possible food impaction, and postoperative infection.

Study Design

At the screening appointment, upper and lower impressions were taken for fabrication of plastic vacuform stents. These custom stents (**FIGURE 1**) were used at the baseline, three-month, and six-month appointments to ensure the PD and clinical crown length (CCL) measurements were consistently taken at the same gingival site for each visit.

At the baseline appointment, all measurements were done by one examiner who was blinded to the treatment provided and had been calibrated prior to study commencement. Using a North Carolina periodontal probe and a positioned vacuform stent, the examiner recorded PD, CCL from the gingival margin to the edge of the marked stent, and BOP. Data was collected on a designated form and was kept

TABLE 1

Subject Anthropometric Data: Gender and Age

# Subjects	25
# Males	16
# Females	9
# Smokers	2
Age	
Average	55.8
Median	57.0
Range	38–69
Average (male)	54.8
Average (female)	57.7
Median (male)	56.0
Median (female)	61.0
Range (male)	38–64
Range (female)	39–69

TABLE 2

Average Probing Depth (mm), Bleeding on Probing, and Clinical Crown Length (mm) at Baseline, Three Months, and Six Months

	No. of test groups	Probing Depth			Bleeding on Probing			Clinical Crown Length		
		BSLN	3 Mos	6 Mos	BSLN	3 Mos	6 Mos	BSLN	3 Mos	6 Mos
SRP	34	5.72	4.13	4.15	1	0.29	0.32	3.10	3.58	3.51
PR/SRP/FC	34	5.80	4.01	4.24	1	0.38	0.29	3.32	4.37	4.11
LC/SRP	34	5.82	4.14	4.19	1	0.20	0.35	3.42	3.86	3.76
LC/SRP/LS	34	6.00	4.09	4.37	1	0.35	0.29	3.60	3.87	3.87
CS	34	5.28	4.38	4.43	1	0.47	0.38	3.14	3.29	3.37

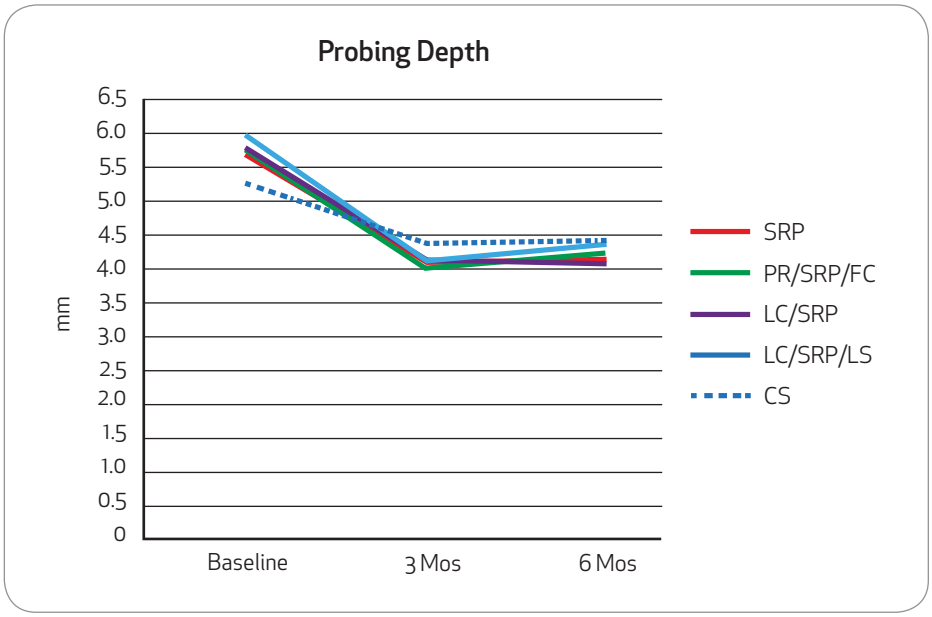

FIGURE 3. Differences in probing depth (mm) at baseline, three months, and six months.

confidential. A test group was defined as having at least five sites that met the study criteria. Some patients had more than one test group. Seven patients contributed two test groups and one patient contributed three test groups for a sum total of 34 test groups within the 25 subjects.

All treatment was performed by a single clinician in order to eliminate operator variation. Each site was randomly assigned to one of the following: (1) scaling/root planing only (SRP); (2) papillae reflection with scaling/root planing and flap closure (PR/SRP/FC); (3) laser curettage with scaling/root planing (LC/SRP); (4) laser curettage and scaling/root planing followed by laser sealing (LC/SRP/LS); and (5) control which received no treatment.

Infiltration local anesthesia was used (2 percent lidocaine with epinephrine 1:100,000) to reduce sensitivity and patient anxiety during treatment. Root planing was done using clinician-selected scalers and curets. Root smoothness was determined with the use of a pigtail explorer.

The papilla reflection surgery was done with a No. 15 blade, with care to preserve the facial and lingual papillae, extending to the alveolar crest. The interproximal area was degranulated, root surfaces were root planed, and the facial and lingual tissues were repositioned and sutured with a single 4/0 resorbable suture. No attempt was made to reduce the existing pocket. The primary advantage of soft-tissue reflection was to enable the clinician to view the interproximal site to facilitate calculus removal.

Laser curettage (Odyssey Diode Laser, Ivoclar Vivadent, Inc.) (FIGURE 2) was done with a 400-micron periodontal tip, providing 9 mm of fiber exposure . The 810-nanometer (nm) laser was set to 0.8 watts (W) with continuous wave energy. Following initiation, the tip was inserted to the full depth of the pocket and the sulcus epithelium was removed using a continuous curetting motion against the soft-tissue wall (30-45 seconds). The fiber tip was cleaned using a 2x2 gauze moistened with 3 percent hydrogen peroxide. Following the laser curettage, the roots were scaled and root planed until smooth. Protective eyewear was worn by all to prevent injury from laser wavelength exposure and to comply with safety standards.

Sites selected for laser curettage and laser sealing were treated as follows: laser curettage for 30-45 seconds using the same control settings on the laser, root planing until smooth, and then laser sealing to stop any bleeding and further disinfect

the gingival sulcus. The sealing was done at the same control setting: 0.8 W on continuous power for 30-45 seconds.

The control sites received no treatment and served as a baseline comparison to evaluate the effectiveness of the proposed therapies.

After treatment, the patients were instructed to follow their usual oral hygiene regimens including flossing, brushing, and mouthrinsing, if this was part of their typical routine. Where the papilla reflection surgery was done, patients were instructed to gently brush but avoid flossing for up to five days. No anti-microbial rinse such as chlorhexidine was prescribed.

Nonsteroidal anti-inflammatory medication was recommended for pain control and throughout the study was used only sparingly not beyond the first day after treatment. Excessive bleeding after treatment did not occur, and there was no reported swelling. The most frequent postoperative observation was cold sensitivity that lasted for several days but gradually diminished.

Subjects returned to clinic at one month, three months, and six months. The one-month appointment was simply for a postoperative healing evaluation and oral hygiene review; no probing was done. At three months PD, BOP, and CCL were recorded, and then supportive periodontal therapy was performed including scaling, polishing, and oral hygiene instructions. At six months PD, CCL, and BOP were recorded, and then the subjects were returned to their respective dental student for continuing care.

TABLE 3

Average Reduction in Probing Depth (mm) at Three Months and Six Months

	No. of test groups	SRP	PR/SRP/FC	LC/SRP	LC/SRP/LS	CS
3 months	34	1.59	1.79	1.68	1.91	0.89
6 months	34	1.57	1.57	1.72	1.62	0.84

TABLE 4

Averages and Standard Deviations of Gain Scores for Four Periodontal Treatments and Control Group for Probing Depths, Bleeding on Probing (mm), and Clinical Crown Length (mm) as Outcomes (N=34)

	Probing Depth			Bleeding on Probing			Clinical Crown Length		
	BSLN	3 Mos	6 Mos	BSLN	3 Mos	6 Mos	BSLN	3 Mos	6 Mos
SRP									
averages	1.549	-0.022	1.527	0.686	-0.029	0.657	-0.467	0.069	-0.397
std dev	0.856	1.024	0.687	0.471	0.664	0.482	0.521	0.819	1.013
PR/SRP/FC									
averages	1.741	-0.219	1.521	0.600	0.086	0.686	-1.023	0.261	-0.762
std dev	0.999	0.755	1.146	0.497	0.507	0.471	0.823	0.627	0.794
LC/SRP									
averages	1.630	-0.046	1.583	0.771	-0.143	0.629	-0.426	0.096	-0.330
std dev	1.167	0.900	1.127	0.490	0.684	0.49	0.923	0.540	0.807
LC/SRP/LS									
averages	1.853	-0.276	1.578	0.629	0.057	0.686	-0.263	0.000	-0.263
std dev	1.045	0.748	0.981	0.490	0.684	0.471	0.597	0.536	0.644
CS									
averages	0.869	-0.048	0.821	0.514	0.086	0.600	-0.148	-0.071	-0.219
std dev	0.813	0.712	0.766	0.507	0.562	0.497	0.844	0.742	0.637

Results

Twenty-five subjects meeting all inclusion/exclusion criteria completed the study. Subject anthropometric data (**TABLE 1**) show that 16 subjects were male and nine were female. The age range of the male patients was 30-64 years (mean=54.8) and the female patients was 39-69 years (mean=57.7). Two of the patients were smokers, consuming less than one pack per day.

Data were analyzed for significant differences using a repeated measure ANOVA and a student t-test. Cronbach's generalizability analysis was performed. This analysis was possible because each subject received each treatment, constituting a fully cross two-factor design.

Probing Depth

All treatments resulted in a significant reduction in PD ($p<0.05$) with an average of 1.74 mm (**TABLE 2, FIGURE 3**). The average improvement in PD ranged from 1.59 mm for SRP only to 1.91 mm for LC/SRP/LS at three months with the greatest reduction in PD observed with PR/SRP/FC and LC/SRP/LS (**TABLE 3**). However, due to study size, the differences were not significant ($p>0.05$) between these two groups. The improvement in PD was maintained at

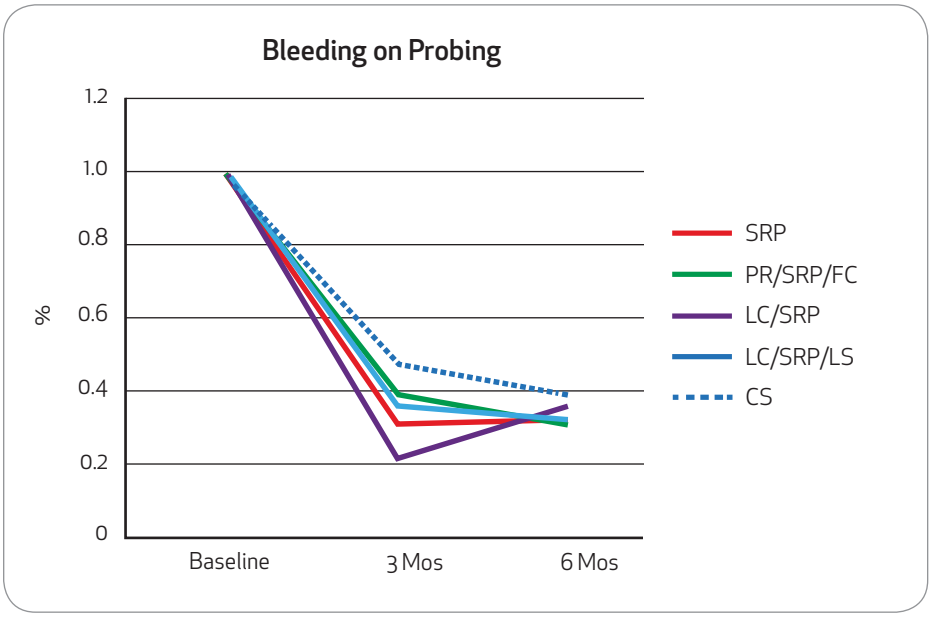

FIGURE 4. Differences in bleeding on probing at baseline, three months, and six months.

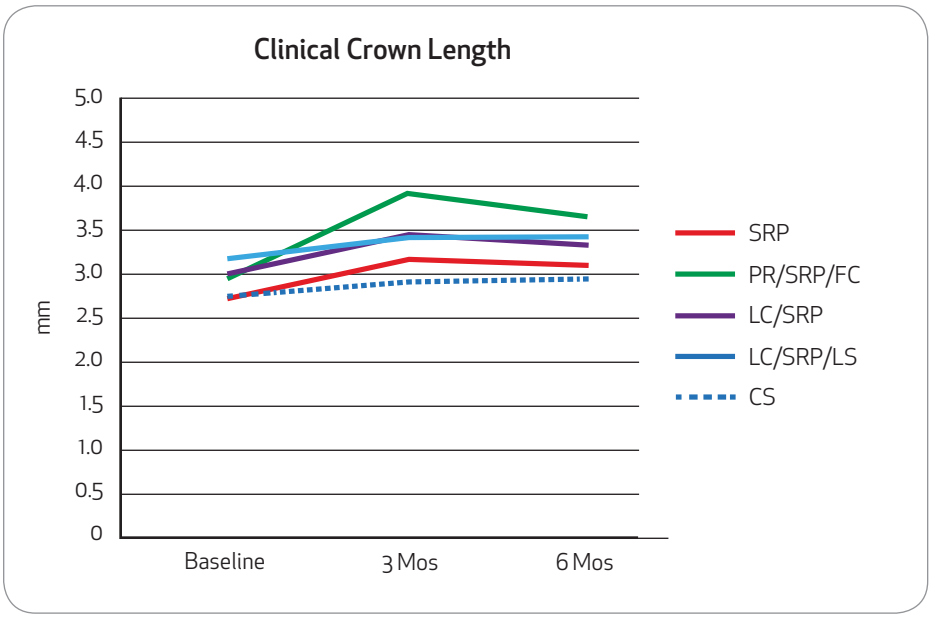

FIGURE 5. Differences in clinical crown length (mm) at baseline, three months, and six months.

the six-month evaluation. The averages and standard deviations for gain scores of the four periodontal treatments and the control group are listed in **TABLE 4**.

Bleeding on Probing

Compared to the control, all treatments resulted in a significant reduction ($p<0.001$) in BOP from 100 percent at baseline to 30 percent at three months and 31 percent at six months (**TABLE 2, FIGURE 4**). There was no statistical significance ($p>0.05$) among the treatment modalities. The reduction in BOP was consistent through six months, the duration of the study.

Clinical Crown Length

With regard to changes in CCL, the control sites showed very little variation in gingival height throughout the six month period (**TABLE 2**). The greatest change in CCL was seen in the PR/SRP/FC sites where at three months there was 1.05 mm increase in CCL whereas SRP only increased 0.48 mm, LC/SRP increased 0.42 mm, and LC/SRP/LS increased 0.15 mm (**FIGURE 5**). The differences were not significant ($p>0.05$). CCL remained relatively stable at six months, not significantly changed from the three-month values.

Post-Treatment Observations

Several patients experienced increased thermal sensitivity following initial treatment. However, by the one-month "check-up" appointment, the discomfort had decreased, and by the three-month appointment, there was no further awareness of a problem. Pain experience immediately following the laser treatment was minimal and was well-controlled by taking nonsteroidal anti-inflammatory medication. There were no instances of postoperative bleeding or infection.

Discussion

Determining a position for the use of dental lasers in practice is an ongoing process. There are as many positive reports as there are negative reports, and the clinician must be aware of all if anticipating their routine use.[13-20] Some clinicians feel strongly enough to state that lasers have no advantage for routine use in periodontal procedures.[42-48]

The purpose of this study was to clinically evaluate laser use and compare it to root planing and minimally invasive surgery. The 810-diode laser, if used in a prudent manner, has minimal negative effects on root and bony

surfaces. Following the manufacturer's recommendations, low power 0.8 W on a continuous mode for up to 45 seconds was used, and this easily removed the gingival sulcular epithelium with negligible charring or tissue injury. The tip was easily cleaned using a 2x2 gauze moistened with 3 percent hydrogen peroxide. Root planing was done at all sites except the control areas for consistency of treatment. Laser curettage either stopped or greatly reduced bleeding, thus facilitating treatment visibility.

All treatments resulted in improvement both in BOP and PD, which was consistent for up to six months. Control sites also showed modest improvement up to six months. Possible explanations for improvements in control sites could be that the patients improved their oral hygiene efforts as they were aware of their involvement in a study evaluating periodontal health (Hawthorne Effect).[49,50] Another possibility is the close proximity of some control sites to the treated sites, in some instances only 1 or 2 interproximal distances.

PD reduction was slightly greater with papilla reflection surgery and laser curettage as compared to root planing alone; however, due to study size and extent of reduction, the comparisons were not significant.

In evaluating CCL, what is apparent is that even minor surgical intervention (PR/SRP/FC), can bring about noticeable gingival recession (an average of 1.05 mm at three months in this study). The other three treatment modalities, SRP only (0.48 mm), LC/SRP (0.44 mm), and LC/SRP/LS (0.27 mm) showed less reduction in the gingival papillae heights. With this in mind, if there is an esthetic concern, it would appear that root planing and/or laser curettage might be the treatment of choice (**FIGURE 5**).

Within the scope of this study, none of the patients was categorized as having a thin gingival biotype. Surgical intervention, gingival flap reflection, or laser curettage within this group has the potential of creating undesirable postoperative results including excessive soft-tissue recession. It is therefore necessary that during the initial pretreatment evaluation, careful examination of the gingival integrity and biotype should be documented and appropriate treatment selected with full awareness of potential side effects.

SOME CLINICIANS feel strongly enough to state that lasers have no advantage for routine use in periodontal procedures.

In comparing the apparent type of healing in reducing PD, more than half of the PD reduction when doing minor surgery is due to recession, apical tissue migration. In contrast root planing, and to a slightly greater extent laser curettage and laser curettage/sealing, heals largely by soft-tissue attachment, probably a long junctional epithelial type. All measurements appeared to be stable up to six months.

The second introduction of the laser into the gingival sulcus to seal the treatment site and further disinfect and reduce microbial contamination did not appear to be therapeutically beneficial. There was no significant improvement in either PD reduction or BOP with LC/SRP/LS as compared to LC/SRP alone.

Conclusion

All therapies resulted in a significant improvement in PD and BOP when compared to control sites with no treatment. The LC/SRP and LC/SRP/LS did not significantly differ from SRP alone or PR/SRP/FC in decreasing PD/BOP. The greatest increase in CCL was observed with the PR/SRP/FC with the other three interventions showing less post-treatment recession. Laser sealing (LC/SRP/LS) did not significantly improve PD or BOP from LC/SRP alone. Compared to papilla reflection surgery (PR/SRP/FC), the other three interventions: SRP alone, LC/SRP, and LC/SRP/LS healed with improved clinical attachment levels (long junctional epithelium). If there is an esthetic concern such as avoiding excessive post-treatment gingival recession, diode laser curettage is a viable option along with SRP. All therapies appeared to be stable up to six months post-treatment. ■■■■

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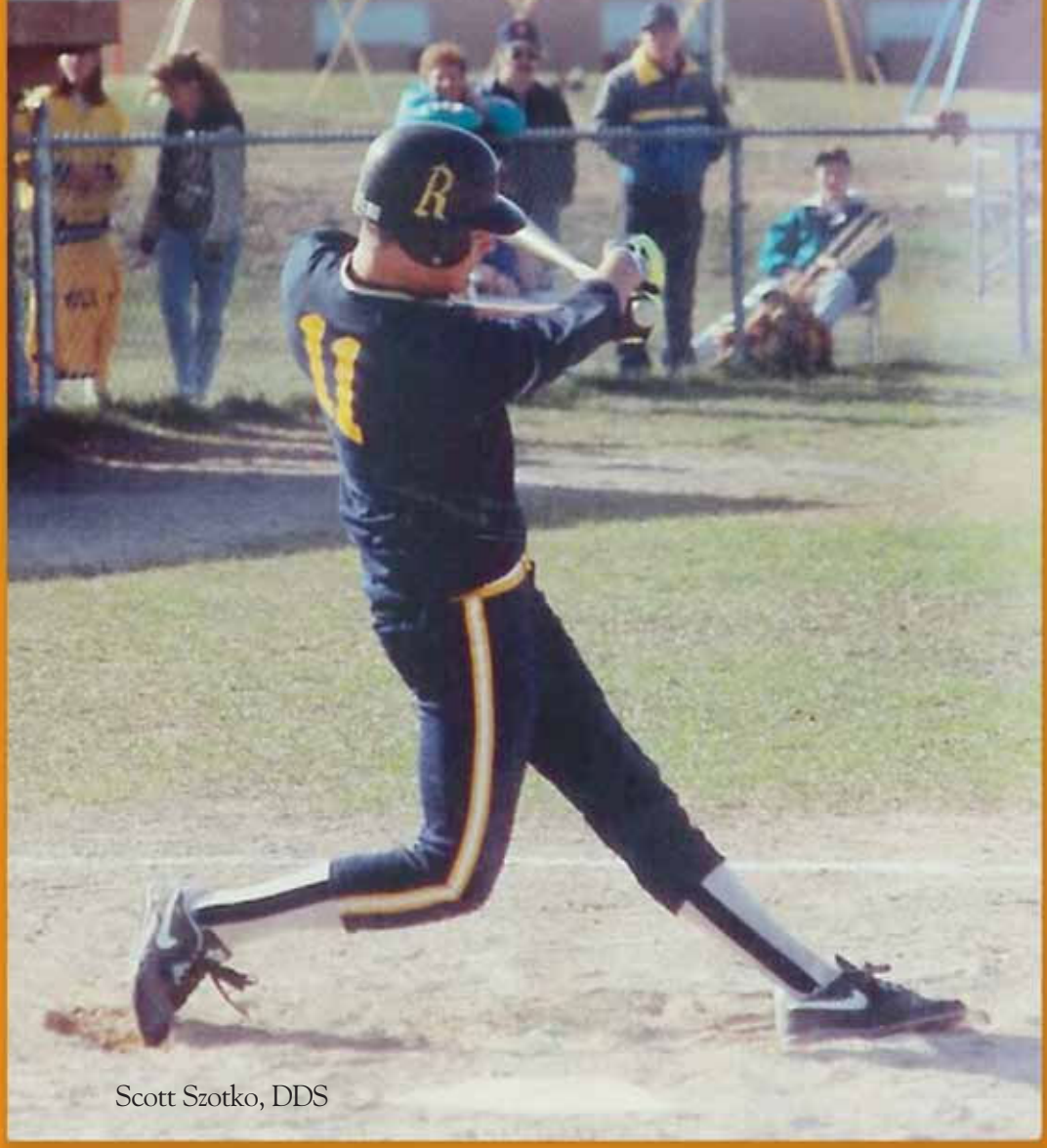

Scott Szotko, DDS

Hand-eye coordination in sports, helped him hit a home run in dentistry. Scott Szotko had two passions growing up, sports and science. And while originally he thought he'd go into medicine, he began to think about dentistry in high school when his own dentist piqued his interest in the profession. Everything coalesced in college when he realized that with dentistry, he could use the hand-eye coordination from sports and his love of science to help people. A home run in his book.

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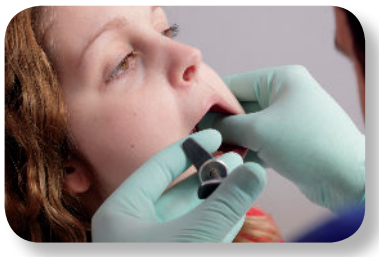

Permanent Nerve Damage From Inferior Alveolar Nerve Blocks: A Current Update

M. ANTHONY POGREL, DDS, MD

ABSTRACT Permanent nerve involvement has been reported following inferior alveolar nerve blocks. This study provides an update on cases reported to one unit in the preceding six years. Lidocaine was associated with 25 percent of cases, articaine with 33 percent of cases, and prilocaine with 34 percent of cases. It does appear that inferior alveolar nerve blocks can cause permanent nerve damage with any local anesthetic, but the incidences may vary.

Editor's Note:

Subsequent to the publishing of the article "Permanent Nerve Damage From Inferior Alveolar Nerve Blocks: A Current Update" in the October 2012 issue of the *Journal of the California Dental Association*, the author M. Anthony Pogrel, DDS, MD, reported that he has been a paid expert witness in a number of cases for dentists who have been sued for permanent nerve involvement following a local anesthetic injection.

AUTHOR

M. Anthony Pogrel, DDS, MD, is a professor and chair, Department of Oral and Maxillofacial Surgery, University of California, San Francisco. He also is a fellow of the Royal College of Surgeons, as well as with the American College of Surgeons.

Conflict of Interest Disclosure: None reported.

Permanent involvement of the inferior alveolar and/or lingual nerve following an inferior alveolar nerve block has been reported. There are a relatively small number of studies and the reported incidences vary from a high of 1 in 20,000 blocks to a low of 1 in 850,000 blocks. Several studies do not indicate whether the involvement was temporary or permanent.[1-7] Studies appear to show that when nerve damage occurs, the lingual nerve is affected twice as frequently as the inferior alveolar nerve and one suggested reason for this may be the fascicular pattern in the region where the injection is given.[8] It also appears that about half the patients feel an "electric shock sensation" on injection, but approximately half do not.[7] The phenomenon has been noted with every local anesthetic used in dentistry, but it has been suggested there might be a higher incidence with prilocaine and articaine, possibly since they are in a 4 percent solution whereas other local anesthetics are in lower concentration.[9-16] The author last reported his findings in 2007, based on information received up to the end of 2005.[17] This study tended to show that although all local anesthetics could cause this problem, it was more or less in proportion to their usage. It was felt that it could be helpful to update these numbers utilizing data obtained from patients seen since the beginning of 2006.

Materials and Methods

The Department of Oral and Maxillofacial Surgery at the University of California, San Francisco, has become known as a tertiary referral center for injuries to the inferior alveolar and lingual nerves in general, and, in particular, injuries caused by inferior alveolar nerve blocks. Many practitioners are aware of these problems

CDA JOURNAL, VOL 40, Nº10

and will refer patients to UCSF for evaluation. This study covers all patients referred and seen between Jan. 1, 2006, and Dec. 31, 2011. All patients still have neurological symptoms nine months after injection and are considered permanent injuries.

Results

Forty-one patients were referred to the Department of Oral and Maxillofacial Surgery, University of California, San Francisco, with a diagnosis of damage to the inferior alveolar and/or lingual nerve that could only have resulted from an inferior alveolar nerve block, between Jan. 1, 2006, and Dec. 31, 2011. None of these patients underwent surgical or other procedures that could have been responsible for the nerve involvement. The symptoms included paresthesia and dysesthesias, varying from mild to severe, but there were no cases of total anesthesia. In two cases, the type of local anesthetic used was unknown and in one case a carpule of lidocaine was used followed by a carpule of articaine so the causative agent could not be determined.

The distribution of the local anesthetics used in the 38 cases receiving one known local anesthetic is shown in the **FIGURE** coupled with an approximate percentage of sales of dental local anesthetics nationally and in Northern California.[18]

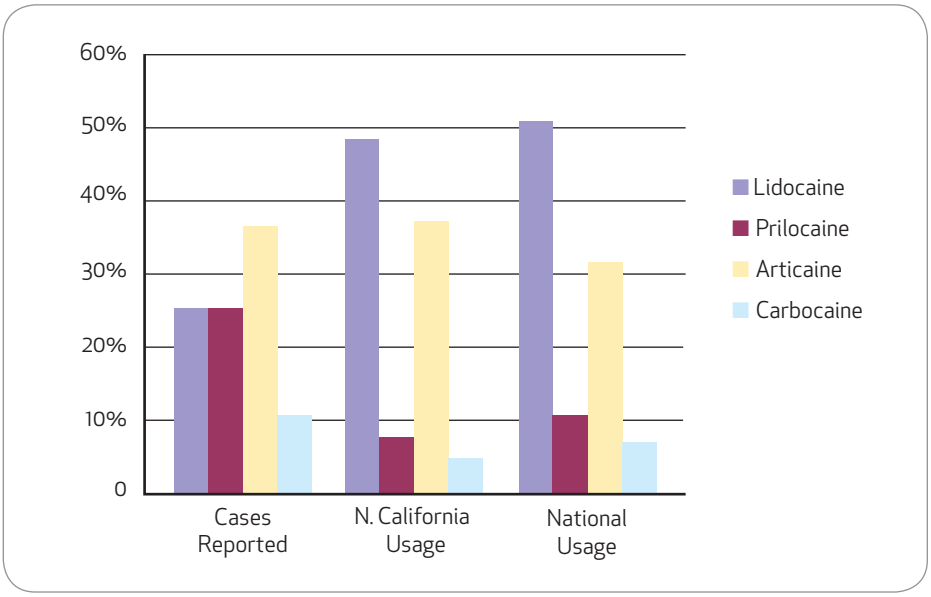

FIGURE. Analysis of the 38 patients who received only one known local anesthetic. Local and national sales figures refer to all manufacturers of these local anesthetics.[18]

Discussion

In 2001, articaine, after its introduction in the United States, increased its sales until 2003 when it had approximately 25 percent of market share for dental local anesthetics, since, which time, its use nationally has risen to about 32 percent (**FIGURE**). This has resulted in a decrease in the market share of lidocaine, which had more than 60 percent of the market prior to articaine being released in 2001. However, it is known that by 2005 warnings were being given about the use of articaine for inferior alveolar blocks, and its use was discontinued in the student clinics of some dental schools.[3,19,20] Largely because of this, the market share of articaine has stabilized, whereas in other countries where it has been introduced, it has shown a steady increase to a final higher usage. It is also possible that much of the articaine used today is used for infiltration injections and not for inferior alveolar nerve blocks.

The new numbers presented in this article show a number of trends.

The number of patients with this problem referred to the Department of Oral and Maxillofacial Surgery at the University of California, San Francisco, has decreased considerably. In the years 2003 to 2005 over a three-year period, there were 57 patients referred (19 per year). In the six years from 2006 to 2011, there were 41 patients referred (an average of seven patients per year). This decrease in referrals could be due to a true decrease in the number of cases occurring but is probably due to the publicity given to the fact there is isn't any treatment for this condition and, therefore, patients are not being referred in the same numbers that there were, since, from a practical point of view, they know there is little to offer in the way of treatment.

However, of the cases referred, it would appear that despite the fact that articaine may be used less for inferior alveolar blocks than it was, and used more for infiltrations because of its great penetrating power, it is still causing cases of permanent inferior alveolar and lingual nerve damage, which is proportionate to its market share. The number of cases caused by lidocaine on the other hand appears to be only around 50 percent of its market share. Prilocaine, however, by causing 26 percent of all cases seen since 2005 with a local market share of only 8 percent is somewhat disproportionate to its market share. The numbers with carbocaine (11 percent of cases with a local market share of 5 percent) is of interest since cases caused by carbocaine appear to be very rare and we had only seen one case prior to this study.

It is also apparent that sales figures for Northern California (where all these cases occurred) differ slightly from national sales figures in that less lidocaine is used (49 percent versus 51.6 percent) and less prilocaine (8 percent versus 10.6 percent) but more articaine (38 percent versus 32.3 percent). The carbocaine numbers are interesting since in the past only isolated cases have been reported, but in this study, carbocaine produced 11 percent of the

total number of cases, confirming that this phenomenon can occur with all local anesthetics used in dentistry.

This study differs from many of the other reported studies in that it is based on patients actually seen and examined by a single clinician. Many of the other reports are a result of reports to a malpractice carrier or reports to the FDA. These kinds of reports are known to be susceptible to reporting bias. It is well-known that complications with new medications are much more likely to be reported than those occurring with older medications and also that publicity regarding a complication can result in a short-term increase in reporting such complications.[21,22] Also, many of the reports to outside agencies do not report whether the paresthesia was temporary or permanent, and since it is known that most of the paresthesias are temporary and do eventually recover, only reports of persistent issues for nine months or longer should be considered permanent.

One potential weakness with the present study is that all the numbers are small and there may well be reporting bias in those cases that are referred to UCSF. Nevertheless, this is felt to be the largest database available of patients actually seen and examined and, therefore, may represent a reasonable source of data. ■■■■

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Emerging Science in the Dietary Control and Prevention of Dental Caries

MAHMOUD AL-DAJANI, DDS, MSC, PHD, AND HARDY LIMEBACK, PHD, DDS

ABSTRACT The key environmental factor involved in caries incidence is fermentable carbohydrates. Because of the high costs of caries treatment, researchers continue to explore dietary control as a promising preventive method. While dietary change has been demonstrated to reduce *Streptococcus mutans*, a preventive role is expected for "functional foods" and dietary habit alterations. The authors consider how recent advances in the understanding of caries pathology can reveal dietary control as a valuable method in promoting a healthy dentition.

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Conflict of Interest Disclosure: None reported.

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Conflict of Interest Disclosure: None reported.

Dental caries is a chronic biofilm-mediated disease of multifactorial etiology that derives from the interplay among cariogenic bacteria on the dentition, the host diet, and other environmental exposures.[1] Dental caries is a major health concern. On a population basis, caries is one of the most expensive human diseases in terms of direct costs. The high cost of treatment is directly related to the progressive nature of dental caries.[2] Longer retention of teeth in the aging population could result in increased prevalence of dental caries.[3] As a persistent steady-growing multifactorial disease, for which preventive strategies have been found to be beneficial and practical, several approaches have been commonly suggested to address the contemporary aspects of dietary control and their role in reducing dental caries incidence. In this review, the authors consider how recent advances in the understanding of dental caries pathology can reveal dietary control as a valuable method in preventing tooth decay and promoting a healthy dentition.

Control of the Aciduric, Caries-Associated Biofilm

Dental caries results from the interaction of specific bacteria with constituents of the diet within a biofilm-termed dental plaque.[4] The normal oral flora is a multispecies biofilm that includes the cariogenic *Streptococcus mutans, Streptococcus sobrinus, Lactobacillus species,* and *Actinomyces species*, and the less-cariogenic nonmutans streptococci.[5] In fact, cariogenic bacteria obtain nutrients and initiate the glycolysis-producing lactic acid as a byproduct of fermentation and subsequently resulting acidification of plaque followed by the demineralization of the enamel that may appear as an early sign of decay.

Frequent consumption of high levels of fermentable carbohydrates can harmfully shift the ecological balance of the oral microflora. This sugar-driven biofilm alteration is characteristically associated with high proportions of acidogenic and aciduric (acid-tolerating) bacteria, especially mutans streptococci (such as *S. mutans* and *S. sobrinus*) and lactobacilli that demineralize enamel.[5] This diet-driven increase in cariogenic species is associated with a reduction in bacteria that normally predominate in health.[5] Beighton revealed that excluding or reducing the fermentable carbohydrate content of the diet could beneficially modify the caries-inductive flora.[6]

According to the extended ecological plaque hypothesis suggested by Takahashi and Nyvad, a microbial ecological balance that neutralizes the "physiology" of acid producers in the plaque biofilm favors the persistence of a microflora that is compatible with dental health.[7] However, environmental factors that change the composition and biochemical activities of plaque, such as the frequent consumption of fermentable carbohydrates, can result in a flora that shifts the pH homeostasis of the biofilm toward demineralization and enamel loss.[1,5,7]

Despite the fact that caries is originated by many bacterial species, there remains a strong relationship between caries development and high levels of *S. mutans*.[8,9] Reducing the prevalence of *S. mutans* in the plaque community is one approach to re-establishing healthy plaque.[1] Beighton describes *S. mutans* as an organism implicated in caries but lacking the ability to endure environmental changes imposed by exogenous agents.[6] In a probiotic approach expected to ecologically reform biofilm, Tong et al. discovered that *S. oligofermentans*, which exclusively exist in caries-free humans, can inhibit *S. mutans* growth through competitively metabolizing lactic acid into hydrogen peroxide.[10]

Dietary Habits and Dental Caries Activity

Dietary habits, as significant determinants of dental caries risk, are directed customarily by several genetic, cultural and environmental factors. In a sample of 1,305 U.S. children ages 3-12 , Shaffer et al. presented the first genome-wide association scan for dental caries that nominated several novel candidate genes affecting dental caries, including ACTN2, MTR, EDARADD, MPPED2, and LPO.[12] The role of genes in the incidence of dental caries can be processed at two levels: enamel composition and taste sense. So, genes interfere with tooth enamel composition, such as ACTN2 and MTR, may play a role in increasing caries susceptibility.[12] From the diet perspective, it is important to understand genetically the role of taste preferences in caries.

THE MORE SUGARS the individual eats, the more nutrients the cariogenic bacteria will have.

To elucidate why people differ in their dietary choices, Shaw and Murray revealed that the individual's genetic structure appears to be a potentially influential factor in one's autonomous attraction to consume carbohydrates.[13] The role of genetic predisposition can explain the tendency of some people to eat only a "safe" low in sugar diet. For example, Rupesh and Nayak examined genetically determined taste sensitivity and noticed that individuals with low sweet taste sensitivity have a lower dental caries risk than those with high sweet-tasting sensitivity.[14] Likewise, Wendell et al. identified TAS2R38 and TAS1R2 as two genes important in taste sensing that are associated with dental caries risk and/or protection.[15] However, the ability to predict the diet choice and diet-associated conditions such as obesity or dental caries depending mainly on the taste receptor specificity is still unclear.[16] Keeping in mind that the multifactorial cariogenesis is largely the product of accumulated small-effect sizes of various genes, of involvement the genetics in caries requires further research.[12]

Changes in eating habits in recent decades have progressively led to remarkably amplified daily intake of energy-dense, low nutrient-dense snack foods.[17-19] In a large cohort study, Johansson et al. revealed a significant association between consumption of potato chips and caries status in humans.[19] What makes chips a potent cariogenic could be the combination of starch and sucrose. In vivo studies have demonstrated that the hydrolyzed starch has a rapid and deep pH-lowering effect very analogous to that of sucrose.[20]

Dental caries, as a biofilm-mediated disease, depends on several species of cariogenic bacteria and specific eating patterns such as sugar intake and eating frequency. The more sugars the individual eats, the more nutrients the cariogenic bacteria will have. For example, the frequency of intake of foods and drinks sweetened with sucrose appears to be positively related to the incidence of dental caries.[21] On the other hand, water and milk consumption have been shown to be protective against dental caries especially in the primary dentition. Unfortunately, plain water and milk consumption have declined in the modern diet.[22] Similarly, contemporary changes in beverage patterns, particularly the increase in con-

sumption of sugary soda and powdered beverages, have the potential to increase dental caries rates in children.[23] In addition, the consumption of sugar-containing drinks at night or between meals has been notably associated with an increase in dental caries prevalence among preschool children.[24] Such findings strongly support the need to limit the access to soft drinks not only among school children but also among preschool children.[22]

Better eating habits can create a more favorable environment for cariogenic bacteria. Therefore, dietary alterations combined with organized community efforts can be potentially promising methods in promoting oral health especially among high caries risk children.

Noncariogenic Alternatives and Functional Foods

Among the carbohydrates, sucrose is considered the most cariogenic.[25] Therefore, commercially available sugar substitutes have emerged as a promising less-cariogenic alternative to sucrose. Sugar-substitutes that are commonly used to prevent caries are either sugar alcohols or artificial sweeteners. The U.S. Food and Drug Administration (FDA) approves "sugar-free" products sweetened only with sugar alcohols, artificial sweeteners, or a combination of these sweeteners.[26]

The sugar alcohols or polyols are nonfermentative dietary sweeteners that include: xylitol, D-glucitol (sorbitol), erythritol, mannitol, and maltitol.[26,27] The most prominent example is xylitol, which is a nonfermenting natural sugar alcohol of the pentitol type. Xylitol is used worldwide as a sugar substitute. Clinical studies have shown that xylitol, within certain doses and frequencies, can be used as a safe and effective caries-limiting sweetener that reduces the number of mutans streptococci.[27,28] The use of xylitol-containing products such as chewing gums has also been strongly recommended because the habitual use of xylitol is associated with a significant reduction in caries incidence and lesion remineralization.[28-30] Xylitol is at least an effective noncariogenic sucrose substitute but may also be an effective anticariogenic agent.[30]

Artificial sweeteners also include aspartame, saccharin, sucralose, and acesulfame potassium. All of these sweeteners are noncariogenic. Due to their high intense sweetness, artificial sweeteners are frequently added in small amounts to improve the flavor and sweetness of sugar alcohols, which are relatively less sweet.[26]

GREEN TEA IS considered a functional food for oral health due to its high content of catechins, especially epigallocatechin-gallate,

In recent years, much attention has been focused on research and education related to the identification of food components and development of food products with disease-preventing and health-promoting benefits, that is, "functional foods."[31] Despite the absence of universal consensus around this term, Health Canada defines "functional food" as: "a conventional food, [when] consumed as part of a usual diet, [...] is demonstrated to have physiological benefits and/or reduce the risk of chronic disease beyond basic nutritional functions."[32] Given that dental caries is a disease caused by bacteriogenic foods, which have antimicrobial activity against cariogenic bacteria, should help in controlling or preventing tooth decay. Indeed, previous studies have shown a strong connection between killing cariogenic bacteria and reductions in tooth decay. Hu et al. discovered a novel compound (glycyrrhizol A), extracted from licorice roots and manufactured in sugar-free candy form, with strong anti-microbial activity against cariogenic bacteria.[33] According to their study, this herbal lollipop could be a novel tool to promote oral health through functional foods. Recently, Wu found that grape seed extract, which is a rich source of proanthocyanidin, showed a positive effect on the remineralization of root caries lesions.[31]

Consequently, raisins can represent a healthy alternative to the commonly consumed sugary snack foods. Also, cranberries appear to be beneficial for promoting oral health and preventing dental caries. The polyphenols in cranberries can influence the formation of dental caries by reducing the formation of plaque biofilm and inhibiting the production of acids by cariogenic bacteria.[34] Green tea is considered a functional food for oral health due to its high content of catechins, especially epigallocatechin-gallate, which possesses anti-microbial effects against oral streptococci.[35,36] Although "functional foods" are promising, the supporting evidence should be interpreted with caution, as most of these trials are in vitro and animal studies.

Milk and milk products are considered caries protective nutrients not only because of the buffering activity of the milk protein, but also because of their high content of bioactive components that have cariostatic properties: calcium, phosphate, casein, whey protein, lactose, and milk fat.[37-40] As an illustration, casein, which comprises 80 percent of the bovine milk protein and 20 to 45 percent of human milk protein, seems to have

inhibitory effect on adhesion of mutans streptococci to saliva-coated hydroxyapatite (s-HA) and simultaneously casein help to uptake calcium phosphates to demineralized surfaces on the tooth.[41-43] According to Ferrazzano et al., casein phosphopeptide-amorphous calcium phosphate nanocomplexes (CPP-ACP) exhibit anti-cariogenic potential and promote remineralization of early enamel lesions.[44] In addition to casein, milk contains whey proteins, lactoferrin, lysozyme, and antibodies that all serve to promote oral health via their interactions with various cariogenic bacteria.[43] Likewise, Tanaka et al. found an association between a high consumption of yogurt and a lower prevalence of dental caries in young children.[39] Llena and Forner revealed that the average weekly intake of cheese and nuts was associated with less caries experience.[45]

From another aspect, the fermented milk products that contain viable bacteria or so-called probiotics appear to have some protective characteristics against dental caries incidence.[46,49] The FAO/WHO define probiotics as "live microorganisms, which, when consumed in adequate amounts as part of food, confer a health benefit on the host." Probiotics can be introduced to consumers through various mediums such as: milk, yogurt, cheese, ice cream, chewing gum, tablet, lozenge, and oral rinse.[50] Identically, several clinical studies revealed that a regular daily consumption of probiotic lactobacilli and *Bifidobacterium* species decreased the number of cariogenic streptococci in saliva and dental plaque, resulting in a significant lower risk of caries.[46-49,51] However, what makes the probiotic case vague is not only the conflicting positive and negative reports arising in the literature, but also the fact that most probiotic studies have only counted a few bacterial species, especially *S. mutans*. Supportingly, Haukioja et al. and Slawik et al. disclosed that the cariogenic potential of lactobacilli and the high-sugar content of the probiotic milk drink should be investigated in future long-term studies.[52,53] There is a real need for controlled and well-designed clinical trials that investigate comprehensively the whole probiotic microbiota and its acidogenicity.

Nonetheless, although the use of functional foods can help to promote oral health, they are not a substitute for dental preventive strategies like toothbrushing with fluoride toothpaste and fluoride applications.[2,22,29,54] Furthermore, more focused randomized clinical trials are still needed before a comprehensive understanding of the cariostatic activity mechanism of functional foods can be reached.

THERE IS A REAL NEED for controlled and well-designed clinical trials that investigate comprehensively the whole probiotic microbiota and its acidogenicity.

Oral Health Education

Caries is a multifactorial disease with intraoral factors such as saliva, biofilm, fluoride, and diet acting at the tooth surface, while several other social and economical determinants act at the individual level such as person's behavior, knowledge, attitude, education, socioeconomic status, and income.[55] Efforts to adjust the dietary behavior of individuals and groups through oral health education programs have been undertaken in many countries worldwide.[21] For instance, Köhler and Andréen demonstrated a successful reduction of *S. mutans* in children and their mothers who were subjected to a preventive program that included dietary counseling.[56] This reduction of *S. mutans* was associated with delayed bacterial colonization and reduced caries incidence in children when this program was offered to their mothers during the emergence of the children primary teeth.[56]

Oral hygiene education integrated with dietary counseling and oriented with oral health promotion is significantly important in preventing dental caries. For instance, Tinanoff and Palmer suggested an approach for reducing caries in children based on teaching parents how to recognize and reduce high-frequency exposures to obvious and hidden sugars.[57] In fact, a child's oral health status is connected to the lifestyle and the oral health behavior of the caretakers, particularly feeding practices during the child's first 18 months.[58] Likewise, Moynihan and Petersen have endorsed combining oral hygiene education with nutrition education at schools and at antenatal classes where available.[59] In a practice based intervention, Kressin et al. revealed that pediatric clinicians significantly reduced incidence of early childhood caries by counseling.[60] Further studies are still needed to support the direct role of education in reducing dental caries. Nevertheless, regular oral hygiene visits and the professional application of indicated preventive medications should be consistently combined with successful preventive methods that support oral health promotion, patient education, and patient compliance.

Conclusion

With the increased disparities in caries prevalence among vulnerable populations, dietary control can help in reducing caries incidence through motivating individuals to make healthier

dietary choices. Such caries-limiting approach is consistent with the dental public health interest oriented toward preventing caries rather than restoring teeth. The dietary models mentioned in this article are not a substitute for usual dental preventive strategies like toothbrushing with fluoride toothpaste and fluoride applications. Obviously, dietitians, health professionals, consumers, and dental pubic health organizations should advocate for:[59,61-65]

- Reducing consumption of energy-dense, low-nutrient snack foods;
- Limiting the access to regular soda and regular powdered beverages among children;
- Increasing plain water, milk, and milk products consumption;
- Using xylitol-containing products to help in preventing dental caries especially while targeting high-risk populations;
- Labeling products containing sugar alcohols or artificial sweeteners with clear prominent words: "sugar free";
- Building community capacity through increasing parents' awareness of reducing high frequent exposures to obvious and hidden sugars; and
- Sharing ideas and enhancing efforts exerted by other health groups concerned with diet improvement and obesity.

The direct relationship between nutrition and dental caries in modern society is complicated. Thus, there is a clear need for more studies of nutritional factors related to the prevention and/or treatment of dental caries. Such studies would offer important clinical implications for future efforts in caries prevention. In addition, effective preventive strategies should take into consideration the potential role of oral health promotion, dietary counseling, and public nutrition education. ■■■■

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Timothy G. Giroux
DDS/Broker

ASK THE BROKER

Question:

Is the number of "Active Patient Files" an important issue in a practice purchase?

Great Question!!! My answer is emphatically YES!

When you buy a practice, you are paying mostly for the "book of business" generally referred to as "goodwill", "cash flow", profitability, etc. What you are actually buying is the opportunity to meet all the patients of the practice and win them over to continue their treatment in that office. Unfortunately, there is no single definition of what constitutes an "active patient". In a recent situation, the Seller's patient count was 1800, while my count was 1500 and the Buyer's count was 450 patients. Amazingly, the Buyer actually increased the practice production in the first month of ownership! Obviously the Buyer's definition of an "active patient" was much more stringent than the Seller's, but the actual number did not matter as the Buyer proved to be much more adept in treatment planning the existing patients.

Of course, it is up to the Buyer to determine if they can fill the shoes of the Seller, or continue to perform as well with that "book of business". The problem is that if we put a patient in the middle of 10 dentists, we might get 10 treatment plans that are light years apart. This could even happen with 10 classmates from the same school who respect each other! Conclusion: 800 active patients (whatever the definition) in one doctor's hands might yield a $1 million practice and the same patients in another doctor's hands might yield half that amount. In the case of a practice where a classmate who is a conservative treatment planner buys out the more aggressive treatment planner, chances are that this buyer may go broke as he will never produce what the Seller produced. Result: Lawsuit, name calling and finger pointing, regardless of the patient count! Reverse the scenario and the result will be a buyer who doubles production in the first year and the Broker is a genius!

I recently had a buyer's attorney remove the contract clause that took the responsibility of the patient count out of the buyer's hands. While that might help the Buyer if a lawsuit ensues, all parties lose if poor due diligence results in a bad transition and a lawsuit. All Buyers need to do a chart review themselves and confirm that they are capable with their own skill set and/or agree with the philosophy and treatment being prescribed to that patient base.

The best way to prevent a misunderstanding or poor result in a transition is to make sure the Buyer does his own due diligence concerning the practice' philosophy of treatment planning. A patient count, whatever the definition, is important, but should not be used as ammunition to defend poor due diligence.

Timothy G. Giroux, DDS is currently the Owner & Broker at **Western Practice Sales (westernpracticesales.com)** and a member of the nationally recognized dental organization, ADS Transitions. You may contact ***Dr Giroux at*: wps@succeed.net or 800.641.4179**

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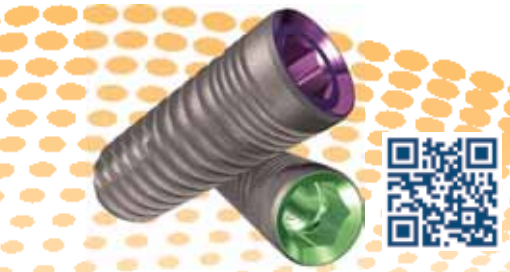

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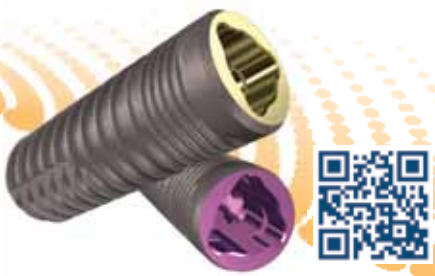

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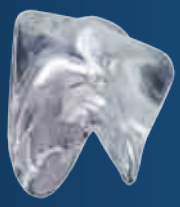

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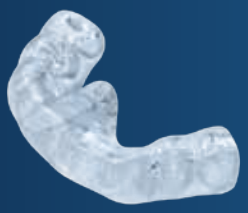

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Management of Avulsed Permanent Incisors With Closed Apices and Prolonged Extraoral Dry Time

PRIYANSHI RITWIK, BDS, MS; YUNUS LANGHA, BDS, MS; AND ROBERT J. MUSSELMAN, DDS, MSD

ABSTRACT This article reports the clinical management and outcome of two avulsed permanent incisors that were kept dry for 42 hours. Dental trauma guidelines were followed and clinically successful outcomes were seen until seven months of follow-up. The factors contributing to successful management of this case despite the extreme clinical circumstances were attributed to pulp extirpation prior to replantation, doxycycline soak, fluoride soak, and timely endodontic treatment. Recent advances and alternate treatment modalities reported in literature are evaluated in the discussion.

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Robert J. Musselman, DDS, MSD, is professor of pediatric dentistry at LSUHSC School of Dentistry in New Orleans. *Conflict of Interest Disclosure: None reported.*

The management of avulsed permanent anterior teeth with closed apices and prolonged extraoral dry time (EODT) in young children is associated with guarded prognosis. Due to the prolonged EODT (>60 minutes) and closed apex, the vitality of periodontal ligament (PDL) cells as well as the pulp is lost. Replanting such teeth carries the risk of replacement resorption and/or inflammatory resorption.[1] However, replanting these teeth is still attempted in clinical practice for the following reasons. Firstly, it provides an immediate esthetic result, which is critical to the self-esteem and confidence of a young child. Secondly, although replacement resorption and inflammatory resorption are anticipated in the future, their onset and severity cannot be predicted. The root of the replanted tooth maintains alveolar bone height and width through the growing years of the child and enables better bony contour for dental implants or other prosthesis at the appropriate age. Following dental trauma guidelines in such cases is imperative to minimize the onset of inflammatory root resorption and delay, as long as possible, the onset of replacement resorption.

The purpose of this case report is to present the management of avulsed mature permanent maxillary incisors with an EODT of 42 hours and discuss the factors leading to the successful outcome of this case.

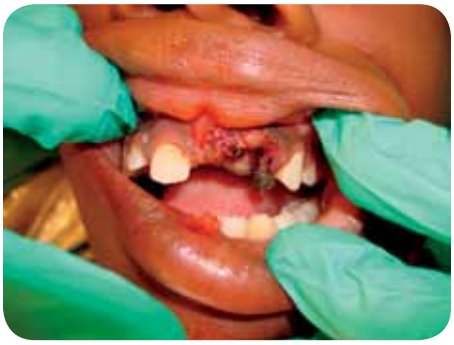

FIGURE 1. Patient presentation at initial examination 42 hours after trauma.

FIGURE 2. Radiograph of avulsion site confirming no other hard-tissue injuries.

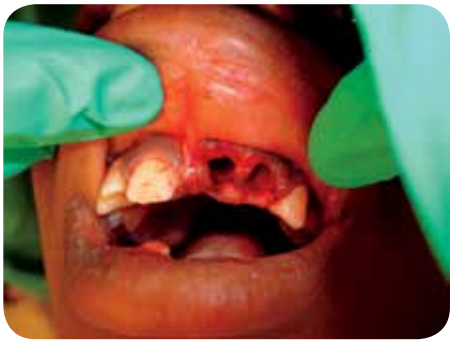

FIGURE 3. Sockets prepared for replantation.

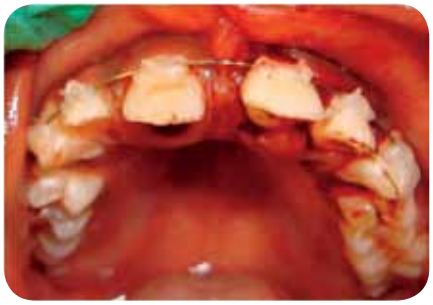

FIGURE 4. Clinical picture of splint.

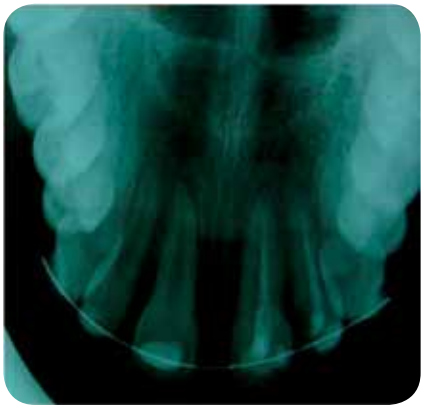

FIGURE 5. Radiograph confirming position of replanted teeth.

Case Report

A 12-year-old healthy African-American male presented to the Special Children's Dental Clinic for management of avulsed maxillary left central and lateral incisors. The avulsed teeth were brought in tissue paper. The EODT was 42 hours. The injury happened at home when the patient ran into a door. He received immediate care at the local emergency department for the soft-tissue injuries and was asked by the physician to see a dentist for management of the teeth.

The patient had a pre-existing excessive overjet. His lower lip and gingival tissue were lacerated. Intraorally, the maxillary left central and lateral incisors were missing, and the sockets were filling in with granulation tissue and blood clots (FIGURE 1). The maxillary right central incisor exhibited >1 mm mobility. Immunization status of the child was verified with his mother. Risk, benefits, and guarded prognosis of the avulsed teeth were discussed with the mother and it was decided to attempt replantation of the avulsed teeth.

Clinical examination and intraoral radiographs confirmed absence of other hard-tissue injures (FIGURE 2). An extraoral pulpectomy was performed on both avulsed teeth, the canals were filled with calcium hydroxide, and the access was sealed with IRM. PDL fibers were gently removed with a sickle scaler, taking care not to gouge the cementum surface. The teeth were then soaked in acidulated fluoride gel for 10 minutes and in doxycycline solution (1 mg/10 ml) for 10 minutes. Local anesthesia was achieved with 2 percent lidocaine infiltration and the sockets were curetted to clean the clot and granulation tissue (FIGURE 3). The sockets were copiously irrigated with doxycycline solution. The teeth were replanted into the prepared sockets and retained in position with a resin-bonded physiologic splint fabricated with .016 stainless-steel wire extending from the left through the right permanent canines (FIGURES 4 AND 5). Postoperative recommendations included soft diet for a week, 0.12 percent chlorhexidine gluconate mouthrinse twice a day, toothbrushing twice a day, and 500 mg amoxicillin three times a day for a week. The splint was removed in two weeks.

Endodontic treatment with gutta percha was completed on the maxillary central incisors and left lateral incisor in one month. At the three-month follow-up, the clinical and radiographic findings were within normal limits. At the seven-month follow-up, the maxillary left central incisor showed signs of ankylosis (FIGURES 6 AND 7).

Discussion

Given the prolonged EODT in this case, both the patient and clinicians were pleasantly surprised with the favorable outcomes of treatment. The outcome can be attributed to the details of treatment

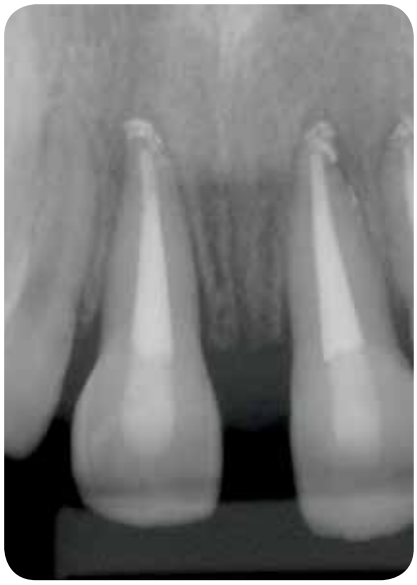

FIGURE 6. Seven months postoperative radiograph of maxillary right and left central incisors.

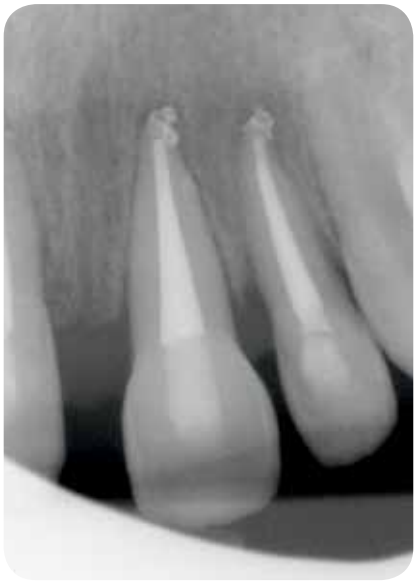

FIGURE 7. Seven months postoperative radiograph of maxillary left central and lateral incisors.

rendered. Removal of the PDL fibers prior to replantation enabled elimination of necrotic cells from the root surface.[2] This is likely to have contributed to the lack of inflammatory root resorption in our case. Soaking the teeth in 2.5 percent sodium hypochlorite solution or 3 percent citric acid and gentle brushing of the root surface are other means of removing the PDL fibers.[2-4] Emdogain was considered a promising agent for root surface treatment since it has been shown to promote regeneration of all periodontal tissues. However, clinical studies involving dental trauma root treatment with Emdogain could neither prevent nor cure replacement resorption of the root.[5]

The authors performed extraoral pulpectomy to remove the necrotic pulp from the canal prior to replantation. This prevents the passage of products of pulpal breakdown via dentinal tubules into the periradicular region, thereby reducing likelihood of inflammatory resorption. Intermediate obturation of the canals with calcium hydroxide has been shown to reduce the chances of inflammatory resorption due to the high alkaline pH of the material.[6,7] The authors employed this same technique where they placed calcium hydroxide in the canals prior to completion of endodontic treatment with gutta percha. Given the fact their patient did not exhibit inflammatory root resorption, it can be inferred that pulp extirpation and calcium hydroxide placement were also contributors to absence of inflammatory root resorption. Other authors have completed endodontic treatment with gutta percha prior to replantation.[1,3,8]

The authors performed a fluoride and doxycycline soak before replanting the teeth. The fluoride soak enables better tolerance to inflammatory breakdown of the root surface.[9] Doxycycline is bacteristatic, inhibits collagenase activity, and promotes bone morphogenic protein; all these are desirable effects in reducing root resorption.[9-11] The authors utilized the same doxycycline solution to irrigate the sockets; saline has usually been used for this purpose.[2] In hindsight, this additional local antibiotic may have improved success. Local and systemic antibiotics were utilized for this patient. While literature supports the use of local antibiotics, there is conflicting data on the use of systemic antibiotics.[1,12] The authors prescribed systemic antibiotics in this case to maximize a favorable outcome. Due to his age, the patient could also have received systemic doxycycline. Due to its anti-resorptive effects, a systemic tetracycline would have been a better medicament than a penicillin drug.[9] At present, trauma guidelines advocate systemic antibiotics for the replantation of avulsed permanent teeth.[13,14] However, the guidelines currently recommend a doxycycline soak only for avulsed permanent teeth with open apices.

The management of this patient deviated from this recommendation within the guidelines to maximize on the therapeutic effects of doxycyline. There has been another case report of doxycycline soak for an avulsed permanent tooth with closed apex transported in milk, showing lack of root resorption at 16 months.[11]

There are few case reports in literature that reflect on the treatment modalities and clinical outcomes of avulsed mature permanent teeth of young children stored dry for prolonged periods of time.[3,6,8,15-17] Such cases should be reported and their treatment modalities evaluated to assess the contributors to successes and failures. This enables compilation of clinically relevant treatment options.

More recent studies have investigated use of corticosteroid-antibiotic mix (Ledermix) after pulp extirpation and alendronate application on root surface to reduce the chances of inflammatory resorption.[18,19] Regenerative therapies have been shown to be successful in avulsion injuries of immature permanent teeth.[20] Autotransplantation of a premolar for an avulsed permanent incisor is also an option in appropriate cases.[21] Decoronation has been recommended in recent literature for the management of post-traumatic ankylosis of teeth to maintain alveolar bone.[22]

Given the circumstances of the authors' case, it is remarkable that no inflammatory resorption occurred during the seven-month follow-up period. Radiographic signs of replacement resorption were seen at seven months. In such cases, replacement resorption is inevitable; however, in young patients, gradual replacement resorption is desirable over rapid replacement resorption. The presence of the natural tooth, for as long as possible, enables better bone support for prosthetic replacement in the future. In conclusion, in cases of avulsion of mature teeth stored in nonphysiologic media for >60 minutes, replantation in accordance with trauma guidelines is a worthy procedure in a growing child. Emergency room physicians should be informed of the critical timeline in management of avulsed permanent teeth and the appropriate storage media for avulsed teeth. ■■■■

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A look into the latest dental and general technology on the market.

Living Earth HD (Radiantlabs, LLC, $1.99) is not only a reliable alarm clock, but also comes with nearly live, high-definition views of the Earth, including cloud patterns (satellite views are updated every three hours). Living Earth, named by Apple as the best iPhone and iPad Utility in App Store Rewind 2011, allows you to program your favorite cities and monitor the weather in different parts of the world. A double tab of the screen allows you to toggle between your marked locations, putting the planet in motion as it relocates your position. A numeric display at the bottom of the screen provides you with the current temperature, as well as the high and low temperatures for the day. In addition, you can view the time of the sunrise and sunset. The New York Times called Living Earth "visually striking," and that is very true. Beyond the weather information, the app allows you to spin the Earth with a touch of a finger and gives clear and crisp views of which side of the planet is currently in the dark and which side is in daylight. Track hurricanes and tropical storms as they sweep across the ocean. Tap and hold the screen, to share an image of the Earth to Facebook, Twitter, Tumblr, e-mail, or save it in a photo album.

Unfortunately, the photo sometimes shows up as a black screen when it is e-mailed. The alarm clock itself offers soothing piano and harp sounds to wake up to, but you can also upload a song from your iTunes collection and set it as your wake-up jingle. Because of the visually appealing aspect of the app, it would be nice if you could set the spinning globe as your wallpaper. That's not an option, but you can turn the "Disable Auto-Lock" feature on, which will prevent your phone from auto-locking or going into sleep mode, keeping the live view of Earth on display while your phone or tablet is resting on a docking station or nightstand. Living Earth will make dealing with an alarm clock an enjoyable experience.

Alarm Clock Pro (iHandy Inc., 99 cents) is a functional alarm with a display that is similar to most standard digital alarm clocks with the added bonus of being able to choose between blue, cyan, green, orange, pink, red, and yellow for a display. It adds the option of waking up to a playlist of songs, podcasts, or audio books. You can also choose a song, podcast, or audio book to fall asleep by setting a timer on the main screen. Live weather conditions are an option but you will have to turn on "Location Service" in your system settings. The weather display could use a little more flair. It looks very similar to the basic weather app that comes with an iPhone. The alarm clock is reliable and gives the option to turn on Auto-Lock, allowing the clock to remain on at night and never turn off when plugged in. This pretty much makes the standard $15-$30 tabletop alarm clock obsolete if one is willing to defer to an iPhone or iPad to help them wake up. If the default display is too bright for your taste, one swipe on the screen allows you to dim the numerals. Users of the iOS 5 operating system can also use the "shake-to-snooze" feature when the alarm goes off without having to unlock the screen. Many users of this app enjoy the fact that it is updated frequently by its developer. It's not a stunning utility, but it is handy and reliable if you are looking to upgrade your alarm clock.

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Epocrates *(free, subscription fee for extended features)* was one of the first-to-market apps of the electronic drug reference tools and is available for almost all smartphone platforms. With the free basic version, users can find and search for particular drugs and related information, which includes dosage, contraindications/cautions, adverse reactions, drug interactions, safety, pharmacology, manufacturers, and pill pictures. Users can also upgrade to get more comprehensive features, including treatment guidelines for infectious diseases, diagnostic tools, billing code references, and an extensive medical dictionary. Depending on the upgrade level, users can expect to subscribe for these services ranging from $99 to $199 a year. Regardless of whether or not a user subscribes for these features, the basic drug reference is free and is updated often. While not specifically made for dental professionals, this app is useful in searching for most of the drug information a user would need in treating patients. This app is optimized for the latest touch-screen technologies included in smartphones and is relatively simple and intuitive to use. For dentists, this app along with its extensive drug reference is missing one key component – effects on dental treatment for each drug. As previously mentioned, this app is not specifically made for dentists and while quite useful for most needs, what it lacks is the most important thing that dentists need.

Lexicomp *(free to download, 30-day free trial subscription for selected texts)*, the trusted name in drug information resources for dental professionals, has also developed an app for almost all smartphone platforms. For those who have used Lexicomp reference books in the past, one cannot argue at the extensiveness and usefulness of the information provided in these texts. The same applies here, as no one can dispute that a mobile, electronic version of the same text is useful. However, here is where the usefulness of this app takes a steep fall. Between Lexicomp's printed texts, online texts, and mobile app texts, there is very little differentiation at all to take advantage of each platform. The Lexicomp app is essentially a book reader and is not optimized to take advantage of the touch-screen technology available. Included are basic search functions and tools available in most free apps, but this is the extent that this app has been developed for touch screens. Upon purchasing a subscription of Dental Lexi-Drugs ($75 per year), you can scroll through the different drugs and find everything you need including the effects of dental treatment of each drug. What you are looking at equates to nothing more than a poorly written e-book; however, as the text and pictures that show up are mostly unformatted and unpleasing to the eye. At the end of your subscription period, unless you renew, you can no longer view your reference, which is a huge drawback from purchasing an actual Lexicomp printed text. The Lexicomp app opens the door to a wide variety of extensive texts that you can carry with you electronically wherever you go for a premium subscription price. As mentioned before, if you want to keep your books after the subscription period is over, it may be more cost-effective to purchase an actual book and carry it around with you.

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B-9851 SAN RAMON Facility—This opportunity will not wait! Office ~ 1,700sf w/ 3+ ops **$219k**

BC-082 OAKLAND-On top of the Oakland Hills, in vibrant Montclair District. 900 sf w/3 ops and room for 4th **$475k**

BG-106 Facility UNION CITY -Intersection w/ monumental signage & excellent visibility. Across from B of A. Open floor plan. 1,800sf w/ 4 fully equipped ops. New Computers and New Telephone Systems. $**150k**

BN-068 ORINDA - Attractive 2-story Professional building. Office is ~800sf w/3 ops. **$850k**

BN-051 HAYWARD— Well-established, family-oriented practice has ~1,000sf w/3 ops **$150k**

BN-052 PLEASANTON *Facility Only—* Spectacular 8-op office. Med Prof Bldg, 1950sf. **$195k**

CC-056 Marin County- With beautiful garden setting, this well maintained office is centrally located near popular shopping center. Easy access to Hwy 101. 1200sf w/ 3 ops. Room for 2 add'l ops **$350k**

CC-077 BENICIA- Highly visible. Within walking distance of downtown. 820 sf w/2 ops **$125k**

D-9091 ATHERTON -Turnkey operation 969 sf & 3 ops ***Call for Details!***

D-960 *Facility only* SAN JOSE -Opportunity to purchase condo suite also! 1,158sf w/3 ops **REDUCED! NOW ONLY $48k**

DG-107 Facility MOUNTAIN VIEW - Located w/in 3 mi. from Google Headquarters. $400k + in build-outs. Top-of-the-line, state-of-the-art, Sirona Eq w/ built-in intra-oral cameras & curing light units. 1,800 sf w/3 fully equipped ops. Plumbed for 1 add'l **$270k**

DN-055 Facility MILPITAS - Located in bustling heart of town. Spacious, fully networked 4-op office (2 fully equipped ops). 1450 sf! **$125k**

DN-063 SAN JOSE - Long-established, Popular Retail Shopping Center. 780 sf w/ 2 ops **$70k**

DN-083 REDWOOD CITY- Modern, attractive, state-of-the-art practice! 2,315sf, 7ops **$395k**

BAY AREA CONTINUED

DG-060 WATSONVILLE- Practice & Real Estate Available! Spectacular 2,245 sf w/ 4 ops. Call for Details!! **Practice: $250k / Real Estate: TBD**

DN-099 Facility SAN JOSE- Ultra-modern facility. Well-established, attractive Dental Professional building complex. 1,450 sf w/5 ops **$125k**

DN-084 PALO ALTO - Drawing from an educated, upper middle class community, this facility is "move-in" ready! 700 sf w/3 ops **$125k**

NORTHERN CALIFORNIA

E-8641 SACRAMENTO-FACILITY - 2,100+ sf w/ 3 ops & plumbed for 1 add'l **$50k**

EN-026 ROSEVILLE—Warm Caring Environment, ~1000sf, w/ 3 ops . **$380k**

EG-065 SACRAMENTO-Practice AND Property only $145k. Collections $350k+ '07. Huge growth potential!! 1,200 sf w/4 ops.

EG-111 ROSEVILLE – Must See! Beautiful layout with gracious, classy design and decor. Upgraded build-outs to include travertine tile in reception area. 1,760 sf w/3 ops **$210k**

EN-090 CARMICHAEL - It just doesn't get any better than this! ~2000sf w/6ops. **$895k**

F-1013 FORTUNA-Well respected FFS GP. Loyal stable patient base. 1,000 sf w/ 3 ops **$195k**

FN-087 LAKE COUNTY—Quality practice w/ friendly staff! ~2400sf w/3+ops. **$775k**

FN-088 SISKIYOU CO— Family Friendly Location! ~1300sf w/ 2 ops. **$85k /Real Estate: TBD**

G-883 CHICO VICINITY – Quality FFS GP. Attractive Prof Plaza. 1,990 sf w/ 5 ops **$495k**

G-998 CHICO/PARADISE—Breathtaking natural beauty! ~898sf, 3 ops. **Now $240k**

HC-054 SIERRA FOOTHILLS- Seller Retiring. 1,800 sf w/ 5 ops **$600k**

G-1019 WILLOWS AREA—Small Community practice! ~1,600sf w/ 2 ops. **$152k**

GN-058 YUBA CITY— Emphasis on quality dental care / patient comfort, 1,704sf w/ 4 ops **$450K**

GN-075 YUBA CITY—Well established practice w/ loyal patient base! ~3000 sf w/ 8 ops**. $250K**

GN-103 CHICO—Successful, highly esteemed practice! ~3500sf, 8 ops + 2 addtl. **$850k**

HN-059 LASSEN CO-Quality, well-established, family-oriented practice. 1600sf w/3 ops **$120k**

CENTRAL VALLEY

I-9721 STOCKTON –Prof. complex 1,450 sf w/3 ops & plumbed for 1 add'l op. **$75k.**

I-1005 SAN JOAQUIN VLY- Long-established High-End . 2,500+ sf w/ 6 ops **$650k**

IN-024 MERCED - This immaculate practice is an absolute jewel! ~1250sf, 3 ops + 1 add'l **$240k**

IC-066 TRACY - Modern, paperless, FFS practice. Excellent visibility! 1,600 sf w/ 4ops +2 **$495k**

IN-071 MODESTO– FFS/Large/stable patient base. Recently remodeled. 2,600 sf w/7ops ***$900k***

IG-067 STOCKTON- Fully computerized, paperless, digitalized. 5,000 sf w/10ops **$475k**

IN-102 STOCKTON- Well-established. Seasoned staff. Unlimited potential! 1,100 sf 2 ops **$125k**

J-1000 TULARE– Highly visible location! ~1650sf w/ 4ops **Practice: $465k /Real Estate: $249k**

J-1001 LINDSEY— All American City! Conveniently located ~3,380sf w/5ops. **$264k**

J-1009 VISALIA- Buy 50% or 100%! Prof Bldg. Desirable area. 4 ops. **$250k /$500k**

IN-072 STOCKTON-Fully computerized/digitalized/ paperless. 3,290 sf w/10 ops. **$700k**

JN-074 CENTRAL VALLEY - This Seller is Extremely motivated! ~2,600 sf w/ + 1 add'l **$85k**

JN-086 FRESNO FACILITY—Low Rent & Overhead! <1yr old, ~1200sf, 3 ops + poss. 4th! $**160K**

SPECIALTY PRACTICES

I-7861 CTRL VLY ORTHO- 2,000sf, open bay w/8 chairs. FFS. 60-70 patients/day. Prof Plaza. **$370k**

I-9461 CENTRAL VALLEY/ORTHO - .~ 1,650 sf w/5 chairs/bays + (2) add'l plumbed. **$180k**

G-975 CHICO ORTHO—Denti-Cal patient base. ~ 900 sf w/ 2 + ops . **$90k**

BC-033 ALAMEDA CO ORTHO – ~ 50 pats/day. Highly visible. 1,250 sf w/4 Chairs/Bays **$450k**

EN-089 ORTHO- ROCKLIN AREA - Large, stable referral base. 1,500 sf w/3 chairs/bays. Plumbed for **$425k**

AG-096 ORTHO- PACIFICA - Perfect opportunity for a practice merger or secondary office. 1,400 sf w/5 treatment chairs in an Open Bay. **$198k**

CG-105 ORTHO VACAVILLE - Strong, loyal, widespread referral base. 30+ pats/day w/ 5-6 new starts/mo. Great location! 2,000 sf w/ 4 chairs/ bays **$280k**

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- **AMADOR COUNTY:** *For Sale*-General Dentistry Practice. Owner retiring. 2011 gross receipts of $710K+. There are 4 1/2 to 5 1/2 days of hygiene on a four day week. This well designed and spacious 2,400 sq. ft. office includes 5 ops, Laser, Intra-oral camera, Dexis Digital X-ray, and Pano. Almost paperless. Av. age of dental equipment is less than 5 years. Abundant recreational opportunities are available close by. #CA510

- **ANAHEIM:** *For Sale*-General Dentistry Practice. This 3 op had $253,000 in collections in 2011. There are 3 ops in this 864 sq. ft. office with 1.5 days of hygiene. Owner works 3 days per week. No welfare or HMO's. Laser, Dentrix Software and Intra-Oral Camera. SOLD

- **BISHOP:** *For Sale*-General Dentistry Practice and Building. After 29 years in the same location this retiring dentist is selling both his practice and building. Collections were $1,000,243 in 2011 with $387,000 Adjusted net income. There are 6 days of hygiene in this 5 op 1,800 sq. ft. building. 100% financing is available for both building and practice.

- **CHICO:** *For Sale*-General Dentistry Practice. The collections in 2011 were $1,209,207. There are 7 days of hygiene in this 5 op., 2,400 sq. ft. office. Equipment includes Laser, Intra-Oral Camera, new Cone Beam X-ray and Dentrix software. This excellent practice has 1,824 active patients with 12 new patients a month. Owner will consider an Associate to Buy-In position leading to the purchase of this practice. #14392

- **CHULA VISTA:** *For Sale*-General Dentistry Practice and Building. **DECEASED DENTIST** as of March 25th, 2012. This beautiful 11 op. office located in a highly visible prime area in Chula Vista, had collections of $1,684,000 in 2011 and $1,730,000 in 2010. There are 5 days of hygiene with approx. 30 new patients per month. Lasers, Intra-Oral Camera, Pan-Ceph, etc. Practice has been in this location since 1998. 100% financing available for practice and building. Staff will stay. #14394 SOLD

- **EAST BAY:** For Sale-ENDODONTIC PRACTICE. The adjusted net income was $186,000 in 2011 in this 3 operatory, 1000 sq. ft. office. Includes Microscope, X-ray Scanner and PBS software. Transfer of referral base should be excellent. Ideal office for new endodontist or as a satellite practice for established practitioner. Dr. is retiring.

- **FRESNO:** *For Sale*-General Dentistry Practice: $935K in collections in 2011, w/adjusted net income of $337K. Office is 2,300 sq. ft. and is located in north Fresno in a highly visible professional office complex on a main thoroughfare. There are 6 equipped operatories, owner reports average age of equipment is 4 years. Practice has been operating in present location for over 20 years. Eaglesoft software, owner is retiring. #CA502

- **FRESNO:** *For Sale*-General Dentistry Facility. One of the best opportunities this year. This 3 op dental office comes equipped. It is in a great location and has about 200 active patients. Owner is in the process of completing his Orthodontic training and only works in the office 5 days a month. Complete pictures of the office and an inventory list of included furniture and fixtures are available. Everything included for only $85,000 You can't afford to pass this up. #14383 SOLD

- **GLENDALE:** *FACILITY SALE*-General Dentistry Office Space & Leasehold Improvements Sale- Office located in a medical plaza, 1760 sq. ft. 7 operatories, computerized equipment approximately 5 years old. Two 5-year options available. #14373

- **GRASS VALLEY:** *For Sale*-General Dentistry Practice. GR 545K 3 days/wk (4 avail). 3 hygiene days/week. 5 Ops (6 Avail) 1,950 sq ft. Refers out most/all Ortho, Perio, Endo, Surgery. Office has Laser, Intraoral Camera, Pano, & Dentrix Software. Owner retiring. #14372.

- **GRASS VALLEY:** *For Sale*-General Dentistry Practice. Owner relocating. 2011 gross receipts $505K on 4 days per week with 5 days of hygiene. This well-established practice with approximatley 1,300 active patients is located in an 1,100 sq. ft. office with 4 ops, Dentrix software, Panoramic X-ray, Cerec, Intra-oral Camera, and X-rays in all ops. #CA509

- **GRASS VALLEY:** *For Sale*-General Dentistry Practice. Owner retiring. Well-designed 1,550 sq. ft. office with 4 ops plumbed, 3 ops furnished. Gross Receipts for 2011 were $309K on easy 3 days/wk with low (47+%) overhead. Practice refers out Endo, Perio, Surgery & Ortho. Pano, PBS software. May be able to merge with another existing practice that will also be for sale in the near future, This merger would result in $800,000 gross annually. #CA503

- **GREATER CHICO/YUBA CITY:** *For Sale*-General Dentistry Practice. 2011 GR $592,520 on 4 days. 1,200 sq. ft. office with 4 equipped ops. Intra-Oral Camera, Pano, 1,100+ patients. Owner retiring after 33+ years in this picturesque and prosperous community with abundant recreation, close to the mountains and near one of the largest lakes in N. CA. #14359

- **GREATER SACRAMENTO:** *For Sale*-Periodontal Practice: Retiring owner is the only Periodontist in a community of 50+K with a draw area of 100K. Implant experience a must. Great opportunity to work closley with a Prosthodontist and an Endodontist. Nicely appointed 1,500 sq. ft. office with 5 operatories, Digital X-rays and Dentrix software. 2011 gross receipts of $719K. #CA500.

- **HAWAII (MAUI):** *For Sale*-General dentistry practice. Gross Receipts of $636K. Office has four equipped operatories in 1198 sq.ft. Pano, Laser, I.O. Camera, Fiber Optics, 2 ½ days of hygiene. Owner retiring: Don't miss this opportunity to live and work in paradise. #20101

- **HAYWARD:** *For Sale*-General Dentistry Practice. This practice consists of 1,600 sq ft with 4 treatment rooms in an excellent location. 2010 gross was $501,000 with a $228K adjusted net income. Dental Vision software, Average age of equipment is 8 yrs. Approximately 1,200 active patients. SOLD

- **LANCASTER:** *For Sale*-General Dentistry Practice. This 4 operatory office is located in 2,360 Sq Ft on the second floor of an attractive Medical Dental office building. Gross receipts were $676,000 with a $174K adjusted net income. Dentist is retiring after 39 years. 4 days of hygiene. Additional operatories could be added to existing space. Great location. #14376.

- **LAS VEGAS:** *For Sale*-General Dentistry Practice. This 4 operatory practice is in a great location in a high-end professional building with a view of the city of Las Vegas. It is equipped with an Intra-oral camera, Pano, Laser, and Dentrix software. There are 2 days of hygiene. The staff is well trained to efficiently run this low overhead office with great potential for further growth, 2011 gross receipts were $727K with adj. net income of $331K. Doctor moving out of state. #NV500

- **LEMOORE/HANFORD AREA:** *For Sale*-General Dentistry Practice & Building. Owner has worked in this location since 1971. Gross Receipts were $378K with $139K adj. net income. There are 3 equipped operatories and 3 days of hygiene. Purchase of the building is optional to the Buyer. 100% financing is available for both building and practice. Excellent opportunity for new grad or satellite practice. #14375.

- **MILLBRAE:** *For Sale*-General Dentistry Practice. This beautiful, well-established office is located on the main thoroughfare of the North Penninsula, offering great exposure that generates 25-30 new patients per month. 5 treatment rooms (6th plumbed) in approx. 1,500 sq. ft. equipped with Digital Pan, Digital Imaging and Intra-Oral Camera. 2011 gross receipts of $651,000 with $230,000 adjusted net income. Owner is retiring. Don't delay, this won't last long! #14395

- **MODESTO:** *For Sale* - General Dentistry Practice. Collections have been approximately $700K per year with a 62% overhead

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on 3 days per week schedule. Six days of hygiene in this 4 op. office. Eaglesoft software and Panoramic X-ray. Approximately 2,000 active patients. Perio and Endo referred out. Excellent location. #CA505

- **MODESTO AREA:** *For Sale*-General Dentistry Practice. Owner is a senior partner in a practice set up to share expenses and reduce overhead. Each partner has their own patients, operatories, etc. Selling partner's gross receipts in 2011 were over $950,000 with only 54% overhead or $443,777 adj. net income. There are 8 days of hygiene. Intra-oral camera, Panoramic X-ray, digital X-rays, and Dentrix software. Owner is retiring. #CA506

- **MODESTO-TRACY-AREA:** *For Sale*-Pediatric Practice. $677,000 in collections in 2010 with a $357,000 net income. This 3-chair office is located in approximately 1,250 sq. ft & has recently been remodeled. Patient Base software. Office equipped for NO2 & IV sedation. Practice has operated in its present location for 20 years.

- **MOUNTAIN VIEW:** *For Sale*-General Dentistry Practice: This 2 day per week satellite office is located the heart of Silicon Valley, surrounded by most of Mountain View's largest employers. 2 fully equipped treatment rooms (expandable to 4), Pano, Digital Processor and Dentrix Software in approx.. 1500 sq. ft. With household names as your neighbors, few opportunities are this good! #14398

- **MORGAN HILL:** *For Sale*-General Dentistry Practice & Building. DECEASED DENTIST AS OF JUNE 6TH, 2012. The office and equipment are only 5 years old. The office is beautifully decorated and efficiently laid out with 5 operatories. The condominium space is located in highly visible, upscale, professional condo building. 2011 gross receipts were $846,000. Intra-Oral Camera, Panoramic X-Ray and Digial X-Ray. Staff and hygiene are working daily with out-of-the-area doctor covering. Approximately 1,700 active patients. #14399

- **NEWPORT BEACH:** *For Sale*-General Dentistry Practice. This 4 operatory practice is located in beautiful Newport Beach and is part of a larger office complex. Gross receipts were $490K in 2011, with an average of 20 new patients per month. The office is 920 sq. ft. with Dentrix software, Dental laser, and up-to-date equipment. #14397

- **NORTHERN CALIFORNIA:** *For Sale*-Pediatric practice. Owner has operated in same location for 32 years. Approx 1,760 active pts, 1,160 sq ft, panoramic X-Ray, Dexis Digital and Dentrix software in this 5–chair office. 2009 Gross Receipts $713K with 48% overhead. Owner retiring. Call for Details.

- **NORTH OF SAN FRANCISCO:** *For Sale*-PERIODONTAL PRACTICE. Owner retiring: Great opportunity for a Periodondist with experience in dental implant placement. This well appointed practice is located in a 1,300 sq. ft. office with 4 operatories along the busy 101 corridor north of San Francisco. 2011 gross receipts of $558,000. DSN software. Buyer will be the only full-time periodontist in an area with the population of approximately 60,000. #14396

- **ORINDA:** *For Sale*-FACILITY SALE. If you are thinking about relocating or building out a new office in a prime location, then you need to look at this opportunity. At half the cost or less, you can have an outstanding, fully furnished, 2 operatory office in a great location with good parking in an upscale building. Pictures and a complete list of equipment and furnishings are available. Office is suitable for Endo, Oral Surgery, or General Dentistry. #CA508

- **PLUMAS COUNTY:** *For Sale*-3 equipped ops. Space available for 4th op. 1,245 sf office in good location. Gross Receipts $475K. Practice in present location over 50 years. Owner is retiring. #14318

- **ROSEVILLE:** *For Sale*-General Dentistry Practice. Great Location. 2009 GR $900K with adjusted net income of $300K. 1,975 sq. ft. with 4 ops, 4 days hygiene/wk. Digital, Intra-Oral Camera, Dentrix, Trojan, fiber optics, P & C chairs - all less than 5 years old. Owner is retiring. #14327

- **SACRAMENTO:** *For Sale*-General Dentistry Practice. **Ideal start-up or satellite practice.** This is a satellite practice of the owner. this is a 5 op. office that includes Intra-oral camera, Panoramic X-ray, and Soft Dent software. 2011 gross receipts were $202,000. Average age of equipment is 5 to 10 years. Purchase price is far less than purchasing equipment and paying for leasehold improvements in a new location. This office also comes with approximately 450 active patients that provides an immediate cash flow. #CA507

- **SACRAMENTO:** For Sale-General Dentistry Practice. Gross Receipts $546K with adjusted net income of $159K. Office is 2,400 sq ft with 7 operatories. Practice has been operating in the same location for the past 50 years. Pano, Softdent software. Owner to retire. #14374

- **SAN DIEGO:** *For Sale*-General Dentistry Practice. 6 ops, Intra-Oral camera, Eagle Soft Software. Office square feet 2,300 with 3 years remaining on lease. 2009 Gross Receipts $1,448,520, with an adjusted net income of $545K. Doctor would like to phase out then retire. #14331

- **SAN FRANCISCO:** *For Sale*-General Dentistry Practice. This 1000 sq. ft. office is located in the heart of the financial district. It is a corner office with each of the 3 operatories looking out at the incredible views on Golden Gate side of the bay. The 2011 collections were $1,200,000 with a low overhead. The practice averages approximately 15 new patients a month.

- **SAN JOSE:** *For Sale* - FACILITY SALE ONLY - NO PATIENTS: Exclusive Willow Glen district offering 4 fully equipped treatments rooms, 2 additional plumed, in approximately 1,900 sq. ft.. Digital Scanner, Intra-Oral Camera in a very elegant setting. This facility only sale offers favorable lease terms as well. #CA504

- **SAN LUIS OBISPO:** *For Sale* - Two Doctor General Dentistry Practice. Gross receipts $1,537,142 for 2010 with an adjusted net income of $691K. The office has 2,331 sq. ft. with 8 equipped operatories. Pano, E4D, and Dentrix software. Practice started in 1990 and has been in its present location since 1998. Approx. 3000 active patients. Great location with nice views. #14353.

- **SANTA BARBARA:** *For Sale*-General Dentistry Practice. Wonderful opportunity to live and work in one of California's most desirable areas. 2010 Gross Receipts were $974,000 with a $370,00 adjusted net income. Six days of hygiene. Dentrix software, Intra-Oral Camera and Panoramic X-Ray. Owner is retiring. #14382

- **SANTA CRUZ:** *For Sale*-General Dentistry practice. This excellent practice is centrally located in a professional complex. Office is approx. 1,885 sq. ft. 4 operatories with room for one additional. There are approx. 2000 active patients with 6 days of hygiene per week. Practice Pano, Intra-Oral Camera and Easy Dental software. Owner is retiring. Reasonable lease available. #14361

- **TORRANCE:** *For Sale*-General Dentistry practice. This excellent practice is centrally located in a professional complex. Office is approx. 1,885 sq. ft. 4 operatories with room for one additional. There are approx. 2000 active patients with 6 days of hygiene per week. Practice Pano, Intra-Oral Camera and Easy Dental software. Owner is retiring. Reasonable lease available. #14320

- **VICTORVILLE:** *For Sale* - General Dentistry Practice. This practice is worked just on a three day a week schedule. There are 3 operatories with 10 off-street parking spaces. Practice has high visibility. The practice was acquired from previous owner in 2002. #14393

SALE PENDING SOLD SOLD SOLD SOLD SOLD SOLD SOLD SOLD SOLD SOLD

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OPPORTUNITIES AVAILABLE —Seeking a qualified endodontist for part-time position in a private office setting. Opportunity currently available for two days a month. No PPO or HMO accepted. Please email CV to scalajo@yahoo.com.

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3073 SAN MATEO GP
San Mateo GP now available. Located in highly visible single story professional building in a desirable residential professional mix neighborhood blocks from downtown. 1,100 sq. ft. office w/4 fully-equipped ops setup for right handed delivery. Recently upgraded, networked computer system using Dentrix practice software & Dentrix Digital X-ray. 3 year avg. GR $179K+. w/3 doctor days. Doctor retiring. Asking $108K.

3085 STANISLAUS COUNTY GP
General, family practitioner now retiring. Offering well-est. successful, state-of-the-art practice in approx. 2,800 sq. ft. facility w/7 fully-equipped ops. Great location & exceptional long term staff. Owner willing to help in transition. Estimated 2,500+ active pts. 5 year avg. GR $1.4M w/net of approx. $500K & just 3.5 doctor days & 10 hyg. days/wk. This practice is for an established dentist or 2 dentists w/experience & who will appreciate a high quality practice. Asking $895K.

3072 SOUTH BAY GP
Owner retiring from well est. 4 op GP in desirable commercial/residential mix neighborhood. Highly visible location near well travelled intersection. ~1,300 sq. ft. facility with dedicated parking lot, across from shopping plaza. Experienced & well trained, long term staff. 1,400 active patients (all fee-for-service) and 7 full days of hygiene. Ave. GR $840K+. Owner willing to help Buyer for a smooth transition. Asking only $503K.

SOLD

3082 SONOMA COUNTY GP
Well-established, family-oriented practice in charming community located in the hub of Sonoma County. Stable patient base. 4 doctor days, 3 hygiene days/week. Approx. 14 new pts./month. Approx. 1,500 active pts. 3 fully-equipped ops., recently upgraded equipment, in 900 sq. ft. state-of-the-art office. 2011 GR $552K+. Asking $384K.

3083 SONOMA COUNTY GP & BLDG
Well established & respected GP known for personalized, quality dental care in a family oriented community. Seasoned staff, stable patient base, approx. 1,500 active pts. Located in the heart of Sonoma County in ample 2,088 sq. ft. facility w/6 ops. 2011 GR $767K+ w/4 doctor days. Seller retiring & willing to help for smooth transition. Asking for practice $560K. Building is also available for purchase.

3081 SANTA CLARA GP
1,200 sq. ft. 4 op., newly equipped and fully networked modern office w/ laser, Dexis digital x-ray and Dentrix practice software. Located in a well-travelled area approx. 1 mile from Santa Row. 2011 GR $208K+. Asking $145K.

3059 SANTA CRUZ COUNTY GP & BDG
Charming practice tucked among soaring redwoods in Santa Cruz County. 2011 GR $626K+ w/3 doctor days. All fee-for-service. Owner retiring and willing to help for a smooth transition. This is a great turn key practice and opportunity to own a hidden gem. Practice asking price $373K, building is also available.

3078 GILROY DENTAL FACILITY
1,280 sq. ft. turn-key dental facility w/5 ops in medical/professional office complex adjacent retirement community near Westwood Shopping Center. Great opportunity to establish a practice with little start-up cost or open a satellite office. Asking $75K.

3080 SAN BENITO COUNTY GP
State-of-the-art family practice w/3 fully-equipped ops, Panorex, inter-oral camera & digital x-ray. 1,558 sq. ft. facility. Located in a commercial/professional/residential mix neighborhood near well-travelled intersection. Approx. 1,100 active pts. 3 Dr. days. 2011 GR $449K+. Seller willing to help for a smooth transition. Asking $305K.

SOLD

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CLASSIFIEDS, CONTINUED FROM 822

OPPORTUNITIES AVAILABLE — A multispecialty practice seeking a general dentist for part-time position Monday and Tuesday. Must have 2 years minimum experience in group practice. Looking for a go-getter who is a self-starter, producer, educator, and enjoys being involved in all aspects of patient care and office growth. Our patients are our No. 1 priority and are treated very well. Call 818-886-6100.

OPPORTUNITIES AVAILABLE — Excellent long-term opportunity for a highly qualified cosmetic/general dentist. Our well-established multispecialty practice is conveniently located in San Francisco's Financial District. Contact Mr. Steck at 415-874-4336.

OPPORTUNITIES AVAILABLE — Looking to share or rent office space with a dentist in San Francisco's Financial District. Please email dentist415@gmail.com or call 415-399-1122 to discuss.

OPPORTUNITIES AVAILABLE — Are you looking for an office where you can use all of your skills in a caring and energetic environment? We are a fast-paced, rapidly expanding office looking for an associate dentist to join our dental team. Please fax resume to 209-723-7087 or email to elportaldentalgroup@yahoo.com.

OPPORTUNITIES AVAILABLE — Scripps Center for Dental Care, La Jolla, Calif., is seeking a board-certified oral maxillofacial surgeon for 1 day per week "satellite" position. High-quality, multispecialty, fee-for-service. Scripps Memorial Hospital campus in the XIMED medical building. To cover all aspects of oral surgery practice including Nobel and Straumann implants. Digital radiography, 3-D CBCT, and digital impressioning. Compensation based on percentage of revenues. Please send resume, CV and photo to drweston@me.com.

OPPORTUNITIES AVAILABLE — Family practice looking for a dentist who is comfortable working in a fast-pace office. We provide quality oral health care to underserved communities and actively support a doctor who is a team player, reliable, punctual, and has positive attitude. Lic good standing, restorative, root canals, multiple canals. Must have integral, strong diagnosis and treatment plan skills, comfortable with surgical procedures, especially 3rd molars, pedo. Please contact ivetteh79@yahoo.com.

OPPORTUNITIES WANTED

OPPORTUNITIES WANTED — Periodontist/implant surgeon for your office. Implant surgery/bone grafting/perio surgery/3rd molar extractions/surgical extractions/gingival grafting all done in your office. Please call 617-869-1442 or e-mail bayareaperio@gmail.com.

DENTAL EQUIPMENT FOR SALE

DENTAL EQUIPMENT FOR SALE — Astratech implant unit for sale. This Astratech surgical and restorative implant kit has only been used 4 times and is very well-cared for and stored. Some original packaging and manuals saved. The condition is almost "new." I am going into pediatric dentistry and would like to pass this to a new owner who can make use of it. Details of all items included are listed: Surgical: Ref #24980 Surgical Instrument Kit, with Surgical Tray Ref #24264 Surgical Drill Set Ref #24357 Ratchet Wrench Ref #22137 Titanium Bowl Ref #22127 Forcep Ref #22956 Osteotome complete set (straight, curved, and mallet) with cassette tray Ref #24360 Complete Implant Unit SI915 Ref #22903 Contra Angle handpiece W&H WS-75E/KM Restorative: Ref #22495 Torque Wrench Kit Ref #22514 Short Hex Driver Ref #22516 Long Hex Driver Ref #22495 Restorative Tray 3 Fixtures: Osseospeed TX 4 X11 and 5 X 13 and Osseospeed TM 3.5 x 11 Contact me at mydentist@gmail.com photos avail. Asking or OBO $6,300 plus shipping and insurance via UPS. Contact mydentist@gmail.com or 415-981-9078.

DENTAL EQUIPMENT FOR SALE — For sale, southern implants Strauman style, prosthetic parts and surgical kit. Decided not to do implants. Please send me your fax and I will send you my inventory. I welcome all reasonable offers. Contact Ben Mandel at smiles@helixdentalcare.sdcoxmail.com.

DENTAL EQUIPMENT FOR SALE — The Wand, STA unit-110 volt Needles: STA Handpiece w/30G 1/2 inch needle: 4 boxes of 50 STA handpiece w/30G 1-inch needle: 1 box of 50 STA handpiece w/27G 1-1/4 inch needle: 1 box of 50. Call 510-651-2222.

DENTAL EQUIPMENT FOR SALE — Myotronics Occlusal Analysis System. 2005 K-7 Occlusal Analysis System including all attachments and accessories. Original cost was $ 24,000. Will sell for $12,000. The complete unit is in mint condition. Call 916-443-6692.

DENTAL EQUIPMENT FOR SALE — Almost new equipment for sale. CE fully gnathological Stuart articulator, model 73 w/complete eminentia pads and side shifts. $2,000 SAM 2 articulator w/carrying case $900 SAM 2 incisal pin $40 SAM facebow $400 SAM txfr stand $150 MPI mand posn indicator by SAM $700 whip mix articulator model 8500 $400 Waterpik pantograph $400 carrying case for mounted pantograph+articulator $100 new Castix cast stabilization kit $25 synthetic skull without top dome $35 Prest-o-Lite pneumatic device by Pnemadyne, includes 15 g co2 cartridges $200. See Craig's list for photos of items. Contact soosonmc@gmail.com.

CONTINUES ON 826

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6008 MENDOCINO COAST - FORT BRAGG Cultural haven offers attractive lifestyle. 2011 collected $725,000 on Owner 3-day week. 4-days of Hygiene. Digital radiography. Computers in ops.

6020 PEDO PRACTICE - ATTRACTIVE FAMILY COMMUNITY 2012 trending $550,000+ in collections with Available Profits of $280,000+. Remarkable office with investment here topping $345,000. Computerized charting with digital Pano and Ceph. Full price $240,000.

6024 PERIO PRACTICE – SAN FRANCISCO'S SOUTH BAY On part time schedule of 19-hour week with 7-weeks off, collected $600,000 in 2011. 2012 trending Profits of $270,000. Attractive office, nice location. Full price $150,000.

6025 CENTRAL MARIN COUNTY - SAN ANSELMO Well established practice collected $490,000 in 2011 on 3-day week. 2+ days of Hygiene.

6026 SACRAMENTO 2011 collected $825,000 on 3-day week. Practice coupled with facility and location can do much more. Bring in specialists. Strong foundation can be developed into busier practice.

6027 PLEASANTON Collected $500,000 with Profits of $260,000 in 2011. Office remodeled 3-years ago at cost of $60,000. Nice "Town & Country" feel. Adec delivery systems.

6028 BERKELEY'S ALTA BATES MEDICAL VILLAGE 2011 collected $525,000. Collections for first 6-months of 2012 have practice tracking $600,000. Busy Hygiene schedule. SOLD

6029 NORTHEAST CALIFORNIA - ALTURAS Trade in smog and congestion for soaring mountains and close-knit communities. 2012 tracking $600,000 on 3-day week. 3+ days of Hygiene. Strong Recall. Great staff. Beautiful office. 3-ops with Adec delivery systems. Be busy, be happy and take vacations. No worries here. Full price $185,000.

6030 SANTA ROSA AREA 2012 shall again top $800,000. Strong profits. 4-days of Hygiene per week. Digital x-rays. Building optional purchase.

6031 MODESTO Owner retiring. 2012 tracking $430,000 in collections. 4-ops. Bilingual staff.

6032 MODESTO Currently collecting $520,000+ with Available Profits of $210,000. 3-days of Hygiene.

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NORTH SAN DIEGO BEACH CITY High identity dental building included in sale. Absentee senior Seller. Grosses $800,000+ plus in 2011. $1,000,000+ previously when Owner was active. Needs hands on Successor. Can be $1,000,000+ again.

TEMECULA - MURRIETA Senior Dentist grosses $750,000. Classic 4 Op office. Cash & indemnity - no PPO's. Take to $1,000,000 by adding PPO's. When Seller was younger, always did a Million. Only $585,000.

HEMET - TEMECULA HMO. GP and Ortho. Fantastic high identity location. Will do over $1 Million with right Buyer. Total price $550,000.

REDLANDS Gross $20,000 per month. One of last chances to open in this beautiful city. Single story professional plaza. Major freeway exit. State-of-art office with 5 Ops. Full price $250,000.

ORANGE COUNTY BEACH CITY Senior Seller will assist Dentist with Specialist Team to take to $ 2 Million first year. Fantastic opportunity.

PALM SPRINGS Established 25 years. Valuable high identity Dental Building included in sale. Gross $1,200,000. Five Ops with room for more. Smooth Transition assured.

BALDWIN PARK Senior conservative Lady Dentist with high identity free-standing 1,000 sq.ft. 3-Op Dental Building. Young Buyer will do $500,000 first year. Full price for building and practice is $750,000.

LAMONT - ARVIN Dental Building and practice. Some HMO. Gross $30,000+ per month on two days. 4 Ops. Next to McDonalds. Full time DDS will gross $500,000 per year.

AT INTERSECTION OF 210 & 57 Gross $1.2 Million. Emergency sale. Seller will assist in financing.

LANCASTER Established 50 years in center of city. Home of Space Shuttle. Good growth area. 2,800 sq.ft., high-identity free standing building. 6 Ops. Manager says "motivated Successor will do $1 Million." Needs TLC. Full Price $350,000.

PALMDALE Great Practice. Shopping Center. Gross $50,000 per month.

DOWNEY - BELLFLOWER High identity. Corner Strip Shopping Center. Gross $400,000. 6 Ops, 4 equipped. This is a $1 Million 2-shift Location. Full Price $350,000

PALMDALE Emergency Sale. 4 Ops. Full price $200,000

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CLASSIFIEDS, CONTINUED FROM 824

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DENTAL PRACTICE FOR SALE — This is a wonderful opportunity for an associate who is interested in a partial or full purchase. Looking for someone who is proficient in all phases of general dentistry, including molar endo, with at least 5 years of practice experience. This is a well-established successful practice in Simi Valley, Ventura County, emphasizing quality dentistry and patient education. We have 6 operatories, Dexis X-ray, digital Pano, Eaglesoft software, computers and TVs in all ops. No HMOs or Medi-Cal. Please e-mail your resume to simidentalpractice@gmail.com.

DENTAL PRACTICE FOR SALE — Awesome opportunity only $69,900. Because of travel out of state, dental office for sale in Covina. 3 full operatories + 1 plumb. Low overhead rent; 1,640 in a one floor medical building. $180k collection, 2 days a week. Please call 626-965-4210.

DENTAL PRACTICE FOR SALE — Practice located in rural NE California. 5-yr-old equipment, newly remodeled office, 4 OPS, PANO, Nobel Biocare Implant System, and much more. 3d/wk hygiene. Collected $746K in 2010 on 5d/wk, $527K in 2011 on 3d/wk. Great staff, reasonable rent. Asking $175K. For more information e-mail ddspractice4sale@yahoo.com.

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ANTELOPE VALLEY – (7) op comput. G.P. in a free standing bldg. Newer eqt., digital X-rays. Annual Gross Collect $1.5M. Cash/Ins/PPO pts. 20-30 new pts/mos. (50) yrs of Goodwill.
ANAHEIM #3 – (3) op comput. G.P. in a one story prof. bldg.. Gross Collect $20K+/mos on 2 ½ days/wk. Does no advertising. Cash/Ins/PPO pts. Low rent and overhead. **NEW**
BAKERSFIELD #24 – 4 ops/2 eqt'd. G.P. in a strip ctr. Cash/Ins/PPO. Gross $180K p.t. **SOLD**
CENTRAL VALLEY/So. FRESNO COUNTY – (3) op comput. G.P. in smaller town w ltd. competition. Newer eqt. Networked & digital. Dentrix & Dexis. Gross Collect $40K+/mos **NEW**
CONEJO VALLEY – **"TO DIE FOR!" DROP DEAD GORGEOUS!** (3) op comput. G.P. and a Condo. Digital & Chartless. Cash/Ins/PPO pt base. Annual Gross Collect.$500K+ on 3.5 days/wk (10) new pts/mos. Refers out all Endo/O.S. & Perio Surgery. Seller retiring. **NEW**
HACIENDA HTS #1 – (2) op G.P. in a Shop Ctr. Cash/Ins/PPO. 2011 Collect $164K p.t.
HACIENDA HTS #2 – (3) op comput. G.P. Cash/Ins/PPO. Gross Collect ~ $500K/yr **NEW**
IRVINE – (3) op Turnkey office located in a shop. ctr. Newer equipment. Reasonable rent. **NEW**
NORTHRIDGE – (6) op comput. G.P., (5) ops eqt'd. In a remodeled prof. bldg. Cash/Ins/PPO & HMO pts. ~ $2K/mos in cap cks. Annual Gross Collect $400K+ on (2) days/wk. **REDUCED**
PORT HUENEME #2 – Turnkey w charts. (4) ops/(3) eqt'd. G.P. Digital. Strip Ctr. **PENDING**
RESEDA #6 – (3) op comput G.P. located in a prof. bldg. Gross Collect. ~ $140K/yr p.t. Cash/Ins/PPO pts. Digital X-rays & Dentrix. Great starter or 2nd office. **BRING ALL OFFERS**
RIVERSIDE – Clean & well maintained (3) op G.P. in a Shop. Ctr. Retiring DDS works (2-3) relaxed day/wk. Cash/Ins/PPO small % Denti-Cal. Annual Gross Collect $180K. **Back on market**
SAN JOAQUIN VALLEY – G.P. & Bldg. in small town w ltd. competition. (4) op comput. office. Cash/Ins/PPO. Annual Gross Collect $500K+. Very low overhead. Seller retiring. **NEW**
SANTA BARBARA #3 – (3) op comput. G.P. in a prof/med/dental bldg. Cash/Ins/PPO. 8-10 new pts/mos. Gross Collect. $250K+ on a (4) day wk. Digital x-ray. Seller retiring. **PENDING**
SANTA BARBARA #4 – (3) op p.t. G.P. (2) ops eqt'd. 40+ yrs of Goodwill. On main St. **NEW**
So. TULARE COUNTY - PORTERVILLE AREA – (6) op comput. G.P. in a major Shop. Ctr. Exposure/visibility/signage. Cash/Ins/PPO/Kids Denti-Cal pts. Gross Collect. $500K+/yr.
VALENCIA – **DROP DEAD GORGEOUS!** (6) op comput. G.P. Digital X-Rays & Pano. Dentrix and Dexis s/w. CEREC. All the toys and whistles. Newer build out and eqt. 2012 Projected Gross Collect. $800K. 22+ years of Goodwill. Seller has a degenerative condition & is calling it quits before it worsens. Seller will assist with transition. **NEW**
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DR. BOB, CONTINUED FROM 830

the electron and particles that go viral on Facebook like the "quark." Before that, there was the wheel and fire.

It is easy to make fun of scientists when you lack understanding, so that is why I and curious people like me rely on the daily publication of "recent studies" to sort out life's constantly changing mysteries such as the popularity of rap "music."

At the Bureau of Recent Studies, a government entity that acts as a combination think tank and clearinghouse for operational study groups, persons without any visible means of support gather to sift through recent contributions. Their raison d'etre ostensibly is to refute what is already known about the subject under scrutiny. For example, there is no point in conducting a study to examine pure water. For the study to have any impact, headlines would have to announce that "According to a recent study, pure water can kill you. It lacks an essential ingredient to human longevity previously thought to be hops and yeast, but is now revealed to be partially hydrolyzed selenium hydrate." PGSH deficiency according to other recent studies, manifests itself as diarrhea and inability to switch off the *Jerry Springer Show*.

Meeting in secrecy to prevent leaks to Matt Drudge and CNN, the following have been approved for release to the *New England Journal of Medicine, Readers Digest* and *Cosmopolitan:*

Double cheeseburgers, contrary to current thinking, are *good for you*. Studies involving 25 goats ranging in age from 4 months to 10 years, indicate the quality of goatishness improved 37 percent with the introduction of only three cheeseburgers per day into their regular diet. The goats' DNA matches the human genome in only two instances, but new studies may prove this is irrelevant.

The belief that breakfast is the most important meal of the day is apparently fatally flawed. Breakfast primarily consists of these items from the four major Death Groups: caffeine, grease, nitrites, and any political news in the morning paper emanating from within the Washington Beltway. The source of most caffeine manufactured in this country is ZAP!, a subsidiary of the Diehard Battery Company.

Fat is good, skinny is good. Most of the deaths occurring today are happening to the in-between people. According to a recent study, 30 pounds overweight is not only OK, but may sustain you during prolonged famines and periodic biblical locust invasions. Studies suggest that slender individuals seated between two obese persons are 43 percent more likely to be comfortable in current airline seating configurations and are better prepared to survive the flight providing they do not eat any of the airline food, particularly the peanuts.

The Flat Earth Society, in a recent study, concluded that the concept of the sun rising in the east and setting in the west is erroneous and divisive. "East of what?"; "west of what?" it questions. Citing confusion between true and magnetic north, the Deep South and so-called Antarctica, the study recommends these terms be stricken from geography texts and monitored carefully by parents whose children have access to the Internet.

Gravity, according to a recent study, is not a constant and unchanging factor. Studies now show that gravity is a personal phenomenon based on age, not magnetism, the Coriolis Force, or the intrinsic worth of something about to be shattered by dropping to a tile floor. Experiments measuring the length of time it takes elderly persons and young children to pop out of bed in the morning, *even though both are acted upon by the same gravity*, prove that age is the prime factor.

This was later confirmed by stair climbing in a specially constructed 50-story stair climbing facility funded by a federal grant. In order to isolate the gravity factor from possible error induced by air resistance, the study was conducted in a vacuum. Many of the elderly people did not make it to the second story, whereas the children easily rose to the 25th floor before demanding to know if they were there yet and announcing they had to go to the bathroom.

Because the brain, unlike the body, requires no sleep, it tends to wear itself out earlier than, say, nasal mucous glands, often working throughout the night fretting about things better forgotten or postponed until later next month. Many owners of these worn-out brains continue to function physically for many years, holding public offices, driving automobiles, and breeding. It may be possible in a few years to suspend all nightly brain wave activity as many teenagers are able to do already during their waking hours. Reactivation of the cerebral cortex is said to be accomplished by administrating 12 ounces of Red Bull orally, or incorporated in glycerin suppositories.

Smoking, long the whipping boy of scientists and bluenose anti-everything groups has at last regained a measure of respectability according to a new study funded by a coalition of tobacco and cannabis growers. Smokers' claims of relaxation are valid. The studies have revealed that synapses of multiple nerve complexes, once coated with a thin layer of a soporific substance known commonly as "tar," relaxes the entire respiratory system. This "mellowing out" of lungs allows the little cilia in the airways to cease their frantic work until finally the relaxed smoker can take full advantage of a beneficial phenomenon called 'smokers' cough." Nearby people who can't afford the ridiculous prices charged for the combustible elements in cigarettes are then free to enjoy the same degree of satisfaction. "Second-hand smoke," according to recent studies is just as effective as the original, a serendipitous thing that has gained the approval of "Population Zero" groups, who have had little success in their zeal to limit the burgeoning population of the world. Recent historical evidence suggests that this is what Sir Walter Raleigh had in mind all along, a win-win situation the Marlboro Man would have appreciated … had he lived. ■■■■

CDA JOURNAL, VOL 40, Nº10

Science: So Much to Chew On

Double cheeseburgers, contrary to current thinking, are *good for you.*

Robert E. Horseman, DDS

ILLUSTRATION BY VAL B. MINA

Another blow to our national self-esteem has come from a recent study showing that in many areas we are not the greatest country in the world. For example, we are 27th in math, 22nd in science and seventh in literacy. We are still No. 1, however, in overcompensated celebrities and personal cosmetically based obsessions.

Before decamping to another country that is more in line with your expectations, bear in mind that statistics are a fluid phenomenon subject to misinterpretation, manipulation, and bias. In the field of science, especially physics, studies of new concepts and apparent deviations from current wisdom arrive almost daily. Today the LHC (large hedron collider) scientists announce what will be the top scientific achievement in the past 50 years when they isolate the Higg boson, or so-called the "God particle," the most sought-after particle in physics. These are people who conceive of an intangible thing and spend the rest of their lives trying to find proof of its existence. Their counterparts sometimes appear on *America's Got Talent*.

Unlike the Yeti, Sasquatch and assorted UFOs that appear regularly to people who don't live anywhere near you and who are without decent cameras to back up their sightings, scientists look for things that most of us have never imagined, let alone seen. These are things that ought to be there, because their discovery might help explain why we need a word like "proton" that helped define the atom, which, in turn, allowed us to believe in the invisible molecule,

CONTINUES ON 829

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