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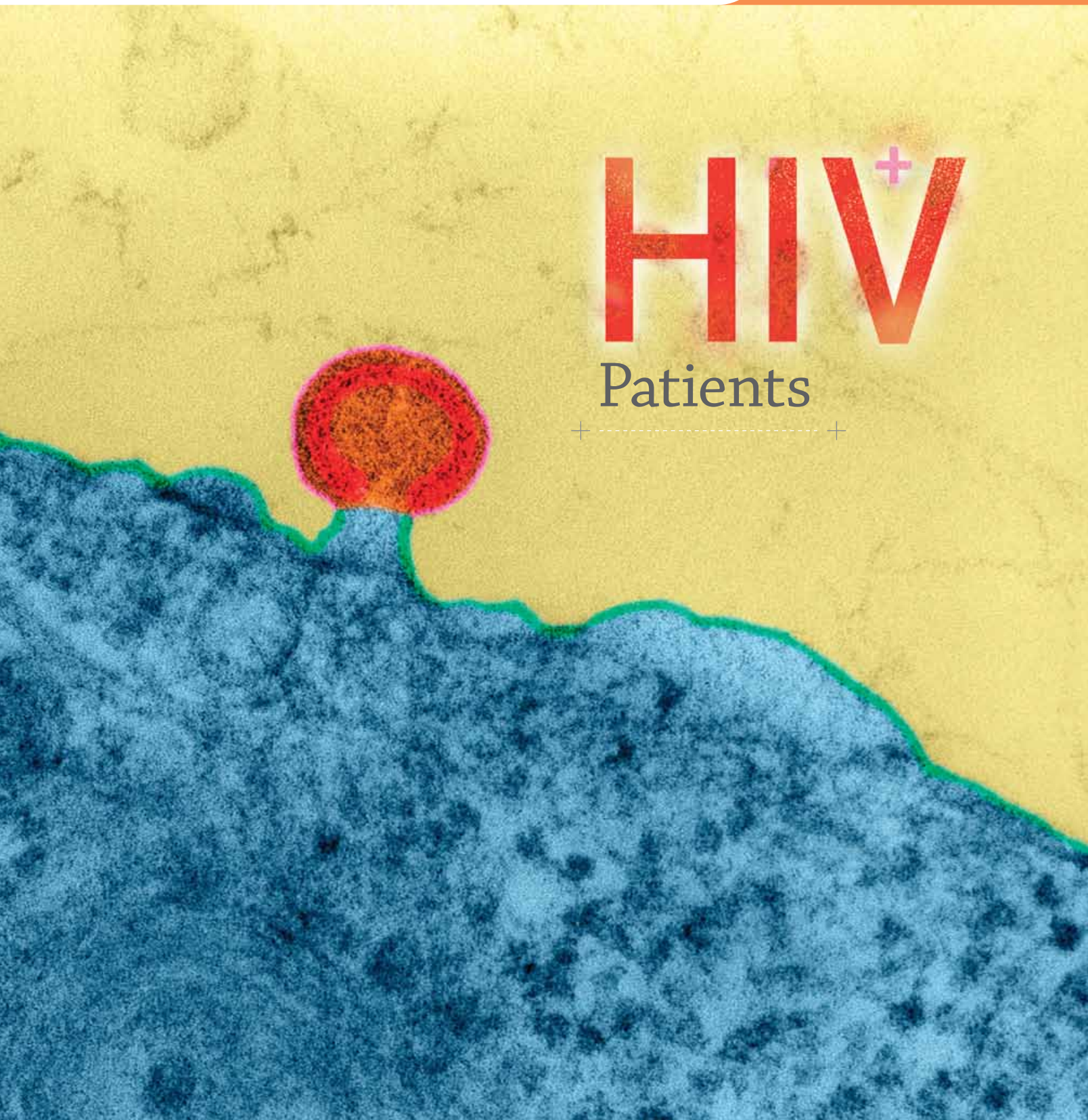

HIV+ Patients

OF THE CALIFORNIA DENTAL ASSOCIATION
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DEPARTMENTS

FEATURES

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Bureaucracies in Collision

KERRY K. CARNEY, DDS

It is a herculean task to keep track of the proposed bills and regulations that may have unintended consequences for dentistry.

How is it that dentistry can get caught up in a piece of federal legislation that was intended for the likes of Charles Schwab and American Express? This is a little investigation into how dentists became collateral damage in the war on identity theft and the regulations pertaining to personal information.

If we set the WABAC (pronounced: way back) machine (apologies to all those unfamiliar with "The Rocky and Bullwinkle Show") for 2003, we can trace how we became entangled with this train wreck.

The 2003 Fair and Accurate Credit Transaction Act is where the story begins. It was estimated that more than 10 million people were victims of identity theft in 2002.[1] In response to the growing concern, Congress adopted provisions to aid victims and prevent identity theft. In designing the new consumer protections, which FACTA would delineate, the normal legislative process was followed. The federal agencies seek public comment from the stakeholders or impacted parties before developing the regulation. During this time, anyone can submit written comments to the agency. After considering the comments, the agency issues the final rules or regulations. "Properly adopted rules have the same effect as a law passed by Congress."[2]

This is where the problem began. These regulations were intended for the protection of personal information held by large financial and credit institutions. Physicians and dentists were not mentioned. The FDIC and FTC were the primary players. Security officers in large financial institutions were the ones testifying or writing comments. The possibility that these regulations might apply to dentists was overlooked by almost everyone. Certainly this possibility did not show up on the American Dental Association's radar until much later.

The Red Flags Rules became law on Jan. 1, 2008, but enforcement was delayed until Sept. 1, 2008. The first alert at the ADA came in July 2008 from a constituent executive director who had been approached by a company offering help for dentists trying to comply with the Red Flags Rules. The entrepreneurial spirit had spurred some individuals to realize that the following FTC definition could include dentists, physicians, and many other small business owners as "creditors."

"A creditor is any entity that regularly extends, renews, or continues credit; any entity that regularly arranges for the extension, renewal, or continuation of credit; or any assignee of an original creditor who is involved in the decision to extend, renew, or continue credit. Accepting credit cards as a form of payment does not in and of itself make an entity a creditor … Where nonprofit and government entities defer payment for goods or services, they, too, are to be considered creditors. Most creditors, except for those regulated by the federal bank regulatory agencies and the National Credit Union Administration, come under the jurisdiction of the FTC."[3]

Basically, if you do anything other than accept payment in full at the time of service, you are by definition a creditor and subject to the Red Flags Rules. By September 2008, an FTC attorney wrote an opinion that interpreted the definition to include physicians and dentists. (This was the first specific reference to physicians and dentists.) The American Medical Association wrote a letter objecting to the interpretation by the end of that month. The FTC did not respond to the AMA's inquiry until February 2009. The president of the ADA also objected to the interpretation. The only action on the FTC's part has been to delay enforcement.

By April 2009, the decision was made to go directly to the Small Business Committee and appeal based on the Regulatory Flexibility Act of 1980. A letter was written to the FTC requesting a delay of one year in order to assess the impact of the rules on the 177,000 dentists who would be affected by the rules. Dentists had not been solicited for input during the public comments section of the proceedings. The Congressional Doctors Caucus has also become interested in the situation. The Red Flags Rules enforcement has been delayed again until Aug. 1, 2009.

Once it became clear that dentists would be considered "creditors" by the FTC, the ADA made available to its

members a security package designed to satisfy the requirements of the Red Flags Rules. The package was free to members, downloadable, and easy to find on California Dental Association's Practice Support Web Site. This is exactly what we expect our organizations to do to help make our professional lives easier.

It would have been better had the ADA recognized that the proposed rules could be interpreted to include dentists. The organization could have then moved to specifically exclude dentists from enforcement and been spared the energy and attention the Red Flags Rules have demanded. Every year there are literally thousands of pieces of legislation proposed at the federal and state level. It is a herculean task to keep track of the proposed bills and regulations that may have unintended consequences for dentistry. But that is the kind of omniscience we have come to expect of our organizations.

One of CDA's greatest assets is its legislative team. They try to be out in front of every issue that might possibly impact your everyday practice, your professional life or the welfare of your patients. Our legislative team tries to recognize potential problems and address them before they become codified in state law. Their goal is an absence of problems for our members and their patients. When they do their job perfectly, you may never know it. ■■■■

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Address comments, letters, and questions to the editor to kerry.carney@cda.org.

Deborah Zemke

Getting to the Bottom of Patients' Fears

An estimated 80 percent of all American adults admitted they fear going to the dentist and of those, more than half say anxiety grips them so much that it prevents them from climbing into the dental chair.

The findings of the American Association of Endodontists' survey are part of the group's effort to tackle the anxiety that is so deeply rooted in the American psyche.

"There are many misconceptions about dental visits and root canal treatment, in particular," said Louis E. Rossman, DMD, AAE president.

Speaking at its recent third annual Root Canal Awareness Week, which took place in the spring, Rossman said the effort "is aimed at dispelling these long-standing myths and hopefully reducing anxiety around the procedure. Patients

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"The acids in wine create rough spots and grooves that enable chemicals in other beverages that cause staining, such as coffee and tea, to penetrate deeper into the tooth."

MARK WOLFF, DDS, PHD

White Wine Has Similar Stain Effect as Red Wine

Contrary to popular belief, white wine can cause teeth to take on dark stains.

Using a spectrophotometer to measure color intensities, dental researchers at New York University used two sets of six cow teeth and soaked them in white wine for one hour before plunging them into black tea. (Bovine teeth have similar surface to human teeth.)

The result? Those teeth had more noticeable darker stains than the comparison teeth that were soaked in water before being immersed in the tea.

"Dipping teeth in white wine for one hour is similar to the effect of sipping the wine with dinner," said Mark Wolff, DDS, PhD, professor and chairman of the Department of Cariology and Comprehensive Care at New York University College of Dentistry, who oversaw the study. The findings were presented at the annual meeting of the International Association for Dental Research in Miami.

"The acids in wine create rough spots and grooves that enable chemicals in other beverages that cause staining, such as coffee and tea, to penetrate deeper into the tooth," said Wolff. Still, red wine continues to beat out white wine when it comes to staining teeth, he said in a press release.

"Red wine, unlike white, contains a highly-pigmented substance known as chromogen," Wolff said, adding that connoisseurs concerned about staining need not cut back on their consumption. "The best way to prevent staining caused by wine, as well as other beverages, is to use a toothpaste containing a whitening."

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Fewer Complications With Implant Therapy Than Hemisected Molars

A study in the *Journal of Oral Implantology* recently evaluated long-term outcomes of two treatment options in a private practice setting and found that implant therapy has fewer incidences of complications than hemisected molars.

When mandibular molars are periodontally involved, the choices of treatment can include implants or hemisection of the molar and tooth extraction. Two groups were in the study and followed for four years for maintenance after first being treated. One group had 32 individuals with a total of 56 mandibular molars treated with hemisection. The other group had 28 patients receiving 36 implants replacing the mandibular molars. All participants had grade III furcation involvement of the first or second mandibular molars.

With patients in the implant group, four implants had complications and one was considered nonsalvageable. With the hemisected molars group, however, 18 had complications and a dozen of those were considered nonsalvageable. Also according to a press release, in both groups, teeth or implants that experienced complications presented a larger percent loss of clinical attachment level per year.

To read the full text of this article, "Mandibular Molar Root Resection Versus Implant Therapy: A Retrospective Nonrandomized Study," go to allenpress.com/pdf/ORIM35.2_10.1563-1548-1336-35.2.pdf.

FEAR, CONTINUED FROM 449

need to understand that root canals actually relieve tooth pain and are much more comfortable today, thanks to new technology and endodontists' specialized training."

In addition to debunking myths about root canal treatment, the annual event also is a way to highlight endodontics as a specialty.

Participants, according to the survey, said getting a root canal was slightly less scary (54 percent) than being on an airplane in a storm (57 percent), with public speaking spiking at only 42 percent. The dread of pain reigned as the top motivation for avoiding the dentist, with root canal treatment the most frightening dental procedure.

One-third of the respondents admitted to surveyors that their preconceived notions about root canal treatment were based on someone else's experience and not their own. What's more, many reported a pleasant encounter when their treatment was performed by a specialist.

"Dealing with patient fear isn't unique to endodontists, but because of the root canal's reputation, we have significant experience with anxious patients," said Rossman. "Given that poor oral health and tooth loss are linked to many serious medical conditions such as heart disease, stroke, and diabetes, we are committed to helping people overcome their fears to ensure they prioritize necessary dental care."

The AAE has several recommendations for the most trepidatious patients regarding dental procedures. According to a press release, patients can:

- Talk about fears. The patient should establish a "stop" signal in case they become anxious and need a time out during the procedure.
- Ask as many questions as they need to feel comfortable. Obtain a brochure explaining the process or get referred to a specialist to describe each step.
- Bring a personal music device or request the dentist play soothing music during the procedure if they are among the one in every five patients who are frightened by the sound of dental instruments.
- Request, like Erich Nitzsche, to be referred to a specialist, like an endodontist, for a more complicated procedure such as a root canal.

Holding onto anxiety he experienced as a child, Nitzsche, now 48, was nervous when his dentist said he needed a root canal. After talking with his dentist, the Massachusetts resident decided to have the procedure done by an endodontist.

"I felt more confident about having a root canal performed by a specialist," said Nitzsche. "My endodontist helped to ease my anxiety by explaining the procedure in simple terms so I knew what to expect every step of the way. The actual procedure was painless, which totally eliminated my anxiety."

AGD and Sirona Partnership to Benefit Members

Now that the Academy of General Dentistry and Sirona Dental Systems have joined forces, AGD members will have a chance to benefit from computer-aided designer and computer-aided manufacturing technology in the dental office.

This year-long sponsorship will provide continuing dental education programs and materials for AGD members aimed at raising awareness for CAD/CAM technology.

"This partnership between Sirona and the AGD is an exciting opportunity to combine two forces, an organization dedicated to continuing dental education and a company committed to providing the best in dental equipment and services," said Michael Dunn, Sirona's Clinical CAD/CAM division marketing manager.

Over the years, technological advances in the dental industry have provided dentists with more efficient ways to detect decay and bone loss and to help with root canals. This progression has allowed dentists to provide more precise tooth whitening procedures and better treatment of gum disease therapy to their patients. Dental technology also has offered patients an inside look at their teeth and a better image and understanding of the state of their oral health.

"Sirona's technological innovations and expertise will enable AGD members to develop, shape, and enhance their practices with next level dental equipment and knowledge that will ultimately benefit the oral health of their patients," says Paula S. Jones, DDS, AGD president. "We are pleased to partner with a company that takes great pride in creating and providing products to help advance the dental community and the public."

General dentists who are members and their office staff can attend a CAD/CAM technology related course, which will be held July 8-12 at the AGD's 2009 Annual Meeting & Exhibits in Baltimore, Md. Additionally, as an official sponsor of the AGD's speaker's bureau, Sirona will sponsor two courses focusing on this technology that AGD constituents and their local members will have an opportunity to participate in and earn continuing education credits.

C.E. Course Designed to Nurture Leadership Skills

The American Dental Association's Continuing Education Online program offers a self-guided course for dentists who want to hone their leadership skills.

"Understanding Associations" can help dentists identify their leadership style, conduct effective meetings, set goals, and gain a better understanding of the professional association's role in the political process, according to a press release. There is no cost for the course and is offered just to ADA members.

Nine modules comprise the program. Among them are Associations 101, Effective Leadership, Strategic Planning, Association Committees, Formation and Procedure, Recruitment and Retention, Finances and Budgeting, Communications, Diversity and Political Action.

Dentists can work at their own pace, and those who complete the entire series within one year earn three continuing education credits. It is suggested that those who take the course check with their state dental board to determine whether these credits will be accepted by their dental licensing jurisdiction.

For more information about "Understanding Associations" and other Committee on the New Dentist leadership development offerings, contact the ADA at 800-621-8099, ext. 2779; newdentist@ada.org, or go to ada.org/goto/newdent.

AGD Issues White Paper on Access to Care

The Academy of General Dentistry recently reminded legislators that dentistry is very different from the practice of medicine and these differences must be taken into consideration in any effort by Congress to enact an overhaul of the health care system.

As such, the AGD created a white paper on access to oral health care to provide real and workable solutions for improving access to oral health care as part of any broader health care reform undertaken by the 111th Congress, according to a recent press release.

"Adoption of the specific recommendations included in the white paper with regard to each of these broad subject areas is likely to dramatically increase access to oral health care and reduce the incidence of dental disease and associated systemic ailments," said Paula S. Jones, DDS, FAGD, AGD president. "The AGD hopes that the Congress will seriously consider the solutions outlined in the white paper in preparing health care overhaul legislation."

"In order to bridge the gap between those who receive proper dental attention and those who do not, professional organizations, as well as local, state, and national governments and even community organizations must all make a collaborative effort," she said, adding the AGD has put forth several well-thought out solutions to bridging the gap, many of which urge greater funding for dental care through Medicaid and Title VII programs, encourage practice in underserved areas through loan forgiveness programs, grants and scholarships, as well as promote recruiting dental school applicants to commit to working in underprivileged areas upon graduation.

Titled "Increasing Access to and Utilization of Oral Health Care Services," the white paper offers more than 30 recommendations in eight broad subject areas. Some included are:

- attracting students to careers in dentistry;
- enhancing existing federal training programs;
- incentives for establishing dental practices in underserved areas;
- improvements to the Medicaid program relative to the provision of oral health care;
- continuing education and cultural awareness training for general dentists;
- public health enhancements and health literacy improvements;
- support for the "dental team" concept; and
- greater collaboration between private organizations and government entities.

"The AGD white paper provides the dental profession and policy makers with 30 substantive and workable solutions to access to care that can be implemented by organizations, governmental entities, and communities of interest," said John T. Sherwin, DDS, FAGD, chairperson, AGD Task Force on Access to Care.

"With the solutions the AGD has proposed in concert with as well as those implemented by other organizations and branches of government, all patients can get the comprehensive, quality dental care that will make their overall oral health substantially better," said Sherwin. "The AGD asks federal lawmakers and administration officials to consider and include these suggestions in any comprehensive health care reform discussions and debates."

Said Jones, "The recommendations contained within the white paper, if implemented, will lay a solid foundation to protect the public and provide quality oral health care to all Americans, not just those who can afford care. The AGD understands the importance of preventive measures and oral health, and by creating solutions that give the underserved a better chance at receiving care, we hope for a tremendous effort to help those in need."

Honors

Jane Weintraub, DDS, MPH, has been honored with the 2009 International Association for Dental Research's H. Trendley Dean Memorial Award for her meritorious contributions to epidemiology and public health.

She holds the Lee Hysan Chair in Oral Epidemiology and Dental Public Health at the University of California, San Francisco, School of Dentistry. Currently, she is principal investigator and director of the National Institutes of Health-funded Center to Address Disparities in Children's Oral Health, which was recently renewed for $17 million.

Jared Fine, DDS, MPH, is the recipient of the 2008 Myron Allukian Jr. Lifetime Achievement Award for Outstanding Achievements in Community Dental Health.

Fine, dental health administrator for the Alameda County Department of Public Health in Oakland, was recognized for his exemplary service to communities, distinguished leadership, creativity in promoting essential public health services, achieving results through collaborative efforts with other health professionals and organizations, and demonstrating sensitivity to addressing the needs of special populations.

Richard Jordan, DDS, PhD, has been named associate dean for research at the University of California, San Francisco, School of Dentistry. Jordan will oversee the school's research and graduate affairs, and will work closely with the dean, associate deans, department chairs and others to fulfill the school's research mission. He will continue his current positions as professor of oral pathology in the UCSF School of Dentistry's department of orofacial sciences, and as professor of pathology in the UCSF School of Medicine.

Gene therapy appears safe to regenerate gum tissue

A method for gene delivery that appears to be safe for regenerating tooth-supporting gum tissue has been developed by University of Michigan scientists.

Gene therapy is an accepted, viable therapeutic concept, but safety has been a significant challenge, said William Giannobile, professor at the U-M School of Dentistry. A number of years ago, a teen died receiving the adenovirus during a gene therapy clinical trial at the University of Pennsylvania. While Giannobile's university also uses the adenovirus, the difference is U-M's approach in a lower dose and local application.

Instead of injecting the genes into the blood vessels, where they can then travel through the bloodstream and result in unexpected and sometimes fatal reactions, U-M scientists put the genes on a localized area, directly on the tissue during surgery much like a paste, according to a press release.

"What the U-M study showed is (the topical method) is very well contained and doesn't distribute throughout the body," said Giannobile, who also directs the Michigan Center for Oral Health Research and has an appointment at the U-M College of Engineering's Department of Biomedical Engineering. "This approach alleviates the safety concern about negative reactions within the body.

"When the teenager died, it got into his bloodstream and he reacted to it. It was tragic. This is the first study of periodontal disease therapy that demonstrates the distribution of these genes is very safe, suggesting that it could be used in the clinic for clinical application," Giannobile said.

"Our study doesn't look at all the safety concerns, but certainly this is very important to the field," he continued. "The two clinical applications to date where it shows potential are periodontal disease and diabetic wounds. Maybe the reason for this is that both diseases result from a compromised or a defective healing environment."

The study was supported by the National Institutes of Health and the AO Foundation. Using this new gene delivery method in human clinical trials is the next step for the U-M team; planning for these studies starts next year, Giannobile said.

Co-authors of "Adenovirus Encoding Human Platelet-Derived Growth Factor-B Delivered to Alveolar Bone Defects Exhibits Safety and Biodistribution Profiles Favorable for Clinical Use," were Po-Chun Chang, Joni Cirelli, Yang-Jo Seol, Qiming Jin, Jim Sugai, Nisha D'Silva, and Theodora Danciu. The paper appeared in the May issue of *Human Gene Therapy*.

UPCOMING MEETINGS

2009	
Sept. 11-13	*CDA Presents The Art and Science of Dentistry*, San Francisco, 800-CDA-SMILE (232-7645), cda.org.
Sept. 30-Oct.-4	American Dental Association 150th Annual Session, Honolulu, Hawaii, ada.org.
Nov. 8-14	United States Dental Tennis Association fall meeting, Scottsdale, Ariz., dentaltennis.org.
2010	
April 11-17	United States Dental Tennis Association, Amelia Island Plantation, Fla., dentaltennis.org.
April 26-28	National Oral Health Conference, St. Louis, Mo., nationaloralhealthconference.com.
May 13-16	*CDA Presents the Art and Science of Dentistry*, Anaheim, 800-CDA-SMILE (232-7645), cda.org.
Sept. 24-26	*CDA Presents the Art and Science of Dentistry*, San Francisco, 800-CDA-SMILE (232-7645), cda.org.
Nov. 7-13	United States Dental Tennis Association, Grand Wailea, Hawaii, 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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TMJ Dislocation Treatment Method Developed

A new treatment that combines epinephrine and lidocaine, which is then administered to the deep temporal nerve may spell relief in the treatment for temporomandibular joint dislocation.

An estimated 10 million people are affected at any one given time, according to the TMJ Association, which added that the condition is especially common in women of childbearing age and children.

Traditional treatment has been limited to the application of force, where the jaw is forced back and down into the joint, and in severe cases, general anesthesia alone or combined with surgery is required, according to a press release. However, unbearable pain, reflexive muscle guarding, and muscle spasms can present significant barriers to the manual reduction method. While muscle relaxants can be used to alleviate these obstacles, they usually come in pill form, which may be not able to be swallowed when the jaw is in a locked position.

The new treatment involves a needle inserted near the mandibular notch until the sphenoid bone is encountered, making anesthesia easy to administer. Manual reduction then can be achieved with some ease.

The study was recently published in *Anesthesia Progress*. To read the entire article, "Use of Masseteric and Deep Temporal Nerve Blocks for Reduction of Mandibular Dislocation," go to allenpress.com/pdf/ANPR56.1_10003-3006-56-1-9.pdf.

New Evidence of Periodontal Disease Leading to Gestational Diabetes

Expectant moms who have periodontal disease are far more likely to develop gestational diabetes, regardless if they are not smokers or drink alcohol. The recent study, conducted by dental researchers at New York University College of Dentistry, emphasized how critical it is to achieve and maintain good oral health.

Led by Ananda P. Dasanayake, BDS, MPH, PhD, a professor of Epidemiology and Health Promotion at New York University College of Dentistry, the team eliminated smoking and alcohol use among a group of 190 pregnant women in Sri Lanka, where a combination of cultural taboos and poverty deter the majority of women from smoking and drinking. The team also collaborated with the Faculty of Dental Sciences at the University of Peradeniya, Sri Lanka.

Results from this study bolster earlier findings, also led by Dasanayake, that found evidence that pregnant women with periodontal disease are more likely to develop gestational diabetes than their counterparts who have healthy gums.

The previous study, which followed 256 women through their first and second trimesters, showed that 22 of the women developed gestational diabetes. In comparison to other women in the study, 22 had considerably elevated levels of inflammation and periodontal bacteria. That research was published in the April 2008 issue of the *Journal of Dental Research*.

In the new study, which was conducted over a year, more than one-third of the women reported bleeding gums while brushing their teeth. These expectant moms were given a glucose challenge test especially to screen for gestational diabetes as well as a dental examination.

Dasanayake said those same women also had the highest levels of glucose in their blood, adding that he expected the final data to show that between 20 and 30 of the women had developed gestational diabetes.

"In addition to its potential role in preterm delivery, evidence that gum disease may also contribute to gestational diabetes suggests that women should see a dentist if they plan to get pregnant, and after becoming pregnant," Dasanayake said. "Treating gum disease during pregnancy has been shown to be safe and effective in improving women's oral health and minimizing potential risks."

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Bilateral Vestibuloplasty Utilizing Palatal Soft Tissue Grafts in an HIV-Positive Patient

SHILPA KOLHATKAR, DDS, MDS; SUZANNE MASON, BS; JAMES R. WINKLER, DDS, PHD; AND MONISH BHOLA, DDS, MSD

ABSTRACT The dental treatment of HIV-positive individuals has undergone a change from the management of HIV-associated oral lesions to routine comprehensive dental care. To the authors' knowledge, this is the first report in which palatal soft tissue grafts were used for vestibuloplasty in an HIV-positive patient with a shallow mandibular vestibule. No adverse sequelae were seen during follow-up.

AUTHORS

Shilpa Kolhatkar, DDS, MDS, is an assistant clinical professor and director of the Objective Structured Clinical Examination at the University of Detroit Mercy, School of Dentistry; a diplomate of the American Board of Periodontology, and is in private practice in Troy, Mich.

Suzanne Mason, BS, graduated from Michigan State University with a degree in physiology and is currently a third-year dental student at the University of Detroit Mercy School of Dentistry.

James R. Winkler, DDS, PHD, is professor and chair of the Department of Periodontology and director of Postgraduate Programs at the University of Detroit Mercy, School of Dentistry; a diplomate of the American Board of Periodontology, and is in private practice Farmington Hills, Mich.

Monish Bhola, DDS, MSD, is an associate professor and director of the Graduate Periodontics Program at the University of Detroit Mercy, School of Dentistry; a diplomate of the American Board of Periodontology, and is in private practice in Waterford, Mich.

ACKNOWLEDGMENT

The authors wish to thank Dr. Gina Biersack, Cascade, Mich., for her invaluable assistance in the management of this case.

Since the beginning of the AIDS epidemic, oral manifestations have been observed as an underlying component of this immunocompromising disease.[1-3] In fact, oral lesions were frequently used as defining criteria for AIDS diagnosis and disease progression.[4-6] The use of combined antiretroviral drug regimens, known as highly active antiretroviral therapy, HAART, has substantially increased the life expectancy and the quality of life of HIV-positive individuals and altered the prevalence and severity of many HIV-associated oral lesions.[7-10]

Although the effects of HAART therapy on oral lesions are varied, the management of oral health in HIV-positive individuals has moved from primarily the management and treatment of HIV-associated oral lesions to providing overall comprehensive dental care as seen in the general population.[11-22]

A variety of HAART-related systemic and local factors such as xerostomia, salivary gland disease, hyperlipidemia, increased risk for cardiovascular disease, diabetes, and osteonecrosis have the potential to increase the risk of tooth loss due to increases in caries and periodontal disease.[11,23-32]

The dramatic increases in the life expectancy of HIV-positive individuals, combined with the potential for increased tooth loss have led to an increased need for tooth replacement. Routine dental care is the primary intraoral need faced by the HIV-infected individual today.

Choromanska and Waszkiel determined that as the duration of a patient's HIV infection increased, the percentage of patient's with prosthetic dentures in both dental arches also increased.[16] Prior to the fabrication of a dental prosthesis many patients need preprosthetic surgical procedures including vestibu-

FIGURE 1. Preoperative image of the area with minimal vestibular depth.

FIGURE 2. A 17 mm x 8 mm x 1.5 mm graft harvested from the maxillary right molar and premolar region.

FIGURE 3. Even thickness of the graft was ensured by trimming any fat or tissue tags from the connective tissue portion of the graft.

loplasty. The goal of these procedures is to increase the vestibular depth. This increased depth aids in denture retention by limiting traction produced by muscular and fibrous attachments.

A variety of surgical techniques have been used for vestibuloplasty including submucosal vestibuloplasty, secondary epithelization vestibuloplasty, Edlan-Mejchar vestibuloplasty, and soft tissue grafting vestibuloplasty.[33-35] Various types of grafts like split-thickness skin grafts, buccal mucosal grafts and palatal grafts can be used for these procedures.[33,34] Over the past 20 years, palatal soft tissue grafts have been routinely used for vestibular extension procedures.[34]

This graft material is utilized frequently because it is highly keratinized and well-suited for supporting dentures.[34] Recently, reports have also been published using an acellular dermal matrix and a tissue-engineered dermal replacement for vestibuloplasty procedures.[36,37] To the authors' knowledge, this is the first report of the treatment of an HIV-positive patient with a shallow mandibular vestibule in which palatal soft tissue grafts were used for vestibuloplasty.

Case Report

A 51-year-old white male was referred for vestibuloplasty in the mandibular anterior region to facilitate denture retention. Medical history revealed he was HIV-positive. He was diagnosed in 1994 and since then has been under the regular care of a physician. His laboratory analysis prior to surgery revealed a CD4+ T-lymphocyte count of 385 cells/mm3, viral load of 3,500 copies/ml, platelet count 150,000 platelets/ml, absolute neutrophils of 3.3 x 103/µL, and a total white cell count of 5.9 x 103/µL. His hemoglobin was 15.6 g/dL and the hematocrit was 47.5 percent.

The patient's medications included tipranavir, emtricitabine and tenofovir disoproxil fumarate, ritonavir, temazepam, fluoxetine hydrochloride, and oxycodone and acetaminophen prn pain. The patient also reported a 35-pack a year smoking habit.

The intraoral clinical exam revealed inadequate vestibular depth in the mandibular anterior region (**FIGURE 1**). The patient was completely edentulous and was wearing a maxillary complete denture. The treatment plan was to use palatal soft tissue grafts to increase the vestibular depth. The patient was educated about the surgical procedure, the postoperative healing process, and postoperative care. Bilateral palatal soft tissue grafts were harvested from the maxillary right and left premolar, and the canine region.

Surgical Procedure

After obtaining profound anesthesia in the mandibular right quadrant (2 percent lidocaine HCl with 1:100,000 epinephrine, Benco Dental Supply Co., Wilkes-Barre, Penn.), a scalpel blade (15 C) was used to make a partial thickness incision corresponding to the mucogingival junction. The incision was started in the first premolar region and continued anteriorly to the midline. A periosteal fenestration was performed at the most apical aspect of the recipient site. A rectangular soft tissue graft measuring 17 mm x 8 mm x 1.5 mm was harvested from the maxillary right molar and premolar region (**FIGURE 2**).

The connective tissue surface of the graft was inspected and any uneven portions were trimmed using a new 15 C blade (**FIGURE 3**). The graft was transferred to the recipient site and secured using 5-0 Polyglactin 910 (Vicryl sutures, Ethicon, Inc., Somerville, N.J.,) and 4-0 chromic gut sutures (4-0 Chromic Gut sutures, Ethicon, Inc.).

First the graft was stabilized using interrupted sutures (**FIGURE 4**), then periosteal strapping sutures were placed to ensure close proximity of the graft to the recipient bed (**FIGURE 5**). A similar procedure was then completed on the mandibular left arch using a 15 mm x 8 mm x 1.5 mm graft. Both grafts were sutured together at the midline using interrupted sutures (**FIGURE 6**) and firm digital pressure was placed on both the donor and recipient sites for four to five minutes until hemostasis was obtained.

The patient was advised to take four 200 mg ibuprofen prn pain and use a 0.12 percent chlorhexidine gluconate rinse twice daily for two weeks. He was instructed to avoid any movement of the lower lip and to avoid any muscular traction to the surgical site. The donor site was protected by the maxillary complete denture. He was also instructed to refrain from smoking. The patient was seen for a follow-up appointment at two weeks and all remaining sutures were removed. The patient was seen for another appointment at four weeks. Lower denture fabrication was started six weeks after the surgery.

FIGURE 4. The graft was stabilized by suturing the coronal portion of the graft to the coronal aspect of the recipient site using interrupted sutures.

FIGURE 5. Periosteal strapping sutures using 4-o chromic gut were placed to ensure close proximity of the graft to the recipient bed.

FIGURE 6. Suturing of both grafts including the use of periosteal strapping sutures. The two grafts were also sutured together at the midline.

FIGURE 7. Healing at two weeks postoperative.

FIGURE 8. Postoperative healing at eight months. Note the minimal shrinkage of the soft tissue grafts as well as the deepened vestibule.

Clinical Observations

The patient reported he had refrained from smoking for three days following the surgery, and had smoked about half a pack for the next 10 days. However, in spite of this, healing at both the donor and recipient sites was uneventful. The patient reported moderate discomfort for the first three days, which gradually reduced over the next week. At two weeks, the appearance of the recipient site was consistent with normal healing. The grafts looked vascularized with good perfusion and the borders of the graft appeared slightly erythematous (**FIGURE 7**).

At four weeks, the borders of the graft were less erythematous. At the eight-month follow-up visit, there was a substantial increase in the depth of the vestibule and a marked increase in the amount of keratinized gingiva (**FIGURE 8**). There appeared to be minimal graft shrinkage.

Discussion

To the authors' knowledge, only one other publication has reported on soft tissue grafting in an HIV-positive patient.[38] In that report, a connective tissue graft was performed on tooth No. 25 in a 26-year-old male patient who was diagnosed with moderate hemophilia A, HIV, and chronic hepatitis C. The recipient site healed uneventfully and root coverage of 85 percent was obtained. However, postoperative complications included sloughing and spontaneous bleeding at the donor site, which resulted in the need for additional Factor VIII concentrate.

Studies comparing the healing response after soft tissue grafting procedures in HIV and non-HIV positive patients are not available. However, various published reports have discussed implant placement in HIV-positive patients with good success.[15,17-19,21,22] In a large prospective study performed by Stevenson et al., edentulous subjects each had two dental implants placed in the anterior mandible to support an overdenture.[15,29] Twenty of these subjects were HIV-positive (test group) and nine were HIV-negative (control group). Five HIV-positive subjects dropped out of the study due to medical reasons. Each implant was evaluated six months after loading to assess the outcome of treatment. The results showed that regardless of the subject's HIV status, all implants had successfully integrated after six months.

Additionally, none of the implants placed showed signs of mobility, pain, bleeding, significant bone loss or infection. It is worth noting that some subjects in the test group also had additional risk factors including cigarette smoking and diabetes. This study illustrates that dental implants have a predictable outcome for HIV-positive individuals and suggests that HIV-positive patients are at no higher risk for developing postoperative complications following invasive surgical procedures.

A report by Campo et al. assessed postprocedural complications in 101 patients who were HIV-positive.[14] The procedures used in this study were classified as being invasive or not invasive. Overall, the complication rate in the HIV-positive patients was found to be 2.2 percent. A large study conducted by Powell et al. investigated 1,053 surgical procedures performed in 395 patients.[39] A wide variety of surgical procedures were performed by practitioners of varying skill levels on patients characterized as American Society of Anesthesiologists physical status classification I or II.[40] Overall, the infection rate was 2.09 percent, which is similar to other studies reporting on postoperative infection.[41-43]

A common misconception exists that due to the disturbances in an HIV-positive patient's immune function, these individuals may have poor wound healing and frequent infection following invasive surgical procedures. This has led some clinicians to avoid performing surgical procedures on HIV-positive patients altogether. Regardless of this belief, HIV

status alone is not an indication for the routine use of antibiotic prophylaxis. The authors' patient's CBC with differential values did not predispose him to an increased risk of bacterial infection. The lack of postoperative complications in this patient are consistent with the findings of others with regard to not using antibiotics during invasive oral procedures.[44,45]

Conclusions

Based on the results of this case report, vestibuloplasty using palatal soft tissue grafts was demonstrated to be a successful surgical procedure in an HIV-positive patient despite his lack of compliance with postoperative instructions regarding smoking. The surgery increased the retention and stability of his mandibular denture greatly improving his overall quality of life. ■■■■

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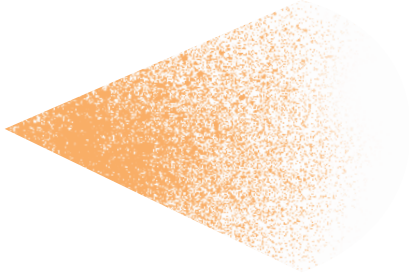

A Microbiologic Investigation Following the Disinfection of Irreversible Hydrocolloid Materials Using the Spray Method

AHMAD GHAHRAMANLOO, DDS, MS; ALI SADEGHIAN, MD, PHD; KEYVAN SOHRABI; AND ALI BIDI, DDS

ABSTRACT Antimicrobial efficacy of three spray disinfectants — 0.525 percent sodium hypochlorite (bleach), deconex and Sanosil — was evaluated on contaminated alginate disks. Disks were sprayed eight to 10 times after rinsing in water for 15 seconds. The samples were then placed into plastic bags containing a sterile moist cotton roll for 10 minutes. The use of 0.525 percent sodium hypochlorite sprayed onto the surface of alginate effectively disinfected 96.6 percent of the samples.

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It has been said that the most biologically contaminated objects to leave the dentist's office for further handling are the dental impressions on their way to the laboratory. Dental impressions get contaminated with microorganisms from a patient's blood and saliva. This makes them noteworthy cross-infection vehicles for hazardous microorganisms. Therefore, the handling of impression materials following their removal from the oral cavity leads to the potential for disease transmission.

Alginate or irreversible hydrocolloid is a common dental impression material in everyday practice. However, these materials, because of their composition, texture and hydrophilic setting mechanisms get easily contaminated with microorganisms present in the oral cavity. Thus, these materials carry significantly higher numbers of bacteria than do elastomeric materials.[1,2] Therefore, establishing a method for disinfecting these materials seems necessary.

FIGURE 1. Precision-machined metal molds.

FIGURE 2. The prepared alginate disks.

Disinfection of impressions, however, can be a challenging task. To be considered efficient, a disinfectant must effectively kill the microorganisms that are transported on the impression without damaging the impression or reducing its accuracy. A wide range of disinfectants are used in everyday practice such as glutaraldehydes, sodium hypochlorite, iodophores, and phenolics. These solutions can be used either in spray form or by immersing the impression in them.[3]

Nonetheless, none of the mentioned solutions or the techniques has become a universally accepted standard. Day by day, the range of disinfectants introduced to the market increases and consequently the number of protocols in use multiplies.[4-6] Unfortunately, appropriate guidelines for impression disinfection are not properly followed.[6]

In the interest of improving compliance, it would appear that storage and transportation of alginate in the moist environment of a sealed bag with the disinfectant sprayed on its surface is a practical alternative. However, studies on disinfection efficiency of irreversible hydrocolloid impressions using various sprays are limited.

This paper is an in vitro evaluation of three different spray disinfectants on irreversible hydrocolloid materials and is designed to provide data regarding the disinfection of dental impressions following removal from the patient's mouth and before entering the dental laboratory to prevent cross-contamination.

Materials and Methods

Three spray disinfectants with different active ingredients were applied in this study. Chloro-Sol Spray (Medtrol, Ill.), deconex Solarsept (Borer chemie, Switzerland), and Sanosil Super 25 (Sanosil Ltd, Feldmeilen, Switzerland) were used in this controlled in vitro study and their antimicrobial efficacy were evaluated on prepared irreversible hydrocolloid disks contaminated with 12 bacterial strains. Chloro-Sol is a sodium hypochlorite solution 0.525 percent; deconex Solarsept is an alcohol-based disinfectant and Sanosil Super 25 is composed of silver and hydrogen peroxide.

Disk Fabrication Method

Regular set alginate (Alginoplast, Heraeus Kulzer) was used in this study. The material was hand mixed according to the manufacturer's instructions, in strict aseptic conditions. For each scoop (8 g) of powder, 19 ml of water was added. Distilled water was used at approximately 23 degrees Celsius. Once the material appeared to be creamy in consistency, the impression material was loaded into prepared metal molds. These molds had an internal diameter of 13 mm and a height of 2 mm (**FIGURE 1**).

The molds were placed on a sterile glass slab and then the impression material was placed into the mold and packed. Alginate was then pressed against a glass slab with balanced pressure. In accordance with the manufacturer's instructions, the material was allowed to set for about three minutes. The disks then were removed from the rings using high-pressure compressed dry air to avoid damaging the surface of the prepared disks during removal. The mentioned steps were carefully applied to all the samples by one of the authors. A total of 792 disks were made (**FIGURE 2**).

Specimen Selection and Collection

A total of 12 bacterial strains were used in this study. Of the microorganisms, six were standard strains obtained from the Persian-type Culture Collection (PTCC), Tehran, Iran. These included *Streptococcus sanguis* (PTCC 1449), *Streptococcus pyogenes* (PTCC 1447), *Streptococcus mutans* (PTCC 1683), *Staphylococcus epidermidis* (PTCC 1114), *Staphylococcus aureus* (PTCC 1112), and *Pseudomonas aeruginosa* (PTCC 1430).

The other six microorganisms were Ghaem Hospital Center clinical isolates. These included *S. epidermidis, S. aureus, Klebsiella pneumoniae, Streptococcus agalactiae,* and *Enterecoccus faecalis.*

All strains were sent to the microbiology laboratory at Ghaem Hospital Center, Mashhad, Iran, and were isolated by morphological and biochemical tests. Each individual strain was cultured on blood agar or MacConkey agar plates (Merck, Darmstadt, Germany) for 24 hours at 37 degrees Celsius. After growth, two or three colonies of that strain were inoculated to test tubes containing a broth medium and a bacterial suspension of 10^8 CFU/ml of that strain was prepared.

Disinfection Treatment and Microbiologic Evaluation

Samples were assigned to three groups according to the disinfection regimen; each group consisted of 240 disks. Sixty samples were made per strain (20 in each group).

TABLE 1

Presence of Microorganisms on the Alginate Disks After Disinfection According to Their Period of Immersion in Bacterial Suspensions

Time	Positive[1]	Negative[2]	Total
	No. (%)	No. (%)	No.
1 min *	60 (16.66)	300 (83.33)	360
4 min **	69 (19.16)	291 (80.83)	360
Total	129 (17.91)	591 (82.08)	720
Result		χ^2= 0.76	
		P= 0.38	

No. = Number of disks
* Disks contaminated with the bacterial suspension of 10^8 Cfu/ml for one minute.
** Disks contaminated with the bacterial suspension of 10^8 Cfu/ml for four minutes.
1. Bacterial growth
2. No bacterial growth

TABLE 2

Antimicrobial Efficiency of Each Individual Disinfectant

Disinfectants†	Active ingredient	Positive[1] No. (%)	Negative[2] No. (%)	Total No.
Deconex Solarsept	Alcohol	71 (29.58)	169 (70.41)	240
Sanosil Super 25	Silver, H_2O_2	50 (20.83)	190 (79.16)	240
Chloro-Sol	NaOCL	8 (3.33)	232 (96.66)	240
Total		129 (17.91)	591 (82.08)	720
	Chi-square test result		χ^2= 58.3 P<0.001	

*All samples were sprayed with the products for 30 seconds and were kept in sealed plastic bags for 10 minutes.
No. = Number of disks
1. Bacterial growth
2. No bacterial growth

From 20 disks used for each bacterium, 10 were immersed in bacterial suspension for one minute and the other 10 were immersed in the suspension for four minutes. In order not to have a decrease in the suspension's concentration, an individual tube was used for each alginate disk (792 tubes for 792 disks).

After contamination, disks were washed with 50 cc of distilled water for 15 seconds. Excess water was removed by a gentle shake. According to the predefined group, the disinfectant was applied on the disks by spraying for 30 seconds (approximately eight to 10 sprays). The samples were then stored in a plastic bag containing a sterile damp cotton roll for 10 minutes.

Afterward, the disks were placed onto test tubes containing nutrient broth media for 30 seconds. The tubes were incubated for 24 hours in 37 degrees Celsius, and were plated on soybean casein digest agar plates. These plates were incubated for 24 hours at 37 degrees Celsius for determination of the minimum inhibitory concentrations (MICs) using the macrodilution method.

In the control group, which consisted of 72 disks (six per strain), samples were immersed in bacterial suspension and neither water nor disinfectant was applied on these disks.

Data Analysis

For describing the data, distribution charts and tables were used. For analyzing the data, Chi-square test and logistic regression were applied. In all the stages of evaluation, the P value less than 0.05 was considered significant. All the statistical analysis was done Via SPSS V. 11.5 software (SPSS, Chicago, Ill.).

Results

TABLE 1 summarizes the data regarding the duration of time in which disks were immersed in the bacterial solution. Half of the impressions were immersed in individual microbial suspensions of 10^8 cfu/ml for one minute; the other half was immersed for four minutes. Both groups showed similar results regarding the bacterial growth after disinfection. (P= 0.38, χ^2 =0.76).

The data regarding the antimicrobial efficacy of each individual disinfectant is summarized in **TABLE 2**. Results showed that only eight out of 240 irreversible hydrocolloid disks (3.3 percent) sprayed with 0.525 percent hypochlorite showed bacterial growth. In other words, 96.66 percent of these samples were effectively disinfected. Sanosil killed microorganisms on 79.16 percent of the disks, and the corresponding result was 70.41 percent for deconex (**TABLE 2**). According to the mentioned table, after disinfection, sodium hypochlorite sprayed disks showed the least bacterial growths when compared to the other two products and the Chi-square test showed a statistically significant difference (P <0. 001, χ^2 =58.3).

TABLE 3 summarizes the growth of challenged microorganisms following disinfection with different sprays. Results showed that 0.525 percent sodium hypochlorite spray (Chloro-Sol) had the best antimicrobial activity. None of the strains indicated resistance

TABLE 3

Growth of Challenged Bacteria on Irreversible Hydrocolloid Disks Following Disinfection Treatments

Strains	Deconex Solarsept	Sanosil Super 25	Chloro-Sol	Overall evaluation (n=60)	
	Bacterial growth No.(%)	Bacterial growth No.(%)	Bacterial growth No.(%)	Bacterial growth No.(%)	%
Staphylococcus epidermidis	1 (5)	2 (10)	0 (0)	3	5
Streptococcus pyogenes	2 (10)	2 (10)	2 (10)	6	10
Streptococcus mutans	3 (15)	1 (5)	1 (5)	5	8.3
Pseudomonas aeruginosa	20 (100)	18 (90)	1 (5)	39	65
Streptococcus sanguis	0 (0)	0 (0)	0 (0)	0	0.0
Staphylococcus aureus	2 (10)	1 (5)	1 (5)	4	6.6
*Staphylococcus epidermidis**	2 (10)	1 (5)	0 (0)	3	5
*Enterecoccus faecalis**	0 (0)	1 (5)	0 (0)	1	1.6
*Streptococcus agalactiae**	0 (0)	1 (5)	0 (0)	1	1.6
*Staphylococcus aureus**	2 (10)	3 (15)	1 (5)	6	10
*Pseudomonas aeruginosa**	19 (95)	3 (15)	1 (5)	23	38.3
*Klebsiella pneumoniae**	20 (100)	17 (85)	1 (5)	38	63.3
Total	71	50	8	129	17.9

*Clinically isolated strains
** Sixty disks were used for each individual strain.

against this agent whereas *P. aeruginosa* (both standard and clinically isolated strains) and *K. pneumoniae* were resistant against disinfection by deconex (TABLE 3). Sanosil Super 25 was ineffectual against *K. pneumoniae* and standard strains of *P. aeruginosa*. The growth of the more resistant strains has been summarized in TABLE 4 and compared to other strains.

Analysis by logistic regression showed that significant difference exists between the antimicrobial efficiency of disinfectants (TABLE 5). Antimicrobial efficiency of Chloro-Sol was 125 times more than deconex (OR=125) and 20 times more than Sanosil. Analysis by logistic regression also showed that resistance of *K. pneumoniae* against disinfection was 3.7 times more than other strains all together. This result was 4.3 for *P. aeruginos*a (standard strain).

According to FIGURE 1 the overall resistance of the standard and clinically isolated strains against disinfection was the same (P= 0.14, χ^2 =2.1).

Discussion

During practice, dentists are exposed to microorganisms harmful to health. The source of these harmful microorganisms is, in most cases, the patient.[7] A fundamental route of dentists' exposure to these pathogens is through saliva. Risk factors spread via the saliva include a vast range of microorganisms. According to Miller and Cottone, a saliva droplet contains 50,000 bacteria belonging to 25 genera; many of which are potential pathogens.[8,9] These pathogens can be easily spread through impression materials, especially irreversible hydrocolloids, which harbor microorganisms more than any other impression material.

From the point of view of the dentist's occupational hazards, common carriership of potentially pathogenic bacteria is an epidemiologically unfavorable phenomenon. Surveys show that the frequency of *S. pyogenes* carriership in the nasopharynx amounts to 10 percent in the general population, of *S. pneumoniae* — 20-33 percent and *S. aureus* 30 percent.[7] Pathogenic bacteria can easily penetrate from the nasopharynx to the oral cavity, contaminate the impressions, and create a threat to both the dentist and the dental technician.[7,10-12]

It has been estimated that more than a million dental impressions are made each week in the United States. Impressions are made of the teeth and soft tissues regularly by dentists for the fabrication of crowns, bridges, dentures, orthodontic appliances, and many other dental devices. If contaminated, beside the direct threat to the dentist, the transmission of microorganisms from impressions to dental laboratory technicians seems likely. The disinfection protocol is an essential precaution for preventing cross-infection and protecting laboratory personnel. The American Dental Association, the Centers for Disease Control and Prevention, and the Occupational

TABLE 4

Growth of Resistant Strains

Strain †	Deconex Solarsept No. (%)	Sanosil Super 25 No. (%)	Chloro-Sol No. (%)
**Klebsiella pneumoniae*	20 (100)	17 (85)	1 (5)
**Pseudomonas aeruginosa*	19 (95)	3 (15)	1 (5)
Pseudomonas aeruginosa	20 (100)	18 (90)	1 (5)
Other strains[1]	12 (60)	11 (55)	5 (25)
Total	71 (88.7)	49 (61.2)	8 (10)

1. *S. sanguis, S. epidermidis*, S. pyogenes, S. aureus*, S. mutans, S. epidermidis, S. aureus, S. agalactiae,* and *E. faecalis*
* Clinically isolated strains
† Twenty strains per group

TABLE 5

Coefficient of Binary Logistic Regression Regarding the Products' Efficacy and Bacterial Resistance

Variable	ß	P-value	Odds ratio	CI (95%)
Deconex Solarsept	4.8	<0.001	125	(39.9-394)
Sanosil Super 25	2.0	<0.00	20.4	(7.9-52.9)
Chloro-Sol	0	—	—	—
**Klebsiella pneumoniae*	1.3	0.01	3.7	(1.3-10.8)
**Pseudomonas aeruginosa*	-0.58	0.229	0.55	(0.21-1.4)
Pseudomonas aeruginosa	1.47	0.007	4.3	(1.5-12.7)
Other strains[1]	0	—	—	—

CI: Confidence interval
1. *S. sanguis, S. epidermidis*, S. pyogenes, S. aureus*, S. mutans, S. epidermidis, S. aureus, S. agalactiae,* and *E. faecalis*
* Clinically isolated strains

Safety and Health Administration state that every impression be disinfected after removing from the patient's mouth and before entering the dental laboratory in order to prevent cross-infection.[11,12]

In reality, disinfection protocols can be neglected. The lack of knowledge regarding the risks posed by the microorganisms, time-consuming disinfection procedures, and the possible destruction of the surface detail of impressions by disinfectants is considered the underlying reasons for negligence.[5,6] A nationwide survey, by Kugel et al. in United States, designed to determine how well dental laboratory personnel are communicating with dentists regarding the disinfection of impressions, revealed that 45 percent of the dental laboratory personnel receive inadequate instruction about appropriate disinfection techniques for various impression materials. Most of the respondents stated that they were not sure if the impressions they received had been disinfected. According to this study, many respondents stated that they use solutions not specifically recommended by the ADA or the impression manufacturer.[6]

Three generations of disinfectants were used and their antimicrobial efficiency was tested in the present study. Bleach was represented by Chloro-Sol, alcohol-based disinfectants were represented by deconex, and peroxide-based disinfectants were represented by Sanosil. All three sprays are commercially available and are commonly used in dental clinics and offices.

One of the least expensive but effective disinfectants is sodium hypochlorite, which is commonly known as bleach. Hypochlorite is listed among the ADA's acceptable disinfectants for dental impressions.[13] Results from some studies have indicated that this substance possesses promising effects as a disinfectant in the immersion technique.[14-16] However, the duration in which the dental impressions are immersed in the solution is of importance. Ideally, that time should be the shortest possible, which still disinfects the impression in order to save the dentist's professional time and to avoid any possible etching or destruction of the surface detail of the impression.

In this regard, studies by Rueggeberg et al. and Westerholm et al. have also shown that impressions can be effectively disinfected by spraying hypochlorite and placing them in a sealed plastic bag.[16,17] In the study conducted by Westerholm et al., 0.525 percent sodium hypochlorite spray was able to affect a 4-log10 (99.99 percent) reduction against *S. aureus*.[16] Rueggeberg et al. reported that the antimicrobial effects of 0.5 percent hypochlorite spray treatment were similar to those of immersion treatment.[17] Similarly, 0.525 percent sodium hypochlorite spray applied in the present study showed to be the most effective disinfectant; 96.6 percent of the samples were effectively disinfected (TABLE 2). Thus, the authors' result corroborates with what Rueggeberg et al. and Westerholm et al. reported. Another interesting observation was the

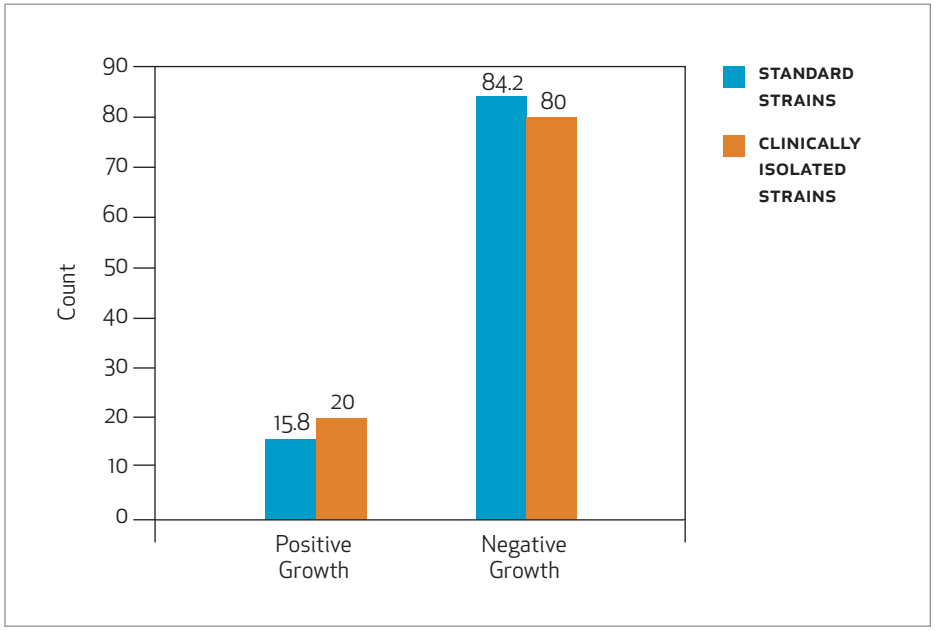

FIGURE 1. Overall resistance of the standard and clinically isolated strains against disinfection.

broad spectrum that sodium hypochlorite possesses as it could kill all gram-positive and gram-negative organisms (**TABLE 3**).

Sanosil is a commercially available disinfectant which is made of silver and hydrogen peroxide. Sanosil's virucidal effect had been tested by Mahnel and Schmidt on drinking water.[18] It has also shown to be effective for control of dental chair unit waterline biofilm.[19] Results from the authors' study indicated that this product was almost effective against all bacterial strains on impression disks except *P. aeruginosa* and *K. pneumoniae* (**TABLE 3**). This might have been due to the method of disinfection (spray). According to **TABLE 5**, deconex is ranked as the third effective disinfectant after Sanosil, with 70.4 percent of the samples effectively decontaminated by this product. Compared to both disinfectants, sodium hypochlorite showed superior activity (P<0.001). It was 125 times more effective than deconex.

A somewhat similar result was reported by Yilmaz et al. in 2005.[20] They studied the effects of disinfectants on denture-lining materials contaminated with different microorganisms. For all microorganisms, soaking in 2 percent sodium hypochlorite reduced the number of microorganisms significantly compared to soaking in 5 percent solution of deconex.

Strains assessed in the current study were sporadically used in some other studies.[21,22] However, the wide range of bacteria used in this study made it possible to scrutinize the efficiency of the disinfectants against each potentially harmful strain. Patient-derived dental impressions are contaminated with numerous microbes, including *streptococci* (100 percent), *staphylococci* (65.4 percent), and *P. aeruginosa*, (7.7 percent), all which are known pathogens responsible for nosocomial and life-threatening infection in the immunocompromised host.[7]

A potential threat to dentists are also some of the gram-negative bacteria, which commonly inhabit the oral cavity and may also come from biofilms occurring inside dental unit waterlines. The most harmful include *P. aeruginosa* and *K. pneumoniae,* which are highly infectious and cause respiratory and urinary tract infections and meningitis. Both *P. aeruginosa* and *K. pneumoniae* were eliminated by hypochlorite in the present study, but deconex and Sanosil were partly ineffective. However, each of the disinfectants were effective in the bacterial elimination of *S. aureus* and *E. faecalis*, which are considered hazardous bacterial strains.[7,9]

According to **TABLE 3**, some weak strains showed sporadic instances of growth. This might be explained by the fact that irreversible hydrocolloid materials are complex carbohydrates that imbibe water. If pathogens are also imbibed into alginate (get trapped subsurface within the material) they would be less exposed to the disinfectant. This indicates that penetration of the disinfectant to such substances might be of importance.

According to **FIGURE 1**, 360 disks were contaminated with standard strains and another 360 were contaminated with clinically isolated strains. Regardless of the each disinfection treatment, when evaluating the resistance of the standard and clinically isolated strains against disinfection, it was demonstrated that disinfection could equally kill the two groups (P= 0.14, χ^2=2.1). Elimination of the clinical isolates, which are often considered more resistant than standard strains, might possibly indicate the application of these products in hospitals settings. However, this result needs further research.

Conclusion

Irreversible hydrocolloid (alginate) can be disinfected by spraying and placing in a sealed plastic bag for the manufacturer's recommended time. The data from this study suggests that 0.525 percent sodium hypochlorite spray is an effective disinfectant agent if the impression is washed under tab water, sprayed for 30 seconds and is put in a sealed plastic bag containing a damp cotton roll for 10 minutes. Due to its effective antimicrobial effect, impression spraying with hypochlorite following

removal from the patient's mouth is strongly advocated by the data from the present study. By disinfecting the impression properly, the safety of both the dentist and the laboratory technician would be guaranteed. ■■■■

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Concrescence of a Maxillary Second and Third Molar

KYLE J. GERNHOFER, DDS

ABSTRACT **Background:** Concrescence is a rare dental anomaly that may be inadvertently diagnosed during a tooth extraction.
Case Description: While extracting a maxillary second and third molar, it became evident that the teeth were attached between the roots. Both teeth were extracted atraumatically and healing was uneventful.
Clinical Implications: Concrescence may increase the likelihood of certain complications to occur during a tooth extraction. Practitioners should consider concrescence prior to surgery when obtaining informed consent from patients.

AUTHOR

Kyle J. Gernhofer, DDS, served two years on the U.S.S. Tortuga and was responsible for treating more than 700 sailors and Marines as the only dental officer on board. He currently is stationed at the Marine Corps Recruiting Depot in San Diego and plans to pursue private practice this fall.

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The author would like to thank Justin Barwick, Christopher Cheung, and Sara Settle for their efforts while assisting with patient care onboard U.S.S. Tortuga. Photos are courtesy of Justin Barwick.

A healthy 30-year-old black male presented to the dental department for an oral surgery consultation appointment. The patient's teeth were asymptomatic and he had no history of sensitivity, pain, or swelling in the maxillary left or right posterior quadrants. However, the patient stated he wanted his wisdom teeth removed while he was still in the military.

The intraoral examination revealed that both maxillary third molars were soft tissue impacted. The maxillary second molars were nonfunctional and hypererupted due to the absence of teeth Nos. 17, 18, 31, and 32 (FIGURE 1). There were no clinical or radiographic indicators of caries, periodontal disease, anomalies, or pathologic processes associated with the dentition. After informing the patient of the clinical findings and his treatment options, he elected to schedule teeth Nos. 1, 2, 15, and 16 for dental extractions.

Treatment

At a follow-up appointment, the patient presented to the clinic for the extraction of his maxillary second and third molars. After achieving anesthesia, an incision was made along the buccal alveolar crest extending from the distal of No. 3 to the mesiobuccal aspect of the maxillary tuberosity. A full thickness mucoperiosteal flap was reflected to expose the crown of No. 1.

A purchase point was located and the tooth was elevated repeatedly, but there was no movement. A small amount of bone was removed along the buccal aspect of No. 1 to create a better purchase point for elevation and to expose more of

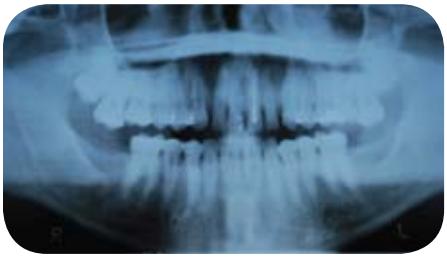

FIGURE 1. Preoperative panoramic film taken on March 6, 2008.

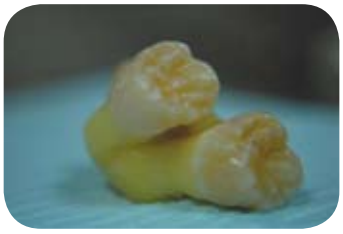

FIGURE 2. Coronal view showing the absence of crown involvement in the union of teeth Nos. 1 and 2.

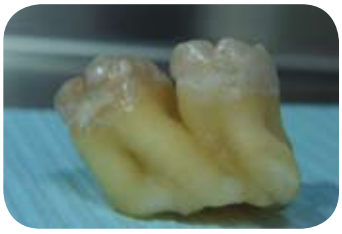

FIGURE 3. Palatal view of the cemental union between teeth Nos. 1 and 2.

the clinical crown in order to engage the maxillary forceps. Still, there was no tooth mobility upon elevating and luxating with the forceps. It was assumed that the lack of mobility associated with tooth No. 1 was due to either ankylosis, concrescence, or an abnormal root curvature. Therefore, tooth No. 2 was elected to be extracted first in order to gain better access and visibility at the third molar site.

Upon releasing the attached gingiva circumferentially, tooth No. 2 was elevated from the mesiobuccal aspect. Within minutes, there was a moderate amount of mobility associated with the tooth, but there was still an abnormal amount of resistance. After elevating repeatedly without coming any closer to extracting the tooth, maxillary forceps were engaged around the crown of tooth No. 2. After luxating the maxillary second molar for several minutes, it was extracted along with the maxillary third molar. There was a complete union between the roots of No. 1 and 2, but there was no evidence of a root/crown or crown/crown junction (**FIGURES 2 AND 3**).

All roots of the maxillary right second and third molar appeared to be bulbous, suggesting hypercementosis. There was no abnormal pathology such as a cystic lining or periapical granuloma upon examining the extraction site. Besides removing a small portion of buccal bone adjacent to tooth No. 1, all of the supporting bone at the extraction site was intact and uncompromised. There was no sinus communication and the maxillary tuberosity was intact. Bleeding was well-controlled and only a small tissue tear located posterior to the extraction site of tooth No. 1 resulted from the extraction.

Postoperative Management

After extracting the teeth, a curette and bone file was used to ensure the removal of tissue debris, bony spicules, and to smooth sharp edges of the supporting bone. The extraction site and subperiosteom was irrigated with normal saline due to the large surface area of exposed bone and potential for debris to become trapped in underlying soft tissue. Two interrupted 3.0 chromic sutures were required to approximate the mucoperiosteal tissue overlying the buccal plate to the adjacent palatal gingiva. Firm pressure was applied to the surgical site and cotton gauze was inserted to help maintain hemostasis. Because teeth Nos. 15 and 16 were asymptomatic and the potential for concrescence existed, no treatment was rendered on the left side.

For postoperative analgesia, the patient was prescribed ibuprofen (800 mg) and acetaminophen (325 mg) to be taken over a course of five days. The patient was also prescribed penicillin VK (500 mg) to be taken over a course of seven days. Prophylactic antibiotics were administered because of the complexity of the extraction coupled with the significant size of the extraction site, age of the patient, and poor access to specialty care. The patient returned for follow-up appointments on postoperative days 2, 7, 14, and 28. The patient had no postoperative sequelae and the surgical site healed within normal limits.

Discussion

The classification of odontogenic anomalies resulting from the division or union of tooth germs includes gemination, fusion, and concrescence. Gemination is best described as an attempt of the tooth bud to divide.[1] The result is two completely or incompletely separated crowns originating from a single root and root canal.[2] Depending upon the degree of crown separation, this anomaly may give the impression that there is an extra tooth in the mouth and it is most often seen in the anterior dentition.[2,3] Fusion is a condition in which two separate tooth buds have a joined crown of normal size, enlarged size or a bifid shape.[1,2]

When counted, the number of teeth is reduced by one and it is most often seen in the deciduous dentition.[1,2] Although its etiology is unknown, trauma, hereditary patterns, or pressure-induced contact between developing teeth may be possible causes.[2] Concrescence is a rare dental anomaly that can be best defined as the union of adjacent teeth involving only the cementum.[1-7]

In order for concrescence to occur, the roots of the affected teeth must be in close proximity to each other, and an excess layer of cementum must be deposited to form the union between the roots of the adjacent teeth.[2,5-7] Concrescence typically affects maxillary molars, especially maxillary second and third molars, but its prevalence is not influenced by age, gender, or race.[1,3,4,6,7]

Concrescence is believed to occur during root formation or after the radicular phase of development is complete.[1,2,6,7] If concrescence occurs during root formation, it is categorized as developmental and attributed to the close proximity of the developing

roots of the adjacent teeth.[3] If concrescence occurs after root formation, it is categorized as postinflammatory and it may result from a chronic inflammatory response to a nonvital tooth.[3]

It is often very difficult to identify concrescence using radiographs or any other diagnostic tool. Since the teeth are joined by cementum only, concrescence will usually appear normal on a radiograph (**FIGURE 1**).

Concrescence may be identified on a radiograph if any or all of the following conditions are met: multiple films are taken from different angles, different exposure parameters are used, and there is a substantial amount of cementum deposition.[1,2,6,7] However, even if all three of these conditions exist, it may still be difficult to distinguish actual concrescence from superimposed teeth.[1,2,6,7]

Unfortunately, the diagnosis of concrescence is typically made inadvertently while extracting a tooth. In this case, the diagnosis of concrescence was considered when the elevation and luxation of tooth No. 1 did not result in any mobility. Since concrescence usually involves an unerupted maxillary molar, the practitioner must consider its presence when extracting an impacted tooth in the posterior maxilla.[1,3,4,6,7] Concrescence should also be considered when the roots of one tooth appear inseparable radiographically from those of another, even with the help of multiple angulations.[7] If a provider suspects a tooth planned for an extraction is concrescent, he or she will be able to make the appropriate modifications to his or her surgical technique in order to prevent any undesirable surgical complications.

Conclusion

Even though it is very uncommon, patients need to know that concrescence does exist, especially in the case of maxillary molars. This is very important because certain treatment complications may be more likely to result if an extraction is performed on a concrescent tooth. Oral surgery complications, including the inadvertent removal of an adjacent tooth, maxillary sinus exposures, tuberosity fractures, and buccal plate fractures, have all been documented in the literature when concrescence was detected at the surgical site.[2,4,6,7] These reported complications healed unremarkably and it is likely that sinus communications and alveolar fractures were discussed at the oral surgery consultation appointment as possible risks associated with the procedure.

CONCRESCENCE TYPICALLY affects maxillary molars, especially maxillary second and third molars, but its prevalence is not influenced by age, gender, or race.

However, because concrescence is relatively uncommon and difficult to diagnose preoperatively, it is probably not addressed at most oral surgery consultation appointments nor mentioned in the oral surgery consent forms. Most patients are probably unaware that an additional tooth will likely need to be extracted if it is attached to the adjacent tooth. According to Mader, if the cemental union between the teeth is not too large or too strong, this union may fracture during the extraction of one of the teeth and produce no problems.[7]

However, if a more solid attachment exists between the teeth as in this case, the cemental union will not fracture during the extraction and both teeth will have to be removed. The need to extract an additional tooth may be confusing and frustrating for patients, especially if the patient was informed midway through the procedure instead of at the oral surgery consultation appointment. Therefore, dentists performing oral surgery must be able to recognize the clinical indicators of concrescence so they can obtain informed consent and provide the highest level of care. ■■■■

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Progesterone Effects on Experimental Tooth Movement In Rabbits

MARYAM POOSTI, DDS, MSC; MOHAMMAD BASAFA, DDS, MSC; AND NEDA ESLAMI, DDS, MSC

ABSTRACT The effect of progesterone on tooth movement was evaluated for nine weeks. Twenty-four rabbits were assigned into three groups of long-term, short-term and no progesterone injection. Orthodontic force was applied to incisors for three weeks. Statistical tests showed no significant difference at the seventh and eighth week; but at the ninth week, tooth movement was significantly lower in the long-term group. Long-term progesterone administration could reduce the rate of tooth movement.

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Extending the duration of orthodontic treatment will accentuate its side effects such as caries, white spots, and periodontal diseases. Recognizing different factors affecting the velocity of tooth movement including drugs, age, and nutrition is of particular importance, which should be considered during treatment planning. Progesterone as a feminine estradiol hormone can affect bone metabolism. It is believed this hormone stimulates bone formation and reduces renal secretion of calcium.[1] Progesterone could also specifically prevent corticosteroid-induced osteoporosis.[2]

Today, women comprise a major part of the whole population of orthodontic patients.[3] Many of these patients use estrogen-progesterone compounds as a definite method for contraception. On the other hand, female hormone levels undergo major changes during pregnancy or the menopausal period, which could effectively alter bone metabolism.

In a histological study on ovariectomized rats, it was concluded that ovariectomy induces osteopenia and accelerates skeletal metabolism in rats.[4] In another study, it was demonstrated that estrogen therapy after ovariectomy in rats has a complete protective effect against osteopenia.[5] Heersche mentioned that estrogen and progesterone deficiency together cause bone mass reduction.[6] Additionally, it is even claimed that in postmenopausal women, progesterone deficiency and not lack of estrogen is the principal factor in the pathogenesis of menopausal osteoporosis.[7]

On the other hand, some studies questioned the role of progesterone on bone turnover and claim that this hormone does not have considerable effects on bone density by itself. However, they believe that progesterone therapy

FIGURE 1. Force application method to rabbit's incisor teeth.

TABLE 1

Mean and SD of the Rate of Tooth Movement in Three Groups at the End of Seventh, Eighth, and Ninth Weeks (mm/week)

		7th week	8th week	9th week
Group	Sample size	Mean ± SD	Mean ± SD	Mean ± SD
LTG	6	0.7±0.2	0.9 ± 0.2	1.06 ± 0.1
STG	5	0.64 ± 0.1	1.02 ± 0.2	1.34 ± 0.2
CG	8	0.73 ± 0.2	1.2 ±0.2	1.5 ± 0.15
	ANOVA	p=0.398	p=0.07	p=0.001

TABLE 2

Tukey Test Results in Comparing the Three Groups (Two by Two)

Comparing groups	Mean difference	p-value
LTG & STG	-0.27	0.044
LTG & CG	-0.43	0.001
STG & CG	-0.16	0.256

increases serum levels of osteocalcin that is a marker for bone matrix synthesis.[8,9]

When a force is applied to a tooth, alveolar bone formation and resorption occurs and the tooth moves while alveolar bone remodeling increases.[10] Estrogen promotes alveolar bone formation and prevents bone resorption, and its deficiency accelerates tooth movement.[11-13] It also has been shown that progesterone affects tooth movement in pregnant rats and has a positive effect on periodontal ligament reconstruction during tooth movement.[14]

Orthodontic tooth movements vary in different stages of the estrous cycle in rats and the estradiol level of serum has a negative correlation with tooth movement, which suggests that bone formation activity depends on the progesterone level in the estrous cycle.[15]

It seems there is no general agreement concerning the role of progesterone on bone metabolism and there is lack of data about its influences on tooth movement. Therefore, it was considered appropriate to investigate the influences of the progesterone hormone on the rate of experimental tooth movements. The aim of the present study was to evaluate progesterone effects on the rate of tooth movements in rabbits.

Materials and Methods

In this interventional animal study, 24 prepubertal female albino rabbits with the mean age of 8 weeks and a mean weight of 1850 grams were randomly assigned into three equal groups.

In the first, long-term group, LTG, 5 mg intramuscular progesterone was injected in the leg muscle everyday for nine weeks. In the second, short-term group, STG, the rabbits did not receive any injection in the first six weeks, but they did get intramuscular injections of progesterone at the last three weeks with the same dose and method of group one. The third, a control group, CG, served as the authors' control group and did not receive any injection during the nine weeks of experiments.

At the end of the sixth week, general anesthesia was performed in all groups via intramuscular injection of 0.5 ml of rumpon and ketamine (1:2) solution. After the rabbits were unconscious, the two upper incisors were pumiced, etched (37 percent phosphoric acid for 30 seconds), rinsed, and dried. Then Microlock edgewise brackets were bonded on the buccal surface of these teeth by a no-mix self-cure composite (Dentaurum, Germany). These brackets were positioned parallel to the long axis of rabbit incisor teeth, and with 5 mm distance from their incisal edge (almost in the middle of the clinical crown).

In order to apply orthodontic force, the authors used a spring as in the Akin method with 0.014-inch stainless-steel wire in the vertical slot of these brackets[16] (**FIGURE 1**). All the springs had similar diameter and height, and were activated only once from one arm at the end of sixth week to insert 50 gr distal force.

The distance between the mesial corners of incisors was measured blindly at the end of the seventh, eighth, and ninth weeks by a caliper calibrated 0.1 mm. SPSS software was used to analyze data. The Kolmogrov-Smirnov test revealed normal distribution of data, and the ANOVA and the Tukey test were used to compare the three groups.

Results

The rate of tooth movement at the end of the seventh, eighth, and ninth weeks is demonstrated in **TABLE 1**. The ANOVA test did not reveal significant difference in the rate of tooth movement between three groups at the end of the seventh and eighth week, but it demonstrated a significant difference among these groups at the end of the ninth week (p=0.044) (**TABLE 1**).

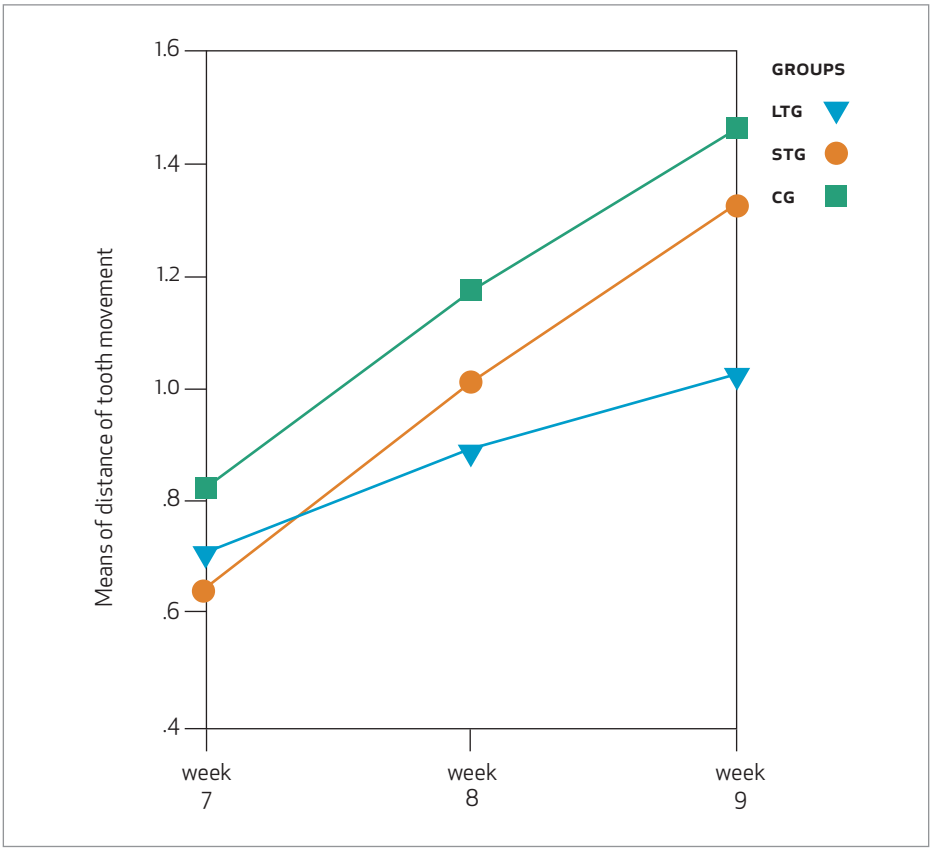

FIGURE 2. Comparison of tooth movement velocity in the three experimental groups.

The results of the Tukey test revealed significant differences between LTG and STG (p=0.044), and also between LTG and CG groups (p=0.001) (**TABLE 2**).

The interincisal distance in the CG group increased 105 percent between the seventh and ninth week, but this parameter had only 51 percent increase in the LTG group in the similar period of time. Comparison of tooth movement velocity between three groups is demonstrated in **FIGURE 2**.

Discussion

Scientists' efforts have always been to find the relationship between biochemical markers in bone remodeling and the rate of bone metabolic turnover in clinical situations. However, it is usually difficult to interpret the effects of different variables such as age, puberty, and endocrine regulations on this procedure.[17]

Various hormones have been recognized in association with tooth movement. For example, the growth hormone directly enhances anabolic modeling of bone via its receptors on osteoblasts. Androgens produce a masculine body through a secondary response of bone to the increased muscular forces.[2] Parathyroid hormone receptors exist on osteoblasts and osteocytes that indicate its direct effect on bone formation.

It has been found that estrogen accentuates osteogenic response of spongy bone to mechanical loading. This mechanism may have an important role on enhancing bone turnover in estrogen deficiency conditions.[2]

Although a number of studies with various results have been performed on progesterone effects on different parts of the body's skeleton, there is lack of research on progesterone influences on jawbones in the literature. There is no evidence that changes in mandibular and maxillary bone mass are parallel to the alterations of other parts of the skeleton. The mastication force is a major factor that differentiates the maxilla and the mandible from other parts of the skeleton. However, there is a strong possibility that the rate of bone resorption after tooth extraction is coordinated with alterations in bone mass in other parts of the body.[7]

In the present study, there were attempts to evaluate the independent effect of progesterone on tooth movement in prepubertal female rabbits. These animals had appropriate tooth size for bonding orthodontic attachments and since the effects of sex hormones is gender related, female rabbits were selected.[9,18] On the other hand, it has been shown that orthodontic forces in different periods of the estrous cycle induce various responses.[15] To eliminate the latter effect, prepubertal female rabbits were chosen for this study.

The complete remodeling cycle in rabbits takes six weeks.[19] Because of that, the progesterone injections were initiated weeks before force application in one of the authors' groups while in the other group, progesterone administration and force application were started simultaneously to evaluate the long-term and short-term effects of progesterone prescription.

According to the results of the present study, only a long-term progesterone application significantly decreased the rate of tooth movement, which means that the incisor teeth in rabbits moved significantly slower when progesterone was prescribed for nine weeks compared to three weeks application (p=0.044) and the control group (p=0.001). Although this finding corroborates He's study, there are controversial results in the literature about progesterone mechanism of action.[14] Some investigators believe that progesterone in

combination with estrogen will reverse estrogen effects, but when prescribed alone, will increase bone formation and create positive calcium balance.[19,20]

Kalu and Abe believe that progesterone does not affect either bone resorption or formation, but other investigators such as Yamamoto claim progesterone inhibits the bond between glucocorticoids and osteoclasts, and consequently prevents bone resorption.[8,21,22]

Human ostoeblast cells have specific receptors for progesterone but there are even controversial findings in humans about progesterone effects. Prior claims progesterone causes an increase in bone formation and estrogen only reduces bone resorption, while Verhaar demonstrated that these hormones have anabolic effects on osteoblast cells.[23,24] It also has been shown that women with a shorter luteal phase, which indicates a shorter duration of endogen progesterone secretion, demonstrate more severe osteopenia.[23]

However, whether progesterone prohibits bone resorption or induces bone formation, the result could interpret slower tooth movement in rabbits receiving progesterone in comparison to other groups. Tooth movement is a multifactorial procedure and further studies are recommended to evaluate the velocity of tooth movement associated with the differences between male and female patients.

The authors suggest histological and histochemical assessments in future studies about progesterone effects on tooth movement, and it is also better to differentiate the estrogen and progesterone effects on tooth movement in ovariectomized rabbits.

Conclusion

1. Short-term progesterone injection (three weeks) in rabbits does not significantly affect the velocity of orthodontic tooth movement.

2. Long-term progesterone prescription (nine weeks) significantly reduces the rate of tooth movement in rabbits. ■■■■

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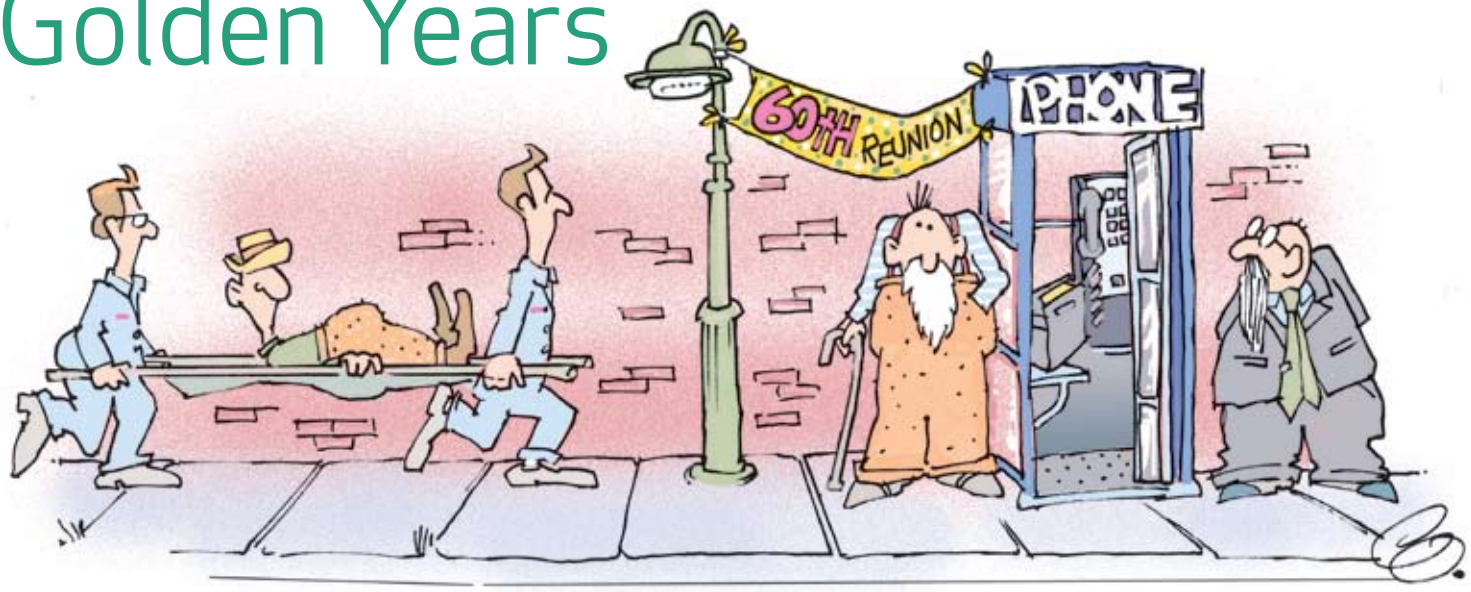
Making Green in the Golden Years



It became depressingly apparent that I and a few others who were still ambulatory were all who were left of my graduating class.

Robert E. Horseman, DDS

ILLUSTRATION BY CHARLIE O. HAYWARD

The worst of work nowadays is what happens to people when they cease work.
— G.K. Chesterton

Of course I had thought about retirement, but it was always in the abstract much as you might, as a teenager, muse to yourself that one day you would drop by the Taj Mahal or see if you could ride all the rides at Disneyland in one day without throwing up.

I did actually retire once. Grudgingly, it became clear at the end of my first summer as a busboy at Knott's Berry Farm that, career-wise, I had probably peaked. My white uniform was lavishly decorated with boysenberry stains; my every pore redolent with the cloying scent of fried chicken fat. Reluctantly, I tendered my resignation. It was obvious that several years of obsequious toadying would be required before rising above my 40-cents-per-hour position to be CEO of the place.

At age 19, I was a man on the move. Conceding that a good time to retire is before it's too late to have a good time, I enrolled in dental school based primarily on the observation that our family dentist seemed to have Wednesday afternoon free and his uniform reeked of nothing more annoying than the scent of oil of cloves. He drove a DeSoto Airflow, the most innovative car I had ever seen. I would have one of those I decided, or perhaps move up to a Chrysler. The Big Picture featured enjoying the perks of a profession that encouraged poking around in other people's mouths with a host of Rube Goldberg gadgets assisted by a nubile handmaiden. I would do this for maybe 20 years, tops, and then pack it in, my whole life ahead of me. The Agra-culture offered by the Taj Mahal could wait; it had been there since 1683, another decade or two wouldn't make much difference.

Somehow 25 years slipped by without my noticing it. I married, fathered three children, lost some hair, grew a mustache

CONTINUES ON 501

DR. BOB, CONTINUED FROM 502

to compensate, and was invited to my dental class reunion where 82 classmates seemed hale and hearty and none the worse for wear. A few birthdays later, for some inexplicable reason, the class spokesman announced a 50th reunion. What is this, I puzzled? Are we going to have a reunion every year now? I didn't attend. A classmate who now claimed to be 81 years old, sent me pictures. He said he and the other 30 balding, paunchy strangers missed me. I discounted this sentiment as I had never seen most of them in my life.

A couple of years later I received a questionnaire asking if I would be interested in the formation of a 60th reunion. Not really, I answered. It became depressingly apparent that I and a few others who were still ambulatory were all who were left of my graduating class. Everybody had either retired years ago or contributed to insurance actuarial tables and dropped off the twig, leaving only a handful still able to cash their Social Security checks. The reunion, if held, could be easily accommodated in a venue no larger than a phone booth.

I must be the only one of that original stalwart group of 125 future dentists left who is still practicing after 66 years!

I must be the only one of that original stalwart group of 125 future dentists left who is still practicing after 66 years! A dubious honor and only held because I wasn't paying attention. There are two types of graduates: the grasshoppers and the ants. The ants plan. They live according to a plan, they invest in real estate, stocks, bonds, save for the future, become Amway reps. Retiring with several of their faculties still functional, they stop being serious about everything but golf, where they eventually keel over on the 14th dogleg, par 6 hole.

The grasshoppers' only concern is to avoid hitting life's windshields at speeds of 50 mpg or more. No plans, every day is summer until one day it isn't. Old age is the big windshield.

My classmate, who was No. 77 to my No. 76 (we didn't have names in those days), is now 96 years old and has been retired forever it seems to me. He is an ant of the first order. "Think before you quit," he advises. "Stay home for a week and watch daytime television."

"You're saying that all these dental retirees would love to be chairside again, having learned that the freedom to do anything they wish, wish they could do something else?" I asked.

"Well, not exactly," he said, "but wouldn't it be great if we could sell our experience for what it cost to get it?"

Good luck with that. Granted, the California Lottery Commission could easily convince me otherwise, but until it does, I hold the conviction that nothing would be so difficult as doing nothing. Somebody told my wife that retirement meant half the income and twice the husband. She hasn't mentioned the subject since. ■■■■