LETTERS

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POSTOPERATIVE PAIN

I read with interest the December JADA article by Dr. Cenck Canakçi and Dr. Varol Canakçi, "Pain Experienced by Patients Undergoing Different Periodontal Therapies (JADA 2007;138[12]:1563-1573). Having many years of clinical experience, I found myself in agreement with their assessment of levels of postoperative pain and postoperative dentin hypersensitivity.

The last sentence of their conclusion is perhaps most insightful and relevant to the future of periodontal therapy: "It will be important to interpret the findings of our study in comparison with those from other studies of periodontal pain linked with therapeutic methods such as laser surgery."

After nearly two years' experience using the Millennium PerioLase laser (Millennium Dental Technologies, Cerritos, Calif.), my long-term chairside assistant and I recognize that there is less postoperative pain and postoperative dentin hypersentivity after laser surgery than after scaling and root planing and considerably less pain than after gingivectomy or modified Widman flap surgery.

Frequently, patients report no discomfort, and those who have been treated at different times with scalpel and with laser report much less postoperative pain subsequent to laser surgery.

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DENTAL IMPRESSION WAFERS

I read with interest Dr. Mark Ellis and colleagues' September JADA article, "An Evaluation of DNA Yield, DNA Quality and Bite Registration From a Dental Impression Wafer" (Ellis MA, Song F, Parks ET, Eckert G, Dean JA, Windsor LJ. JADA 2007;138[9]:1234-1240).

Although I have little experience with quantifying DNA or determining DNA quality, I must say I have used Toothprints (Kerr, Orange, Calif.) since they were released and am satisfied with the quality of the bite registration. I also have the children emboss their fingerprints on the handle. If the wafer is heated to the recommended temperature and seated right away, there should be no problem getting as good a quality on the bite registration as if warmed wax were used, which has been a standby for bite registrations for years.

My determination of a quality bite registration from the wafer is to let it set to room temperature and reseat it. I have had a very small percentage that needed to be redone, but the reason always was due to the patient's not biting long or firmly enough. Once this was resolved, the bite registrations were consistent.

Please don't construe this suggestion as belittling the research. I am just passing along my experience, so others don't discount the overall benefits of this inexpensive and easy-to-use method.

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DATA QUESTIONED

I would like to thank Dr. Mark Ellis and colleagues for their research identifying the important issues of search and identification of missing and unknown children. As the inventor of the Toothprints (Kerr, Orange, Calif.) bite impression technique, I do, however, have serious concerns regarding their most recent publication in September JADA, "An Evaluation of DNA Yield, DNA Quality and Bite Registration From a Dental Impression Wafer" (Ellis MA, Song F, Parks ET, Eckert G, Dean JA, Windsor LJ. JADA 2007;138[9]:1234-1240).

These concerns specifically arise from the reporting of data collected in 2005 by the authors under Indiana University Institutional Review Board approval. These data were reported previously in two scientific

venues: first, as a published abstract in Pediatric Dentistry[1] and second, as an OMNII Oral Pharmaceuticals Pediatric Dentistry Postdoctoral Fellowship research presentation by Dr. Ellis at the annual meeting of the American Academy of Pediatric Dentistry (AAPD) in Orlando in 2005.[2]

No disclosure in the JADA article was made as to the previously reported conclusion that "Toothprints wafer impression material … was able to produce an accurate representation of the dentition." In that the methods, analysis and conclusions differ in the published abstract, the presentation and the JADA article, it would necessarily precipitate a number of important questions addressed here for the authors' reply.

First, why were the data and previous reports not cited in the literature review of the JADA article? Which method was used to collect the data on the children? I would ask the authors to define the actual sequence of data collection (rinsing prior to taking the bite impression would certainly be expected to reduce the quantity of DNA available for capture on the wafer).

Second, and perhaps most importantly, during the AAPD presentation, Dr. Ellis described the problems encountered with the data collection. This included "child didn't really want to stay closed" and "warping" of the wafer. This also would help to explain the poor quality of the bite impression shown in Figure A of the JADA article (are there seven teeth in the bite impression and 10 teeth on the stone model?). Did the technique used for the bite impression produce the quality and clarity described in the published standard[3] (this thermoplastic material itself is actually more accurate than alginate [Kerr Dental, unpublished data, 2004])? Because the data collection problems identified by Dr. Ellis in the presentation were not reported in the JADA article, could the distortions caused by a faulty technique have contributed to any of the mismatched comparisons?

Third, was the comparison technique "modified" after 2005? There was no indication of how a determination for match and unmatch was calculated. Was the examiner calibrated? What variance in overlap was recorded as a mismatch? To what sensitivity (micrometers, millimeters) were the comparisons made? Bite mark analysis is accepted to be a "physical comparison science with most identifications based on uniqueness" (sometimes only one or two teeth). The method described in the study, requiring matching all teeth at the 95 percent confidence level, might even bind future forensic testimony to an excessive standard. Perhaps the analysis presented by Dailey and McGivney[4] at the American Academy for Forensic Sciences meeting in 2005 is a more useful tool? They also affirmed that "quality control is an absolute requirement."

Finally, at the American Board of Forensic Odontology 1999 Bitemark Workshop,[5] an accuracy score of 0.86 was concluded to correlate with bite mark certainty and forensic value. It begs the question: are the authors' conclusions even consistent with their results?

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1. Ellis M, Dean J, Windsor J, et al. An evaluation of Toothprints DNA yield and bite registration (abstract). Pediatr Dent 2005;27(2):163.
2. OMNII Pediatric Dentistry Postdoctoral Research Fellowship presentations (CD-ROM). Richmond Hill, Ontario, Canada: Content Management; 2005.
3. Tesini DA, Harte DB. Anatomy of a properly taken Toothprint thermoplastic bite impression. J Mass Dent Soc 2005;54(2):22.
4. Dailey JC, McGivney J. The dental forensic value and usefulness of Toothprints (abstract F10). In: American Academy of Forensic Sciences Proceedings. Colorado Springs, Colo.: American Academy of Forensic Sciences; 2005:214.
5. Arheart KL, Pretty IA. Results of the 4th ABFO Bitemark Workshop: 1999. Forensic Sci Int 2001;124(2-3):104-111.

Authors' response: Our thanks to both Drs. Schroeder and Tesini for their letters. In response to Dr. Tesini's first inquiry about the previous reports, the first and second references to which he refers[1,2] are the same study. The abstract was published as a research abstract for the 2005 American Academy of Pediatric Dentistry (AAPD) meeting,[1] which included the OMNII research presentations.[2] As stated in Pediatric Dentistry, the abstract was not edited or reviewed.

In addition, we did not realize that the research abstract was going to be published in Pediatric Dentistry and did not have a chance to edit the proofs. This resulted in several errors. However, this abstract does state, "Toothprints wafer impressions material appears to be a valid bite registration material." After more critical analyses of the data and critical reviews by the JADA reviewers and a forensic dentist, the conclusion was that the Toothprints (Kerr, Orange, Calif.) bite registration was of

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value, but it was not good enough for forensic identification.

The actual sequence of data collection is stated in our JADA article, and we agree that rinsing prior to taking the bite impression would certainly reduce the quantity of DNA available for capture. Therefore, this was not the sequence performed.

To address Dr. Tesini's second question, this study was conducted by using the manufacturer's original fabrication technique. The patient was instructed "to bite hard onto the softened wafer and hold for 20 seconds to record dentition and capture saliva." It is very interesting that the video describing the technique on the Web site, "dentrek.com/class/FlashClass/DTST/TPrints/Toothprints_Control.swf", now states that the patient should bite hard for 50 seconds. And Dr. Schroeder noted in his letter that the small percentage of his bite registrations that needed to be redone were due to patients "not biting long enough or firmly enough."

It would be very interesting to determine if having the patient bite two and one-half times longer would significantly increase the quality of the bite registration obtained from the Toothprints. We realize that changes or modifications to the fabrication technique will affect the quality of the bite registration obtained from the Toothprints. Future studies with the modified manufacturer's directions should be conducted to determine the effects of these modifications on the quality of the bite registration, as well as DNA capture.

The presentation at the AAPD meeting[2] was reported as preliminary results, before further analyses and statistical tests were performed and before reviews by a forensic dentist and by JADA. It is interesting that Dr. Tesini's statement that "this thermoplastic material itself is actually more accurate than alginate" is based on unpublished data from Kerr, the manufacturer of Toothprints. Other evidence that he cites in his letter is his own article, his third reference.[3] Our report appears to be one of perhaps two independent studies examining Toothprints.

In response to Dr. Tesini's third point, the American Board of Forensic Odontology (ABFO) defines a bite mark as "a physical alteration in a medium caused by the contact of teeth."[4] The markings on the Tooth prints material certainly constitute a bite mark, according to this definition. Consequently, a bite mark analysis was used to compare the markings on the Toothprints material with models of the teeth of the subjects.

The toothprint was scanned at 300 dots per inch (dpi) by using a flatbed scanner along with an ABFO no. 2 ruler. The stone models were placed on the flatbed scanner so that the incisal edges of the teeth were in contact with the scanner bed and scanned at 300 dpi. An ABFO no. 2 ruler was included in the scan at the level of the incisal edges. An overlay was created with the scan of the study model captured at 50 percent transparency. The overlay was placed over the scan of the toothprint that corresponded with the model. The number of teeth incisal edges/occlusal surfaces captured in the scan of the model that corresponded to marks in the Toothprints material were counted. The number of matches was divided by the number of tooth marks present in the bite and multiplied by 100 to produce a percentage of matches.

ABFO guidelines[4] list three degrees of certainty: reasonable medical certainty, probable (more likely than not) and exclude. The guidelines also state that "terms assuring unconditional identification of a perpetrator, or without doubt, are not sanctioned as a final conclusion." with regard to bite mark analysis. This level of certainty would not be acceptable in a dental forensic identification. In this study, only one Toothprint/model set had 100 percent matching. The rest had between one and four mismatches. Utilizing the ABFO guidelines, the range of one to four mismatches would place the match somewhere between "probable" and "exclude."

Dr. Tesini's fourth reference, the Dailey and McGivney study,[5] is an abstract in the proceedings of the annual session of the American Academy of Forensic Sciences. It appears that these authors were comparing an electronic image of the Toothprints material with a manipulated "positive" image of the original image. Additionally, these authors only looked at one tooth per age group (for example, permanent first molar for 7-year-old children). Bite mark analysis looks at all marks left by teeth rather than one type of tooth in a dental arch.

Further, Dailey and McGivney[5] note, "Toothprints is a reliable method to record dental information that is of forensic value." It is difficult to

determine what "forensic value" means. We found that the impression wafer in Toothprints did not appear to make a bite registration with enough accuracy to be used for forensic identifications. The conclusion should not be misconstrued to imply that the Toothprints wafer has no forensic value. It can provide dental information (as well as DNA) to assist in getting close to an identification. Our conclusion is that it should not be used as the sole source of antemortem dental information for the purpose of definitive identification.

We hope this explains, in part, Dr. Tesini's concerns. We still agree that Toothprints can be used for collection of DNA for identification, and that it has some forensic value in regard to bite registration, but that it cannot under the manufacturer's directions utilized in this study be used for absolute identification.

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1. Ellis M, Dean J, Windsor J, et al. An evaluation of Toothprints DNA yield and bite registration (abstract). Pediatr Dent 2005;27(2):163.
2. OMNII Pediatric Dentistry Postdoctoral Research Fellowship presentations (CD-ROM). Richmond Hill, Ontario, Canada: Content Management; 2005.
3. Tesini DA, Harte DB. Anatomy of a properly taken Toothprint thermoplastic bite impression. J Mass Dent Soc 2005;54(2):22.
4. American Board of Forensic Odontology. ABFO bitemark methodology guidelines. "www.abfo.org/Bitemark%20Guidelines.doc". Accessed Dec. 14, 2007.
5. Dailey JC, McGivney J. The dental forensic value and usefulness of Toothprints (abstract F10). In: American Academy of Forensic Sciences Proceedings. Colorado Springs, Colo.: American Academy of Forensic Sciences; 2005:214.

POST AND CORE

Whereas Dr. Bahadir Ersu and Dr. Şenay Canay presented a unique method in their November JADA case report, "An Alternative Post-and-Core Method for Patients With Limited Interarch Space" (JADA 2007;138[11]:1464-1467), I must take exception to items in their conclusion.

First, where there is limited interarch space, you would not want to erupt the teeth because you would lose whatever is gained in tooth eruption to tooth preparation in order to acquire adequate interarch clearance for your restorative material.

Second, I take exception to the comment that crown-lengthening techniques typically produce other problems. The tooth shown had adequate bone support and at least two millimeters of tooth structure showing above the tissues. Repositioning these tissues another two millimeters apically would have given adequate retention for a conventional crown.

I fear that the method shown with the large post makes the tooth much more likely to fracture than simply covering it with a proper crown.

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Authors' response: Regarding the crown-lengthening procedure, the patient refused to have orthodontic brackets in her mouth for at least six months. Crown-lengthening techniques typically produce other problems; the procedure may expose furcations, and unfavorable root-to-crown ratio can be expected. Also, there is very limited interarch space.

Covering the molar teeth with a conventional crown will not give sufficient support to the three-unit fixed partial denture. If erupted because of the flared molar roots, force eruption in the posterior region may present proximity problems. Tipping and unfavorable axial tooth position may also preclude extrusion.

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MULTISYSTEM DISEASES

We write to comment on the December JADA articles by Dr. Junu Ojha and colleagues and Dr. Scott De Rossi and colleagues regarding patients with Crohn disease and ulcerative colitis.[1,2] Both articles recommended appropriate local treatment for patients with moderate oral symptoms. We believe that it may be appropriate for the dentist to make clinical recommendations regarding the use of more appropriate current systemic pharmaceuticals to patients with severe oral manifestations of multisystem diseases.

We have been much more aggressive in our patient education and referral discussions with patients who have severe oral manifestations of multisystem diseases. This is because we have had several family members and good friends who have presented with severe oral manifestations associated with diagnosed rheumatoid arthritis,

Crohn disease, ulcerative colitis and vasculitis.

These are patients who were severely disabled and barred from daily pursuits owing to severe oral, systemic and other organ symptoms. They are not interested in palliation of any symptoms. Rather, they are highly motivated and wish to pursue aggressive treatment to get back to healthy lifestyles immediately.

One of our mentioned patients became severely disabled in a short period of time from oral, systemic and gastrointestinal symptoms related to ulcerative colitis and vasculitis. After a discussion with the dentist and her two physicians, the patient was brought to a remission by treatment with Remicade (Centocor, Horsham, Pa.). Our personal and professional experience with this group informs us that many patients can benefit from the dentist's leading aggressive, informed and clear discussion between the patient and physicians.

Accordingly, we advise all of our patients who present in this way of the availability and possible benefits of the most up-to-date systemic pharmaceuticals to treat their conditions, specifically naming the biological response modifier drugs by brand name such as Enbrel (Immunex, Thousand Oaks, Calif.) Remicade and Humira (Abbott Laboratories, Abbott Park, Ill).

For those patients whose physician has already mentioned or recommended the appropriate drug, we have only reinforced the prescription. For patients whose physicians have not, it may be appropriate for the patients to seek referrals to physicians proficient in such treatments.

Both of the JADA articles and the medical and dental literature mention how oral manifestations of these immune-related or inflammatory multisystem diseases improve as the diseases remit and exacerbate as the diseases flare. Therefore, it is in the dentists' and patients' interest to push the systemic disease into remission with the most aggressive systemic pharmaceutical treatment in order to control severe oral manifestations along with the disease itself.

Just as a gastroenterologist or primary physician may treat the intestine pharmaceutically in order to remit gastrointestinal symptoms and, thereby, remit other systemic symptoms including oral symptoms, an appropriately trained dentist should be able to recommend aggressive systemic pharmaceutical treatment in order to remit severe oral symptoms along with remission of systemic and other local organ symptoms.

Therefore, for now, we are recommending clear, equal communication among dentist, patient and physicians and more active participation by the dentist in the overall treatment plan.

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1. Ojha J, Cohen DM, Islam NM, Stewart CM, Katz J, Bhattacharyya I. Gingival involvement in Crohn disease. JADA 2007;138(12):1574-1581.
2. De Rossi SS, Salazar G, Sarin J, Alawi F. Chronic lesions of the gingiva and mucosa. JADA 2007;138(12):1589-1592.

Author's response: We read with interest Drs. Andrew and Amy Tanchyk's letter in response to our article and would like to commend them for their diligence and commitment to the overall health of their patients. Their letter opens up the age-old discussion of how much involvement dentists should have in advising overall and specific health care to their patients. We support the view that dentists should aggressively monitor and be involved in the systemic health of their patients, and we believe it is paramount to successful treatment of all patients.

Fortunately for us, our patients had well-controlled gastrointestinal disease with mainly oral symptoms and signs that responded well to topical steroid therapy. In addition, many of the cases reported in our article were diagnosed in the middle to late 1990s, when many of the latest immune-modifying drugs were not available.

We would like to note that oral symptoms may be the first sign of these serious systemic disorders. An astute dentist should be able to refer such a patient to a competent specialist for appropriate therapy, and then follow up both with the patient and the physician as the course of treatment progresses.

Moreover, the pharmaceutical breakthroughs available to patients with serious systemic disorders are as fast-changing as they are diverse, making it very difficult for the average dentist (and sometimes physicians) to keep up with the latest therapies available for the myriad diseases patients may have. That is one of the reasons why today's informed patient seeks a specialist's advice on most of these conditions. The medications that the Drs. Tanchyk mentioned—namely, Enbrel (Immunex Corporation, Thousand Oaks, Calif.),

Remicade (Centocor, Horsham, Pa.) and Humira (Abbott Laboratories, Abbott Park, Ill.), all tumor necrosis factor (TNF) antagonists—affect the normal immune response in humans and, as a result, may present with serious side effects, including but not limited to an increase in the risk of developing unusual infections like tuberculosis. Also, there is a risk of increased sinus infections, bronchitis and pneumonia.[1-4]

Other issues that are being investigated are the risk of lymphoma, congestive heart failure and multiple sclerosis. In fact, Ramos-Casals and colleagues[2] report development of autoimmune diseases in patients receiving TNF antagonists. Additionally, there is inconclusive scientific evidence that TNF antagonists improve oral manifestations of autoimmune disease.

We believe dentists should advise patients to seek the latest medical care from their physicians. It would be beyond the scope of dental practice to advocate specific immune suppressive medications for treatment of nondental/nonoral diseases that may or may not have oral manifestations.

A point worth mentioning is that most of the patients the Drs. Tanchyk described as having oral manifestations of serious systemic diseases were either good friends or family members, introducing the possibility of personal bias. It would be interesting to ask the readership if they would feel comfortable, for example, advising patients regarding the latest pharmacotherapy available for severe renal disease or adrenal malfunction, both of which may produce oral manifestations.

In conclusion, we do agree and advocate that dentists should be aware of the systemic health of their patients should communicate with physicians and patients, and should be an integral part of the disease management team. However, we would caution against becoming too involved in promoting specific systemic therapies for multisystem diseases that may or may not produce oral manifestations.

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1. Curtis JR, Kramer JM, Martin C, et al. Heart failure among younger rheumatoid arthritis and Crohn's patients exposed to TNF-alpha antagonists 9published online ahead of print Oct. 15, 2007). Rheumatology (Oxford) 2007;46(11):1688-1693.
2. Ramos-Casals M, Brito-Zerón P, Muñoz S, et al. Autoimmune diseases induced by TNF-targeted therapies: analysis of 233 cases. Medicine (Baltimore) 2007;86(4):242-251.
3. Gómez-Reino JJ, Carmona L, Angel Descalzo M; Biobadaser Group. Risk of tuberculosis in patients treated with tumor necrosis factor antagonists due to incomplete prevention of reactivation of latent infection. Arthritis Rheum 2007;57(5):756-761.
4. Curtis JR, Patkar N, Xie A, et al. Risk of serious bacterial infections among rheumatoid arthritis patients exposed to tumor necrosis factor alpha antagonists. Arthritis Rheum 2007;56(4):1125-1133.

Author's response: We thank Dr. Andrew and Dr. Amy Tanchyk for their comments in response to our article. Their letter raises an important point regarding our role as health care providers. One of our primary purposes as health care providers is to reduce the morbidity of oral disease. But is that all? Where do the boundaries lie for oral health care providers in medicine? The Drs. Tanchyk argue that it may be appropriate for the "dentist to make clinical recommendations regarding the use of more appropriate current systemic pharmaceuticals to patients with severe oral manifestations of multisystem diseases."

Although we appreciate their sharing their own personal experiences, to make broad recommendations based on this would be scientifically and clinically inappropriate. I do agree that oral health and systemic health are inextricably bound and that we have the potential to screen and monitor medical diseases and conditions. However, our primary role continues to be that of experts in oral disease.

Certainly our patients will be better served if we initiate a dialog with our physician colleagues and play a more active role in monitoring adherence to drug regimens and disease maintenance. But to actively make clinical medical recommendations to patients regarding the medical management of their diseases is inappropriate and serves to undermine the growing relationships we are building with our colleagues in medicine.

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