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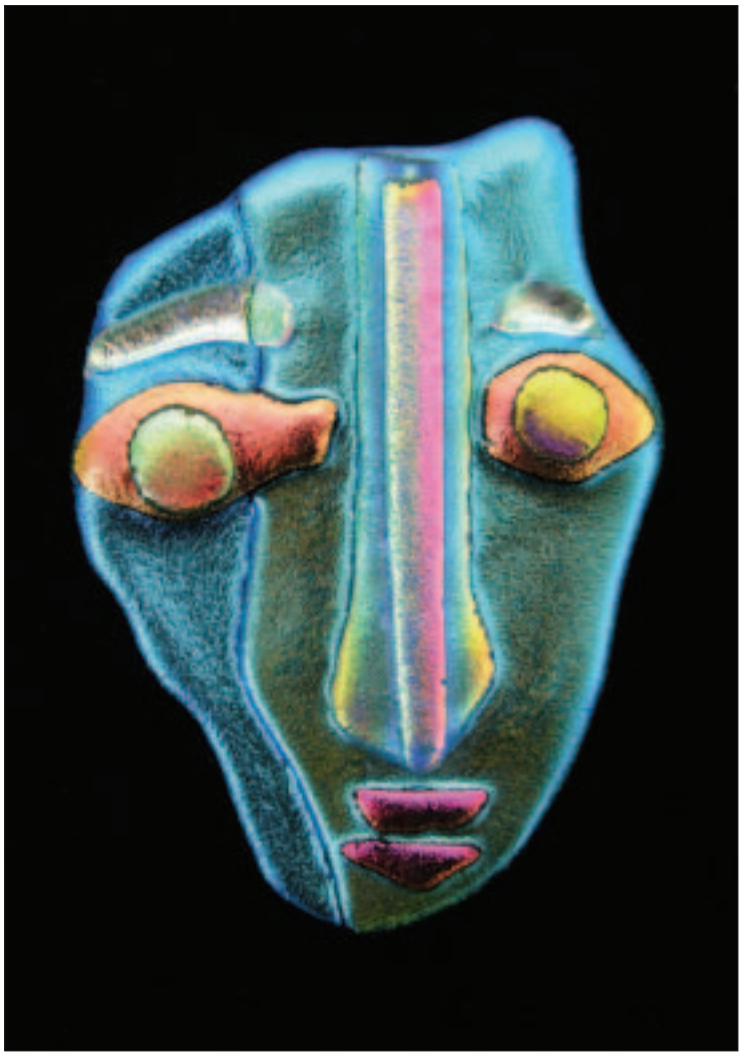

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JCDA
Journal of the Canadian Dental Association

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*THE DENTAL ADVISOR, Vol. 21, No. 5, June 2004

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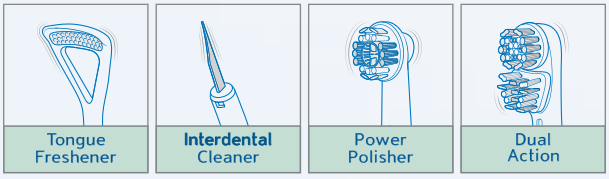

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1 Heanue M et al. Manual versus powered toothbrushing for oral health (Cochrane Review). In: The Cochrane Library, Issue 1, 2003, Oxford: Update Software **2** Sicilia A et al. A systematic review of powered vs manual toothbrushes in periodontal cause-related therapy. J Clin Periodontol 2002; 29(Suppl 3):39-54. **3** van der Weijden, GA et. al. Powered toothbrushing compared to a professional polish. J Dent Res 2001; 80 (Spec Iss): 743 Abstr.1734.

Guest Editorial

FROM PRACTICE TO PUBLICATION

Dr. Bruce R. Pynn

Textbooks have historically served as a major professional reference and information source. However, by the publication date much of the information contained in a textbook may no longer be current. The unfortunate reality is that new and important information can take years before it is finally published in this format.

Indeed, if it were not for the existence of peer-reviewed professional journals, many of our innovative techniques might have taken an inordinate amount of time to become incorporated into our armamentarium. Prime examples of this include the pioneering work of Robert Hall (1959), who reported on the beneficial effect of the high-speed turbine unit for bone removal in a variety of oral and maxillofacial surgical procedures; the research of William Bell (1975), whose anatomic studies formed the biological basis for our modern advanced orthognathic surgical techniques; and the innovative surgical techniques for treating mandibular fractures described by Edward Ellis (1993). Unquestionably, peer-reviewed publications represent one of the most effective means of communicating pertinent and timely information to dental specialists and generalists alike.

In the past 2 decades, major changes have taken place in general and specialized dentistry. Much of the early oral surgery literature dealt with basic exodontia, removal of wisdom teeth, maxillofacial trauma, infections, cysts and tumours. More recently, there has been a shift in emphasis to orthognathic and reconstructive surgery, temporomandibular joint surgery, implants, distraction osteogenesis, endoscopic procedures and esthetic surgery. These changes in surgical focus demonstrate how our specialty uses basic information gleaned from publications to develop and implement new surgical procedures. This principle is illustrated in this edition of *JCDA* by Dr. David Walker, who describes a case involving bilateral intraoral distraction osteogenesis, and by Drs. Friedlich and Rittenberg, who report on a case in which a bur fragment was retrieved from the maxillary sinus of a patient using an endoscopic technique. Both papers demonstrate how the authors' experience became the source of interesting and useful information, worthy of being shared with colleagues.

In Canada, we are fortunate to have internationally recognized oral and maxillofacial surgeons such as Dr. David Precious at Dalhousie University and Drs. Simon Weinberg and George Sándor at the University of Toronto, all of whom are regular contributors to the dental literature. However, our dental specialists and generalists should not have to depend solely upon our academic institutions as the primary source of contributors to the professional literature. With more than 18,000 practising dentists and dental specialists throughout the country, there must be an abundance of interesting material from which we could all benefit. This information can be published and there are people willing to help practitioners bring this worthwhile material through to publication.

I vividly recall the trepidation that I experienced when preparing my first article in consideration for publication. Years later, I still feel anxious each time I submit an article, but my anxieties are tempered with a sense of accomplishment and fulfillment. These feelings compel me to continue to submit articles.

There is no more noble pursuit than the sharing of knowledge amongst professional colleagues. In this regard, I would encourage practitioners engaged in private practice to share their expertise, knowledge and interesting cases, so that we may all learn from each other. Dr. Daniel Laskin, editor emeritus of the *Journal of Oral and Maxillofacial Surgery*, once stated that "through such sharing of knowledge everyone benefits, because it leads to closer cooperation between specialties and the dental community at large, ultimately leading to better patient care." Teachable moments happen every day in our practices. Take advantage of these moments by writing them down, researching and refining your ideas and submitting a paper to a journal. By doing so, you will not only help to enlighten your colleagues, but more importantly, your efforts may eventually translate into improved patient care.

Bruce R. Pynn, MSc, DDS, FRCD(C)
Thunder Bay, Ontario
Dr. Pynn is the CAOMS liaison to JCDA

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1. Volpe AR, et al. J Clin Dent. 1996; 7 (suppl): S1-S14. 2. Data on file, Colgate-Palmolive Company. 3. Ayad f, et al. Clinical efficacy of a new tooth whitening dentifrice. J Clin Dent. 2002; 13:82-85. 4. Singh S, et al. The clinical efficacy of a new tooth whitening dentifrice formulation: A six-month study in adults. J Clin Dent. 2002; 13:86-90.
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President's Column

LISTENING TO THE PUBLIC

Dr. Alfred Dean

It can be difficult to see yourself as others see you. In my experience, many dentists have a distorted idea of how they are viewed by the general public. Moreover, the dental profession as a whole has trouble seeing itself through the public's eyes.

One way to determine the public's perception of dentistry is to ask. CDA did just that in a national telephone survey of over 1,800 Canadians conducted at the end of 2004. For the most part, the results are quite encouraging and should be considered a source of pride for the profession.

Overwhelmingly, patients see dentists as skilled and professional and having their best interests in mind. Survey participants said they trust the advice their dentist gives them and they feel dentists provide reliable information about their oral health. In fact, when ranked against other professions, such as lawyers, physicians, pharmacists and accountants, dentists were rated the highest in terms of level of professionalism.

These results point to the fact that dentists are doing a good job of maintaining the public's confidence about their role in delivering good oral health care. This is especially significant when you consider that almost two-thirds of those surveyed said that their dentist is their main source of oral health care and treatment information.

When asked about levels of service, dentistry also performed very well. Almost 90% of participants responded positively to questions related to office location, hours of operation, being able to communicate in the language of their choice and being able to see the dentist of their choice.

The public appears to be hearing our profession's messages about the importance of good oral health. The number of people reporting good hygiene habits is on the rise, as is the number reporting a dental visit at least once a year. Dental phobias seem to be decreasing, with more patients expressing how benign a dental visit has become relative to many years ago.

The survey revealed that communication with patients may be an area for improvement. When asked, very few patients had been consulted on general health issues. Two-thirds of respondents said that their dentist did not discuss a link between oral health and other conditions such as diabetes, heart disease or stroke. Similarly, results showed that dentists do not appear to talk to their patients about the symptoms of oral cancer. However, patients reported that they are very interested in receiving information in the form of brochures and they enjoy reading this material when it is made available.

Respondents were not shy about saying that they believe that government has a role to play in oral health. Almost 90% suggested that the government should play a larger role in raising awareness of oral health among Canadians. The federal government has moved one step closer to fulfilling this role by appointing a Chief Dental Officer position at Health Canada. Dr. Peter Cooney will assume this new role and part of his mandate includes promoting improvements in the oral health status of Canadians. It was also interesting to note that 80% of those asked expressed a desire to see the national health care system expanded to include some level of dental care.

I've just summarized a lot of statistics but what do they all mean? CDA must plan future public education strategies and develop materials for our members by continually monitoring the attitudes and needs of our patients. This information helps identify areas where greater efforts can be directed to improve relationships with patients.

One such area that could benefit from increased examination is the seniors population in Canada. In February, I attended the first ever Seniors Oral Health Forum — a meeting between CDA and the provincial dental associations — where we began the process of identifying the key issues and steps for action to address this looming health care crisis.

The dental profession needs to learn more about the specific needs of seniors. Surveys and statistics gatherings are ways to engage Canadians of all ages in a dialogue about oral health. I believe that opportunities for exchanges between patients and the profession inevitably lead to opportunities for improvements in the delivery of oral health care.

Alfred Dean, DDS
president@cda-adc.ca

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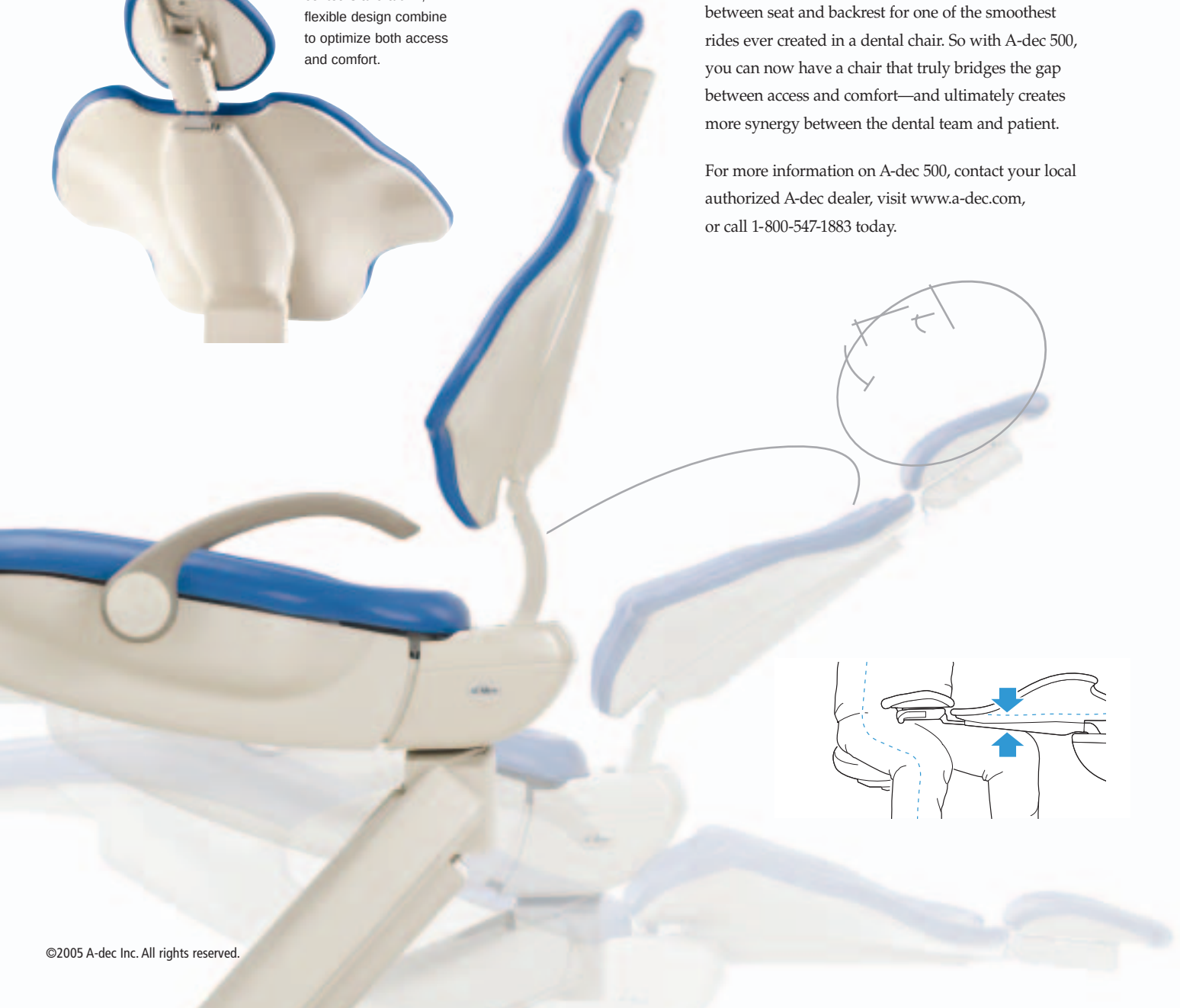

Letters

Editor's Comment

The *Journal* welcomes letters from readers about topics that are relevant to the dental profession. The views expressed are those of the author and do not necessarily reflect the opinions or official policies of the Canadian Dental Association. Letters should ideally be no longer than 300 words. If what you want to say can't fit into 300 words, please consider writing a piece for our Debate section.

Gilbert Medical Dental Supplies Trading as Excel-Dent

One of our Canadian customers recently sent us a copy of an article[1] published in *JCDA* concerning the unsavoury business practices of Gilbert Medical Dental Supply ("Gilbert's").

We are especially concerned that Gilbert's seems to have carried out many of these practices in the name of Excel-Dent, a name that bears an uncanny resemblance to the name of our company, Excel Dental Supplies Ltd.

Excel Dental Supplies is incorporated in Hong Kong and manufactures gutta-percha and absorbent paper points in China for the endodontic market. We have been doing business for over 15 years and have customers in most major markets, including Canada. A sizeable portion of our business is private label business, but we do sell products under the "Excel" label.

We believe that the similarity in names between our company and Excel-Dent has created uncertainty in the minds of our current and potential customers and has resulted in harm to our reputation. We realize this is a matter that should be resolved in a court of law, but legal fees being what they are and because we would need to file "out of jurisdiction," it seems that the costs might exceed any potential benefit we would be able to realize.

We would simply like CDA to know that Canadian dentists were not the only parties harmed by Gilbert's business practices.

Ronald B. Stern
Director
Excel Dental Supplies Ltd.
Chai Wan, Hong Kong

Reference

1. Rogue dental supply company declares bankruptcy [News]. *J Can Dent Assoc* 2004; 70(9):592.

QDSA's Withdrawal from CDA

Dr. Chantal Charest, the president of the Quebec Dental Surgeons Association (QDSA), did her best to explain the reasons for her organization's withdrawal from CDA,[1] but I remain unconvinced. On careful analysis, the justifications she gave certainly do not make a lot of sense, nor do they present a convincing case for the "s" word — *separation*.

Her contention that a professional organization must understand and respond appropriately to the concerns and views of its members, making its entire resources available in the process, is correct. And that is precisely what CDA sets out to do for its entire membership, including Quebec dentists, through *their* elected CDA representatives. If, as a democratically conceived and structured national body, CDA is able to satisfy the needs of dentists in all other provinces, there is no reason to presume it could not adequately represent the interests of Quebec practitioners. That assumption is only valid, of course, in the absence of some other, unstated motive, such as covert nationalism. While Quebec dentists continue to emphasize the differences that they claim constitute a separate national identity, the rest of us are intent on forging the necessary cohesion among *all* dentists that we regard as the only effective tool for dealing with (often recalcitrant) governments.

No matter how complex and different a dental administrative structure might be within a given province, the dentists of that province merely need to funnel their input, via some structured pyramid system, to their CDA representatives in order to be heard. If it works for other provinces, it can be made to work for Quebec, providing a reasonable attitude of accommodation prevails and that no hidden agenda exists.

Dr. Charest's assertion that Quebec's representatives in CDA would not "have the right to represent their home provincial association and must exclusively serve the greater interests of CDA" is balderdash. Under any system, provincial representatives would only have to refer back to their constituents to obtain guidance to negotiate as duly elected board members.

Unity, an essential goal in a country as diverse as Canada, can only be achieved if we keep the following truism in mind: *differences divide, similarities unite*. There is no implication of boring uniformity in this adage, but merely the recognition that exploiting the natural attractive forces among people over the divisive ones is more constructive; it endorses the logic of unity over disunity.

Dr. Donald F. Mulcahy
Edmonton, Alberta

Reference

1. QDSA's withdrawal from CDA. [Letter] *J Can Dent Assoc* 2004; 70(10):663.

Is Dentistry a Profession?

I am astounded at Dr. Welie's concluding remarks in the final article of his series on professionalism,[1] where he suggests that because dentists attend seminars on how to build a successful business or perform cosmetic procedures, this somehow reflects a desire on dentistry's part to relinquish its status as a profession.

When was the last time any profession pursued the goal of earning less income? Am I the only one who finds that a health care system run by for-profit physicians who essentially earn their income from tax dollars is a little bit insane? All I ever hear from the doctors I rub shoulders with is how they want to earn more money. Most of the

physicians in my city are living lifestyles that seem built on consumption. All the dental procedures done in one year would be dwarfed by the medical profession's "cosmetic interventions."

Every day I deal with dental patients with active disease who, even in this era, have to be convinced that it would be a good idea to repair their decay. Right after they turn down treatment because they aren't in pain yet, they rush to their Botox and laser hair removal appointments.

Dr. Kim W. Scott
Medicine Hat, Alberta

Reference

1. Welie JV. Is dentistry a profession? Part 3. Future challenges. *J Can Dent Assoc* 2004; 70(10):675–8.

Response from the Author

I am quite pleased with Dr. Scott's response because he (unwittingly?) supports my concerns. I never claimed that medicine, unlike dentistry, is a genuine profession and not at risk. If Dr. Scott's description of the physicians in his town is correct, and if that description were to apply to all physicians (as he seems to suggest), it would merely show that the medical profession is not or is no longer a profession as I have defined that term. But I am far less pessimistic than Dr. Scott. I am quite certain that many physicians, and likewise many dentists, seek to be genuine professionals rather than successful businesspersons. Granted, it may not always be easy to reach that goal: financial gain is always a temptation and there are many systemic barriers to this aspiration. But for many health care providers, it nevertheless remains a goal worth striving for. Unfortunately, Dr. Scott's stated practice philosophy shows that not all health care providers are so inclined, which is why I deemed it urgent to sketch a view of professionalism that is admittedly idealistic and aspirational. But isn't that what ethicists are supposed to do?

Dr. Jos Welie
Creighton University Medical Center
Omaha, Nebraska

Reference

1. Welie JV. Is dentistry a profession? Part 3. Future challenges. *J Can Dent Assoc* 2004; 70(10):675–8.

Who Should Represent Dentists?

Dr. Richard Busse's letter[1] in the November issue of *JCDA* painted an idyllic picture of organized dentistry in British Columbia. According to Dr. Busse, the separation of membership functions (undertaken by the Association) and licensing/regulatory roles (performed by the College) has been complete and has successfully alleviated all scepticism and fear amongst the membership.

In reality, this separation is far from being complete or satisfactory. Indeed, there is a growing number of dentists in B.C. who believe that the separation is hardly more than window dressing.

Dr. Busse also states that the funding model used in B.C., which is mandatory through the licence fee, is the same as in the other provinces. However, he fails to mention that this is *not* the case in Canada's 2 largest provinces, Ontario and Quebec, which represent approximately 64% of Canada's dentist population. Dentists residing in those provinces can freely decide if they want to belong to their provincial or national organization.

Dr. Busse gives 2 examples of how the public's interest is being served by all dentists belonging to their member association: access to continuing education and to professional counselling. The fact of the matter is that dentists are overwhelmed by continuing education opportunities and hardly need the help of the Association in that regard. In terms of counselling, an increasing number of dentists turn to the free counselling services offered through CDSPI because they are concerned with confidentiality issues.

I am glad that Dr. Busse did not mention as a "members' benefit" our seriously flawed and much contested fee guide, which, for more and more practitioners, represents a hindrance to running a practice in a fiscally prudent manner. It is an additional annoyance to many members that the Association spends a huge amount of money annually for the services of an out-of-province accountant/statistician to "develop" the fee guide and create a report of dubious practical value.

Who do I believe should represent dentists? An independent organization (such as an Association) whose budget comes from voluntary membership fees, whose offices are separate from all other dental or government organizations and agencies, whose employees are not involved in the activities of other dental organizations, and whose sole purpose and interest is the representation and support of its members. An organization that would stand behind members who are having disciplinary and regulatory problems. An organization that would represent its members against organizations such as SOCAN, which, as I see it, is attempting to exploit the members and to discriminate against our profession.

Dr. Emil Sztopa
Port Coquitlam, B.C.

Reference

1. Busse R. Who should represent dentists? [Letter] *J Can Dent Assoc* 2004; 70(10):663–4.

Dr. Busse[1] gives a very concise and interesting historical account of the evolution and development of organized dentistry in British Columbia. As you may already know, the findings of B.C.'s Seaton Commission were congruent with those of Ontario's Woods-Gordon Report of the 1960s. On the basis of this report, the government forced dentists in Ontario to separate the Royal College of Dental Surgeons of Ontario, the licensing body for dentistry, from the Ontario Dental Association (ODA), the voluntary association of dentists.

Since graduating in 1954, I have been a member of CDA, ODA, the Niagara Peninsula Dental Association (my regional component society), and the St. Catharines Dental Society. I joined FDI when I became aware of this organization and realized its relevance and usefulness to me. I got full value and great benefits for all dues paid.

However, I also appreciate that not all dentists agreed with my assessment of membership benefits, and I strongly believe that they had the right to *not* join, whatever their reasons. I still believe that no one should be forced to pay dues to a society, union or any association if they choose not to join.

As a dentist, I had to constantly produce quality care and please my clients to retain them. I had to prove to my clients that I was competent and that my services were beneficial to them and worth the cost. Likewise, our voluntary dental associations must prove their relevance, worth and benefit to their clients, namely the dentists in their jurisdiction.

Democracy and free market systems are not always the most efficient nor the cheapest way of accomplishing certain objectives. Our Bill of Rights gives us the freedom of choice.

I see no justification for compulsory membership and dues to all the levels of organized dentistry because it "eliminates the necessity of costly membership drives and the possibility of dentists benefiting from services without paying for them."

If the number of dentists is small and they unanimously agree to "compulsory" membership for any reason, then that would be acceptable. Otherwise, it's not a voluntary association but an unpalatable tyranny of the majority.

Dr. Ivan Hrabowsky
St. Catharines, Ontario

Reference

1. Busse R. Who should represent dentists? [Letter] *J Can Dent Assoc* 2004; 70(10)663–4.

CDA and Global Networking

I have written a number of debate articles for *JCDA* recently, mostly on dental ethics and communications, and have received many positive responses, not only from dentists across Canada, but from dentists around the world. From the e-mails I have received from Brazil, Mexico, Spain, India, Pakistan and Australia, I have discovered that our professional issues in Canada are of interest to many others in diverse cultures and distant lands. I want to thank *JCDA* for giving me the opportunity to carry on this dialogue with like-minded dentists around the world. The CDA journal has established itself as a significant player in the global knowledge network. This is a testament to the quality and unique nature of *JCDA*, and is something we should all take pride in.

Dr. Barry Schwartz
School of Dentistry
University of Western Ontario
London, Ontario

Mandibular Third Molar Autotransplantation

My reaction to the article by Drs. Mendes and Rocha[1] on mandibular third molar autotransplantation is: "*Plus ça change, plus c'est la même chose.*"

I would like to refer you to the textbook *Dentistry for the adolescent*,[2] written by Castaldi and Brass. Both these authors, as I'm sure you know, were distinguished Canadian academics and clinicians.

It was my privilege to contribute Chapter 21, "Dental reconstruction with transplants," to this fine text. My contribution included 4-year radiographic follow-up of case histories dating as far back as 1966. The sequential radiographs provided evidence of ongoing pulpal vitality, maturation and growth of root structure, as well as accelerated maturation of coronal pulp chambers.

I have been a member of CDA during my entire practice life. I commend you for the excellent evolution and improvement in our scientific journal, particularly under your watch. However, the peer-reviewed article by Drs. Mendes and Rocha seems to be a little "old hat" to me, given that I conducted presentations on the procedure at provincial and national meetings as far back as 1968.

It was unfortunate that in their historical review for a Canadian publication, the authors did not find the detailed description and clinical guidelines for the procedure in a Canadian text.

Dr. Walter H. Sussel
Chilliwack, British Columbia

References

1. Mendes RA, Rocha G. Mandibular molar autotransplantation — literature review with clinical cases. *J Can Dent Assoc 2004*; 70(11):761–6.
2. Castaldi CR, Brass GA. Dentistry for the adolescent. Philadelphia: W.B. Saunders; 1980.

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News

National Oral Health Month

In April, CDA will conduct its annual National Oral Health Month campaign. This year's campaign aims to reinforce the importance of good oral health in relation to overall health and the role of the dentist as primary oral health care provider. The *Oral Health — Good for Life* campaign will be broadly disseminated using many communication vehicles, including a supplement in the *National Post* and *Le Journal de Montréal*. Downloadable patient education fact sheets and materials are available on the CDA Web site, along with more details of the 2005 National Oral Health Month campaign.

FDI and IADR Publish Report on the Future Delivery of Oral Health Care

The FDI World Dental Federation recently published a report entitled "Cutting edge research that will impact future oral health care" in its February 2005 edition of the *International Dental Journal*. Developed in collaboration with the International Association for Dental Research (IADR), the report condenses the findings of IADR's 21 special research groups with respect to scientific developments in each group's particular field of study.

The new report is targeted towards the general practitioner and summarizes the research that will impact the future delivery of oral health care. Results of the findings have been presented at 2 FDI–IADR science transfer seminars, held in collaboration with IADR's annual convention in 2003 and 2004.

For direct access to the report, see the March *JCDA* bookmarks. Further information on the report can be obtained by writing to Professor Asbjørn Jokstad, FDI's scientific affairs manager, at science@fdiworldental.org.

COVER ARTISTS

This month's cover art comes from **Dr. Christopher Robinson and his wife Dianne** of Edmonton, Alberta. The couple has been married for 33 years and during that time they have engaged in various artistic pursuits individually and collectively.

The artwork on the cover depicts an original composition of a kiln-fired fused dichroic glass pin. This material gains its vibrant colours from an aerospace coating that is applied to colourless glass in a vacuum chamber. Glass art has interested the couple for over 25 years. Originally drawn to flat, stained glass construction they are now more focused on hot glass.

Dr. Robinson is an oral and maxillofacial surgeon who is a past president of the Canadian Association of Oral and Maxillofacial Surgeons (CAOMS) and now serves as its executive director. He was a founder and first chair of CDA's Committee on Specialist Affairs.

Cover photo by Dr. Robinson.
Photo of artists by Dr. Glen Zenith of Edmonton.

Global Tobacco Treaty Officially Enacted

The Framework Convention on Tobacco Control (FCTC) will officially become international law in March 2005. This international tobacco treaty has a primary objective "to protect present and future generations from the devastating health, social, environmental and economic consequences of tobacco consumption and exposure to tobacco smoke."

The treaty required the ratification of 40 countries to become international law and this number was achieved in December 2004. Commenting on the ratification, Dr. J.T. Barnard, executive director of the FDI World Dental Federation, said: "Dentists need to play an active role in smoking cessation with their patients and dental associations need to become effective public health advocates."

The FCTC has been negotiated under the auspices of the World Health Organization (WHO) with FDI participating in the negotiation and lobbying process from the beginning.

For more information on the FCTC, see the March *JCDA* bookmarks

Cone-beam CT Unit a First for UBC Dentistry

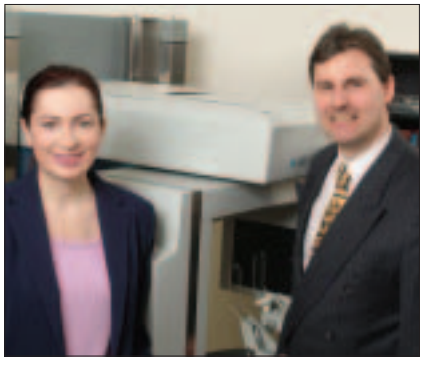
The University of British Columbia (UBC) plays host to the first cone-beam CT (CBCT) unit to be installed in a dental school in Canada. Dr. Elaine Orpe, a clinical assistant professor at UBC who has relocated her private practice to the university, is the owner of the iCAT unit from Imaging Sciences International.

Dr. David MacDonald (PubMed: MacDonald-Jankowski), associate professor and chair of the oral and maxillofacial radiology division at UBC, explains the main features of the CBCT unit. "Formerly, the

relied on both clinical examination and conventional radiology to assess and diagnose lesions affecting the jaw bones," says Dr. MacDonald. "Unfortunately, the radiograph generally reveals only a coarse image of the lesion. This is partly due to the lack of sensitivity to display small changes in the bone and partly due to the superimposition of all structures within the 3D volume of bone, displayed only as a 2D image. This is particularly so with regards to the panoramic radiograph," explains Dr. MacDonald.

He also notes that while spiral CT has assisted to some extent, its spatial resolution, or the ability to separately identify 2 minute points, was still inadequate. Dr. MacDonald believes CBCT overcomes this previous shortcoming. "Spiral CT uses a planar geometry and 2D reconstruction, whereas CBCT perform non-planar geometry and a 3D reconstruction," Dr. MacDonald continues. "As CBCT interrogates a much smaller volume of tissue, it is also called 'micro CT.' The advantage of CBCT is the superior spatial resolution of tissues with high contrast, like mineralized tissue such as teeth and bone. It also imparts a lower radiation dose than spiral CT."

While there are currently other CBCT units (iCAT, Newtom and MercuRay) used in specialist private practice, the iCAT is the only unit with Canadian wheelchair access. ➧



Drs. Elaine Orpe and David MacDonald shown with the iCAT cone-beam CT unit.

Junior Researcher Wins Best Manuscript Prize

In March, the American Dental Education Association (ADEA) presented its 'Best Manuscript of 2004' by a junior researcher in the "Critical Issues in Dental Education" category to Sonya Smithers of Bedford, Nova Scotia. Ms. Smithers was lead author on the article "What Predicts Performance in Canadian Dental Schools?", which appeared in the June 2004 edition of the *Journal of Dental Education.*

The winning manuscript was based on a study examining the validity of both cognitive and non-cognitive factors used for selection to Canadian dental schools. The authors looked at whether the addition of a personality measure would increase the validity of predicting performance beyond that achieved by an interview and the Dental Aptitude Test. It was the first of 2 pilot studies leading to a current multicentre study in Canadian dental schools on admission criteria and its assessment.

Data for the study were collected as part of Ms. Smithers' master's thesis project at St. Mary's University, where she is also a part-time faculty member. Contributing authors on the article were Dr. Vic Catano, chair of the department of psychology at St. Mary's University, and Dr. Don Cunningham, assistant dean of the faculty of dentistry at Dalhousie University. ➧

CIHR Issues a Request for Applications

In December 2004, CIHR's Institute of Health Services and Policy Research (IHSPR), in collaboration with the Institute of Aboriginal Peoples' Health (IAPH), the Institute of Population and Public Health (IPPH) and the Knowledge Translation Branch, launched a Request for Applications (RFA) entitled *Scoping Reviews and Research Syntheses: Priority Health Services and System Issues.*

According to the CIHR Web site, the purpose of this RFA is "to generate relevant evidence to inform important decisions that will be taken by health care and public health policy makers and managers in Canada over the next few years."

The registration deadline for the RFA is May 1, 2005, and the full application is due on June 1, 2005. More details can be found on CIHR's Web site at: www.cihr-irsc.gc.ca/e/25651.html. ➧

Appointments

NDEB Names New President

Dr. Craig Meyers

Dr. Craig Meyers of Prince Albert, Saskatchewan, is the new president of the National Dental Examining Board of Canada (NDEB).

Dr. Meyers has held several positions on NDEB, including chair of the Board's Examinations, By-Laws, Appeals and Finance Committees. He has also been on the NDEB executive since 1996. A 1980 graduate of the University of Saskatchewan, Dr. Meyers practises general dentistry in Prince Albert. He is a former president of the College of Dental Surgeons of Saskatchewan. He is a fellow of the American College of Dentists and the Academy of Dentistry International. Dr. Meyers will serve a 2-year term as NDEB president. ➧

Winnipeg Specialist Named MDA President

Dr. Lee McFadden of Winnipeg has been elected president of the

Dr. Lee McFadden

Manitoba Dental Association (MDA) at MDA's annual meeting held on January 27, 2005.

Dr. McFadden has been practising as an oral and maxillofacial surgeon in Winnipeg since 1984. He has also taught on a part-time basis at the University of Manitoba's faculty of dentistry. Dr. McFadden has served on a number of MDA committees, including the Hospital Services, Registration and Licensing Review and Executive Committees. Dr. McFadden has been a member of MDA's board since January 2000 and became vice-president in 2004. ◆

Clarification

In October 2004, *JCDA* published a News item on Gilbert Medical Dental Supplies ("Gilbert's") and its related companies (Vol. 70, p. 592). One of the associated company names listed in the article was Excel-Dent (please note the hyphen).

There has been some confusion in regards to companies who have similar names, in particular ExcelDent (without a hyphen). ExcelDent is a fully CDAnet-certified company and is *not* related to Gilbert's in any way. *JCDA* regrets any misunderstanding and trusts this clarifies the matter. ◆

For direct access to the Web sites mentioned in the News section, go to the March *JCDA* bookmarks at http://www.cda-adc.ca/jcda/vol-71/issue-3/index.html.

Web Resources

Oral Pathology

Dr. Ken Serota, an endodontist from Mississauga, Ontario, and Dr. Cathy Birek, a *JCDA* editorial consultant, recommend the following Web sites on oral pathology. The information contained on these sites includes definitions and images of oral lesions, case studies and quizzes.

- University of Southern California School of Dentistry
  www.usc.edu/hsc/dental/opfs/
- Marquette University School of Dentistry
  Department of oral and maxillofacial pathology
  www.dental.mu.edu/oralpath/diagnosislist.htm
- Victoria Commonwealth University
  Oral pathology review images
  www.library.vcu.edu/tml/oralpathology/
- University of Iowa College of Dentistry
  Atlas of Oral Pathology
  www.uiowa.edu/~oprm/AtlasWIN/AtlasFrame.html
- University of Oklahoma College of Dentistry
  Department of oral and maxillofacial pathology
  Oral pathology case review
  http://dentistry.ouhsc.edu/intranet-Web/ContEd/caseofthemonth/aHomeCaseMonth.html

Food Recalls

The Canadian Food Inspection Agency (CFIA) is the federal government's regulator for food safety, animal health and plant protection. CFIA is responsible for investigating potential hazards associated with foods. In cases where a product poses a serious health risk, CFIA will issue a public warning advising consumers through the media. Members of the public can sign up to receive CFIA's free e-mail bulletin "Allergy Alerts and Food Recalls" at www.inspection.gc.ca. Subscribers will automatically receive the food recall public warnings and be notified as to which products are being recalled from the marketplace. ◆

Assessing Health Stories in the Press

The UK National electronic Library for Health (NeLH) has commissioned the Centre for Reviews and Dissemination to produce evidence-based summaries of recent health news stories that appear in major national newspapers. The project, titled *Hitting the Headlines*, assesses the reliability of both the journalists' reporting of health stories and the research on which they are based. *Hitting the Headline* summaries go live within 48 hours of newspaper publication. In the past 6 months, summaries have been produced on a variety of topics, including influenza vaccinations for high-risk younger patients, Vioxx and coronary heart disease, hormone replacement therapy and risk of stroke, laser cure for bad breath and mercury in baby vaccinations. For more information on *Hitting the Headlines* or to view the archived summaries, visit www.nelh.nhs.uk. ◆

If you would like to recommend a health-related Web site to appear in *JCDA*, e-mail Dr. John O'Keefe at jokeefe@cda-adc.ca.

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CDA Fund Performance (for period ending January 31, 2005)

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Aggressive Equity fund (Altamira)	up to 1.00%	2.0%	13.4%	8.3%	10.1%
Common Stock fund (Altamira)	up to 0.99%	7.2%	4.9%	1.2%	7.8%
Canadian Equity fund (Trimark)†[1]	up to 1.65%	9.4%	6.3%	8.7%	9.6%
Special Equity fund (KBSH)†[2]	up to 1.45%	12.0%	6.4%	-4.8%	16.1%
TSX Composite Index fund (BGI)††	up to 0.67%	9.2%	7.7%	2.7%	9.9%
CDA INTERNATIONAL GROWTH FUNDS					
Emerging Markets fund (KBSH)	up to 1.45%	0.7%	9.7%	1.1%	0.9%
European fund (KBSH)	up to 1.45%	-7.0%	-10.4%	-11.6%	3.9%
International Equity fund (KBSH)	up to 1.45%	-6.1%	-5.0%	-11.7%	3.6%
Pacific Basin fund (KBSH)	up to 1.45%	-6.7%	-1.0%	-20.5%	0.7%
US Equity fund (KBSH)†[3]	up to 1.20%	-3.5%	-8.9%	-8.1%	9.5%
Global fund (Trimark)†[4]	up to 1.65%	1.6%	2.7%	7.0%	10.3%
Global Stock fund (Templeton)†[5]	up to 1.77%	3.9%	0.7%	0.0%	n/a
S&P 500 Index fund (BGI)††	up to 0.67%	-2.0%	-5.7%	-5.5%	9.4%
CDA INCOME FUNDS					
Bond and Mortgage fund (Fiera)	up to 0.99%	4.1%	5.8%	6.7%	7.3%
Fixed Income fund (McLean Budden)†[6]	up to 0.97%	6.3%	6.6%	7.7%	8.6%
CDA CASH AND EQUIVALENT FUND					
Money Market fund (Fiera)	up to 0.67%	1.6%	2.0%	3.0%	3.8%
CDA GROWTH AND INCOME FUNDS					
Balanced fund (KBSH)	up to 1.00%	4.6%	2.7%	1.2%	7.8%
Balanced Value fund (McLean Budden)†[7]	up to 0.95%	7.2%	5.5%	7.1%	10.0%

CDA figures indicate annual compound rate of return. All fees have been deducted. As a result, performance results may differ from those published by the fund managers. CDA figures are historical rates based on past performance and are not necessarily indicative of future performance. The annual MERs (Management Expense Ratios) depend on the value of the assets in the given funds. MERs shown are maximum.

† *Returns shown are those for the following funds in which CDA funds invest: [1]Trimark Canadian Fund, [2]KBSH Special Equity Fund, [3]KBSH US Equity Fund, [4]Trimark Fund, [5]Templeton Global Stock Trust Fund, [6]McLean Budden Fixed Income Fund, [7]McLean Budden Balanced Value Fund.*

†† *Returns shown are the total returns for the index tracked by these funds.*

For current unit values and GIC rates call CDSPI toll-free at 1-800-561-9401, ext. 5024 or visit the CDSPI Web site at www.cdspi.com/funds.

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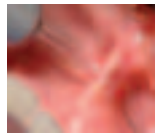
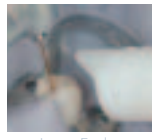
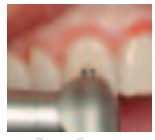

Soft Tissue & Perio


Laser Endo & Surgery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About CAOMS

President's Message

Dr. Joseph J. Friedlich

The Canadian Association of Oral and Maxillofacial Surgeons (CAOMS) welcomes the opportunity to engage in this collaborative effort with *JCDA*. A special thank you goes out to Dr. John O'Keefe and the editorial staff of *JCDA*, Dr. Bruce Pynn, CAOMS liaison to *JCDA*, and all of the contributors who devoted time and effort to the development of this special edition.

Oral and maxillofacial surgery has evolved as a specialty over a rather short period of time. In Canada, Dr. George Beers of Montreal is recognized as the first dentist to specialize in oral surgery in the late 1800s. Oral and maxillofacial surgery is considered to be the first dental specialty. It has been said that the First and Second World Wars were the catalyst behind its rapid development. Dr. Fulton Risdon, who was assigned to the Maxillofacial Centre for the Canadian Forces at Sidcup during World War I, returned to Toronto as a pioneer specialist in plastic and oral surgery. He was later appointed professor of oral surgery at the University of Toronto.

During the war, the number of wounded needing facial bone reconstruction was overwhelming. Patients fell under the care of dentists, who were the recognized jaw specialists of the time. These dentists were the true pioneers of the specialty. They learned in the field and developed surgical procedures in response to extreme situations. Today, new advances are fuelled by research and education. Oral and maxillofacial surgery retains its historical ties to dentistry; this synergy ensures that our specialty continues to evolve so we can meet the growing needs of our patients.

CAOMS was founded in 1953 to establish a national forum to discuss surgical problems, to oversee the rapidly changing format of graduate education and to expedite progress in oral and maxillofacial surgery. These efforts were founded on the fraternalism that allowed our members to develop friendships with colleagues from across Canada and to grow personally and professionally. CAOMS and its members remain committed to the continued advancement of the specialty through close professional connections. The Association holds an annual scientific meeting that highlights cutting-edge research through abstract presentations. These educational meetings are usually open to all dentists in Canada and the format of the event allows for a broad dissemination of information.

The members of CAOMS remain committed to providing timely and appropriate access to care for the patients in their community, with the necessary support of all of our dental colleagues.

The members of CAOMS remain committed to providing timely and appropriate access to care for the patients in their community, with the necessary support of all of our dental colleagues. The Association's redesigned Web site (www.caoms.com) provides access to a Canada-wide directory of surgeons and houses excellent information for patients wishing to learn more about their surgical treatment options related to dental implants, orthognathic surgery, facial trauma, removal of wisdom teeth, cleft palate repair, temporomandibular joint problems and the delivery of anesthesia.

CAOMS is very fortunate to have as its executive director Dr. Christopher Robinson, whose diligent work in representing the specialty of oral and maxillofacial surgery and the profession of dentistry equitably in the national arena is unprecedented. He embodies the zeal that has characterized our past 44 presidents and constitutes a tremendous role model for our current executive, which is composed of Dr. Walter Dobrovolsky, immediate past president, Dr. Lee McFadden, president-elect, Dr. Archie Morrison, treasurer, and Dr. Pierre-Éric Landry, secretary. Our executive is made up of representatives from each of our component regional associations. It is a pleasure to work with this team of highly skilled and dedicated volunteers. With the continued support of CDA, we look forward to forging the strong interdisciplinary bonds that are required for all of us to do what we do best... care!

Dr. Joseph J. Friedlich
President, CAOMS

The Foundation for Continuing Education and Research (CAOMS)

Canadian research in oral and maxillofacial surgery is greatly supported by the Foundation for Continuing Education and Research (CAOMS). Members of CAOMS founded this arm's-length, non-profit organization in 1988. The objective of the Foundation is to contribute to the welfare of the public by the advancement of the specialty of oral and maxillofacial surgery through continuing education and the diffusion of knowledge. The Foundation is the only national philanthropic organization with a mission that is dedicated to the financial support of research and education in the specialty of oral and maxillofacial surgery.

The Foundation's initial mandate was to provide for comprehensive literature reviews on various subjects in the form of "risks and benefits." The Foundation has published "risks and benefits" reviews for impacted third molar surgery, orthognathic surgery and surgery related to internal derangements of the temporomandibular joint.

Currently, the Foundation is evolving into an organization that, in addition to internal projects, now directly supports specific research endeavours through funding and guidance. These projects are undertaken in both the academic and private practice settings. An innovative study is now underway to examine the nature of the relationships between general dental practitioners and oral and maxillofacial surgeons. This study should help oral and maxillofacial surgeons better relate to and support their colleagues in general dental practice.

Various grants, ranging in amounts from $2,000 to $10,000, have been awarded to many researchers in our academic institutions across Canada. Past projects have made valuable contributions to the fields of anesthesiology, distraction osteogenesis and surgery for cleft lip and palate. Most recently, the Dr. Ron Warren awards were presented to: Dr. Daisy Chemaly from the University of Manitoba (for research in the field of oral cancer), Dr. Albert Hadad from the University of Toronto (bone substitutes), Dr. Brett Habijanac from McGill University (maxillofacial trauma), Dr. Nicholas Hogg from Dalhousie University (bacteriology/infection control) and Dr. Annie-Claude Valcourt from Laval University (temporomandibular dysfunction).

The vital and practical benefits that this research provides for both our patients and the profession include improved quality of care, scientifically validated and evidence-based care, the establishment of new and innovative techniques and direct scientific support for the expanding scope of practice of the dental profession. These benefits can only be realized through the generous support of our corporate partners, colleagues and patients. Voluntary donations to the Foundation can be made through CAOMS, 174 Colonnade Road, Unit 25, Ottawa, ON K2E 7J5.

The Foundation is tirelessly administered by Dr. William L. Frydman, chair, Dr. Ken Bentley, secretary/treasurer, and the Board of Trustees, composed of Dr. Richard Bell, Dr. Ben Davis, Dr. George Sándor and Dr. Dany Morais.

Canadian Residency Programs in Oral and Maxillofacial Surgery

The efforts of CAOMS and the Foundation are easily recognized in the 5 residency programs in oral and maxillofacial surgery in Canada. These university-based programs have developed international reputations and attract high calibre candidates from Canada and around the world.

Dalhousie University

The oral and maxillofacial surgery specialty program at Dalhousie is a 6-year program that includes a master's degree in oral and maxillofacial surgery and a medical degree. One resident is accepted per year in addition to one fellow. The fellowship position has recently been formalized and is of one year's duration. Dalhousie faculty are all fellowship-trained; areas of subspecialty training include orthognathic surgery, trauma, preprosthetic reconstructive and implant surgery, cleft lip and palate surgery and head and neck cancer surgery. Research is ongoing in the following areas of interest: obstructive sleep apnea, cleft lip and palate, sterilization of instruments, preprosthetic surgery, temporomandibular disorders, orthognathic surgery and pathology.

Department of Oral and Maxillofacial Sciences
Dalhousie University
Faculty of Graduate Studies
5981 University Avenue
Halifax, NS
B3H 3J5
www.registrar.dal.ca/calendar/gr/ORAL.htm#1

Laval University

The oral and maxillofacial surgery graduate training program at Laval University/Hôpital de l'Enfant-Jésus is a 5-year residency leading to a master of science degree and diploma qualification. Ten regular residents are currently engaged in training. An additional position is held for a candidate with a special contract who is required to return to practice in a remote underserviced area following graduation. The program attracts international interest, with regular rotation of residents from France and Switzerland who wish to expand their French-language education. A formal fellowship in orthognathic, trauma and reconstructive surgery will be offered in the next 2 to 3 years.

Currently, leading-edge research projects are in progress by residents wishing to obtain doctoral qualification in osseous distraction and neural regeneration. The research in osseous distraction is being undertaken in Dr. Antonio Nanci's laboratory at the University of Montreal, while the research in neural regeneration is taking place at Dr. François Auger's Laboratory of Experimental Tissue Engineering (LOEX) in Quebec City.

Department of Oral and Maxillofacial Surgery
Laval University
Faculty of Dentistry
2435 Pavillon Jean-Charles-Bonenfant
Quebec City, QC
G1K 7P4
www.fmd.ulaval.ca/index.html

McGill University

The McGill University graduate training program in oral and maxillofacial surgery is a fully accredited, 4-year program leading to a diploma in oral and maxillofacial surgery and a master of science degree. Two resident positions are available each year. One is a fully funded position open to graduates of North American dental schools. The second position is open to non-North American graduates who have funding from their home country and have made a commitment to return to their country and work within the health care system. The major research initiatives of this program are bone physiology, bone healing and bone regeneration (in collaboration with the McGill Bone and Periodontal Research Centre) and osseointegrated implants. Funding for these initiatives is obtained from 3 principal sources. Alumni provide generous support through the Kenneth C. Bentley alumni fund and the Fund for Oral and Maxillofacial Surgery Research and Continuing Education (FORCE), which has been successful in generating funds from industry sources. The McGill program is also very grateful to funding organizations such as the CAOMS Foundation and the Order of Dentists of Quebec.

Division of Oral and Maxillofacial Surgery
McGill University
1650 Cedar Avenue
Montreal, QC
H3G 1A4
www.mcgill.ca/dentistry/graduate/

University of Toronto

The graduate program in oral and maxillofacial surgery and anesthesia at the University of Toronto is a 4-year program with a compulsory master's degree based on a research project. Residents may choose to enroll in a doctoral program instead of the master's program. There are 8 funded residency positions, with 2 students in each year, and up to 2 international fellowships per year, one in pediatric oral and maxillofacial surgery and one in reconstructive oral and maxillofacial surgery. The graduate program is newly housed at Mount Sinai Hospital, where dentistry is a protected program. The faculty of dentistry is affiliated with the program, as are the Hospital for Sick Children, the Bloorview MacMillan Children's Centre, and Sunnybrook and Women's Health Centre. Residents gain clinical exposure in all areas of oral and maxillofacial surgery. A new rotation to a cleft lip and palate unit at the University of Oulu in Finland has been established. This initiative has received generous funding and support from the Ontario Society of Oral and Maxillofacial Surgeons. There are also a number of community-based practices in oral and maxillofacial surgery that graduate residents may choose to visit during their elective rotations. Research in the graduate program focuses primarily on bone regeneration, hyperbaric oxygen therapy, laser surgery, treatment of congenital malformations and surgical orthodontics.

Department of Oral and Maxillofacial Surgery
University of Toronto
Faculty of Dentistry
124 Edward Street
Toronto, ON
M5G 1G6
www.utoronto.ca/dentistry/academic/graduate/graduateprograms.html

University of Manitoba

The oral and maxillofacial surgery program at the University of Manitoba is of 4 years' duration and leads to a master's degree in oral and maxillofacial surgery. Five residents are currently enrolled in the program. Generally, one new resident is accepted each year, with the possibility of additional resident positions. On-service rotations provide residents with broad exposure to both adult and pediatric oral and maxillofacial surgery. The residents are also scheduled in off-service rotations in internal medicine, adult and pediatric anesthesia, surgical intensive care, emergency room medicine, otolaryngology and surgical oncology. Interaction and cooperation between the residents in oral and maxillofacial surgery and those in the graduate orthodontic program ensures a diversity of experience. Present research includes studies in oncology, trauma, implants and orthognathic surgery.

Division of Oral and Maxillofacial Surgery
University of Manitoba
Faculty of Dentistry
790 Bannatyne Avenue
Winnipeg, MB
R3E 0W2
www.umanitoba.ca/faculties/dentistry/gradPrograms/grad_OMS.html

Dr. Walter Dobrovolsky, past president of CAOMS, speaking at the President's reception at the CAOMS annual meeting.

Participants in the Maligne Canyon walk during the 2005 CAOMS Jasper Ski & Learn Meeting.

Some past presidents of CAOMS were recognized at the CAOMS Gala in Quebec City.

Dr. David "Crocodile" Chimilar performing at the CAOMS Annual Gala.

Speakers at the 2005 CAOMS Ski & Learn Meeting in Jasper (left to right): Drs. Daniel Ricard, Joseph Friedlich, Kevin McCann and Tim Head.

Drs. Vic Goodyear (left) and Daniel Morais at the recent CAOMS Annual Gala held in Quebec City.

CAOMS Meetings and Gatherings

CAOMS organizes various events that contribute to the professional development of its members. The following meetings are planned for 2005 and 2006:

- March 10–13, 2005
  Banff, Alberta
  Advanced Digital Technology in Head and Neck Reconstruction Conference
- June 22–25, 2005
  Halifax, Nova Scotia
  Joint Meeting and Scientific Sessions (CAOMS in conjunction with the American College of Oral and Maxillofacial Surgeons)
- May 23–27, 2006
  Victoria, British Columbia
  CAOMS Annual Meeting
- Winter 2006
  2nd Annual CAOMS Ski & Learn Meeting

For more information about these events, visit the CAOMS Web site at www.caoms.com.

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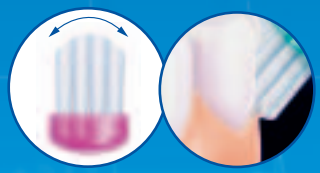

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Management of a Patient with an Accessory Maxilla and Congenital Facial Fistula

• **Vesa T. Kainulainen,** DDS, EHL, PhD •
• **George K.B. Sándor,** MD, DDS, PhD, FRCD(C), FRCSC, FACS •
• **Douglas W. Stoneman,** DDS, FRCD(C) •

Abstract

Although accessory jaws are a rare occurrence, the presence of such accessory tissue may cause some bothersome symptoms. This case report helps identify these unusual developmental lesions so that dentists can refer such patients for definitive care and management.

MeSH Key Words: *child; dental fistula/radiography; maxilla/abnormalities; tooth supernumerary/radiography*

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This article has been peer reviewed.

Developmental aberrations may result in the formation of supernumerary or extra structures. Polydactily or extra fingers or toes and supernumerary teeth are examples of such developmental duplications. Accessory or supplementary jaws are duplicated portions of jaws or entire jaws, with or without teeth.[1] In the case of the maxilla, such accessory jaws are called distomus.[2,3] Distomus formation is extremely rare.[2] Accessory jaws may be associated with the formation of an accessory rudimentary or vestigial mouth.[1] Reports indicate that distomus has been observed more commonly in association with lateral facial clefts.[2] Congenital facial clefts, which have been classified by Tessier,[4] may occur where embryologic processes fuse. The most common facial clefts are cleft lip and palate; the prevalence of cleft lip with or without cleft palate in the largest study to date is 1.2 per 1,000 live births.[5] The incidence of lateral facial clefts in various series ranges from 0.3% to 0.67% of all facial clefts.[5,6] Facial clefts associated with duplication of various oral structures have also been reported.[7–11] Stoneman[1] and DeGurse and others[2] have reported cases of a congenital facial fistula with an accessory maxilla and teeth.

This article reports the management, over 9 years, of a patient with an accessory maxilla with supernumerary teeth and a congenital facial fistula, who required treatment due to increasingly bothersome symptoms.

Case Report

An 8-year-old boy was referred for assessment of a fistula that occasionally drained milk-like fluid from an opening on the left nasolabial groove of the face. The parents stated that this drainage had been present since birth. The patient had been previously diagnosed as having an incomplete facial cleft. Serial panoramic radiographs and a computed tomography (CT) scan revealed the progressive development of first 2, then 3 tooth-like structures in the left cheek in a cavity with a fluid-filled lumen. A diagnosis of odontoma was dismissed, on the basis of the appearance and position of the lesion. Rather the lesion was thought to resemble an accessory maxilla. The past medical history was otherwise unremarkable.

The patient was followed regularly with semi-annual visits over the next 7 years. A creamy-white milk-like fluid was initially expressible by palpation of a dimple of the left cheek in the nasolabial groove (**Fig. 1**). The volume of the drainage progressively increased over the years of follow-up, such that each time the patient smiled, he expressed the fluid spontaneously onto his cheek. This steadily increasing spontaneous drainage became distressing to the patient, to the point of being socially unacceptable. Bacterial culture and sensitivity testing of the facial discharge revealed normal skin flora with a scant growth of coagulase-negative *Staphylococcus* species. Surgery had been delayed at the request of the boy's parents. At the age of 15 years, the

patient had a fistula on the left cheek approximately 3 cm lateral to the left oral commissure. It was secreting spontaneously or when the left cheek was rubbed.

Radiographic examination revealed a 4-cm–wide round cavity with 3 supernumerary teeth in the left maxillary sinus area (**Fig. 2**). In panoramic radiographs taken 6 years earlier, there were 2 premolar-like supernumerary teeth. A CT scan showed a cavity with a sharp delineation from the maxillary bone and its zygomatic process. The lesion extended from the orbital floor to the zygomatic buttress area. It did not extend into the inferior part of the left maxillary sinus or into the maxillary alveolar process. Otherwise the whole sinus was full of accessory tissue. The teeth within the lesion were attached to the bony walls of the cavity (**Fig. 3a**). This bony cavity was filled with fluid and connected to a cavity in the soft tissues of the left cheek (**Fig. 3b**).

Surgery was performed under general anesthesia. A plastic catheter was threaded into the fistula and methylene blue dye was injected into the catheter to help delineate the accessory structures connected to the fistula (**Fig. 4**). A vestibular incision was used to expose the entire anterior maxilla. Bone over the soft tissue capsule was removed (**Fig. 5**). The fistula and the soft tissues surrounding the blue-stained structures in the left cheek were removed in 1 piece. The teeth and the bony cavity, which contained a brownish liquid, were removed in a separate piece. Care was taken not to damage the parotid duct and branches of the facial nerve. The specimens were sent for histopathologic evaluation (**Fig. 6**).

Histologic sections revealed bone, developing teeth and a stratified squamous epithelium lining the lumen of the bony and soft-tissue cavities. Postoperative healing was uneventful and neither the lesion nor the fistula has shown any clinical or radiographic signs of recurrence in over 3 years of follow-up (**Fig. 7**).

Figure 1: *Drainage of a milk-like fluid from the left nasolabial groove.*

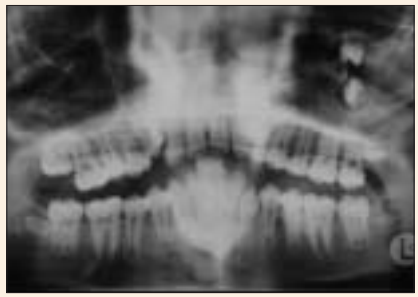

Figure 2: *Preoperative panoramic radiograph showing 3 supernumerary teeth developing in a bony cavity in the left maxillary sinus.*

Figure 3a: *Computed tomography image (coronal view) showing the lesion occupying most of the left maxillary sinus.*

Figure 3b: *Computed tomography image (axial view) showing the lumen of the soft-tissue lesion located lateral to the anterior maxillary wall.*

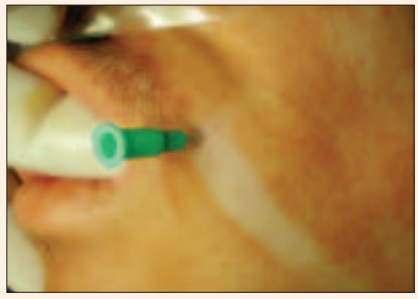

Figure 4: *A catheter is threaded through the cutaneous opening of the fistula into the lumen of the lesion in the left cheek.*

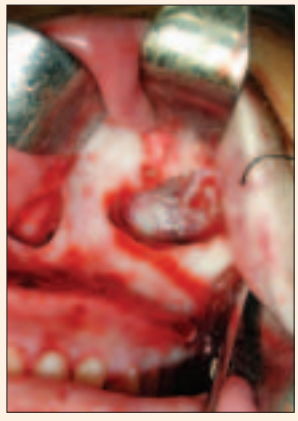

Figure 5: *The anterior wall of the left maxilla is exposed and removed. A separate bony wall is removed to gain access to the bony cavity of the lesion.*

Discussion

This case report presents the long-term management and closely supervised follow-up of a congenital facial fistula with an accessory maxilla and teeth. The diagnosis of incomplete facial cleft had been suggested when the patient was 6 years of age. Because the only complaint was a fistula

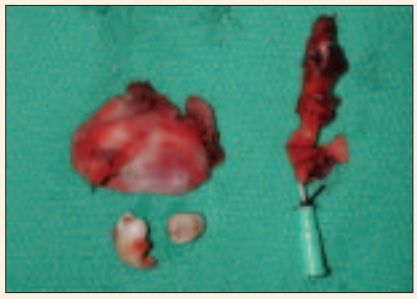

Figure 6: *Teeth with the excised bony and soft-tissue specimens.*

Figure 7: *After 3 years of follow-up, a panoramic radiograph shows a normally pneumatized left maxillary sinus with no signs of recurrence.*

that was occasionally draining, the parents opted for long-term observation. The drainage progressively worsened until the patient found it intolerable and requested removal of the lesion. Serial assessments were conducted to ensure that the patient was not lost to follow-up and that the related structures near the lesion were growing and developing normally.

The development of an accessory jaw is very rare. The lesion may occur as a mass of bone containing teeth or as a complete jaw.[1,2,7–11] Stoneman[1] and DeGurse and others[2] have suggested that some facial fistulas are vestiges of facial clefts. In this case, in addition to the accessory jaw tissue, a fistula connected the skin to a separate lumen or rudimentary mouth in the cheek. The management of such lesions must be guided by the symptoms and their potential to interfere with the development of surrounding structures. The timing of their removal depends on these 2 factors and the progressive development of bothersome symptoms. Dentists can contribute to the management of such lesions by identifying them and referring the patient for definitive management. ◆

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The authors have no declared financial interests.

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Sporadic Burkitt's Lymphoma of the Jaws: The Essentials of Prompt Life-saving Referral and Management

• **Ahmed Jan,** DDS •
• **Kashyap Vora,** BDS, FDS RCS (Eng) •
• **George K.B. Sándor,** MD, DDS, PhD, FRCD(C), FRCSC, FACS •

Abstract

Burkitt's lymphoma is an undifferentiated non-Hodgkin's B-cell lymphoma. Three clinical subtypes are recognized: African (endemic), American (sporadic) and HIV associated. Sporadic Burkitt's lymphoma is a rare malignancy among western populations. This report describes a case of sporadic Burkitt's lymphoma of the jaws with an alarmingly rapid spread associated with acute renal failure. This type of rapid progression bespeaks the need for prompt recognition and life-saving referral by the dental practitioner. The clinical features of Burkitt's lymphoma involving the jaws include severely hypermobile, ectopically displaced and supra-erupted teeth. The purpose of this case report and review of the literature is to illustrate the clinical and histopathologic features of Burkitt's lymphoma to help clinicians recognize such cases readily and facilitate prompt and potentially life-saving referral.

MeSH Key Words: *Burkitt lymphoma/diagnosis; case report; mandibular neoplasms/pathology*

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Burkitt's lymphoma is a malignant tumour of B-cell lymphocyte origin and is classified as a non-Hodgkin's lymphoma (NHL). Three clinical variants are recognized: African (endemic), American (sporadic) and HIV associated.[1] Sporadic Burkitt's lymphoma is a rare malignancy among western populations. In most series, the annual incidence is 2–3 cases per million.[2]

During the early 20th century, Sir Albert Cook, while in East Africa, described a common malignancy among young African children that predominantly affected the jaws and occasionally various abdominal organs. Half a century later, a surgeon, Denis Burkitt, who was working in Kampala, Uganda, noticed the same lesions on the faces of young African children, with occasional intestinal involvement. In 1958, Burkitt published his findings, calling the lesion "a sarcoma involving the jaws."[3] Epstein and others first demonstrated a herpes virus in a biopsy sample derived from Burkitt's lymphoma in 1964. The virus was later designated Epstein-Barr virus (EBV) and was considered a potential etiologic factor of Burkitt's lymphoma.[4]

Burkitt's lymphoma is probably the fastest growing malignant neoplasm to affect humans. It can double in size in 24 hours with 80% of its cells undergoing mitosis at any point.[5] The symptoms are rapidly progressive. Multifocal extranodal involvement is common to all subtypes of Burkitt's lymphoma.[1]

Burkitt's lymphoma is thought to account for 40% of all childhood NHL.[2] Its incidence is greatly dependent on geographic location; in equatorial Africa, it accounts for 50% to 75% of all malignancies in children.[6] Sporadic Burkitt's lymphoma is not as common. Its annual incidence is 2–3 cases per million. Burkitt's lymphoma accounts for 40% of HIV-associated NHL.[2]

Endemic Burkitt's lymphoma is usually diagnosed between the ages of 5 and 7 years and involves the jaws as well as other facial bones in 60% to 80% of cases. Less commonly, it involves the abdomen and bone marrow. Endemic Burkitt's lymphoma is virtually always associated with EBV, as positive titres are found in over 90% of cases.[7]

In contrast, sporadic Burkitt's lymphoma is associated with slightly older children (average age 12 years). The

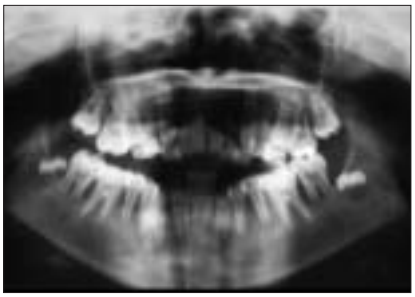

Figure 1: *Orthopantomogram showing the displaced teeth germs of the lower third molars coronally and medially relative to their bony crypts. Severe alveolar bone resorption is visible around the lower second molars.*

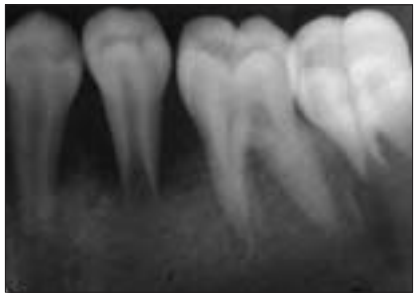

Figure 2: *Periapical radiograph showing severe alveolar bone resorption around the lower second premolars.*

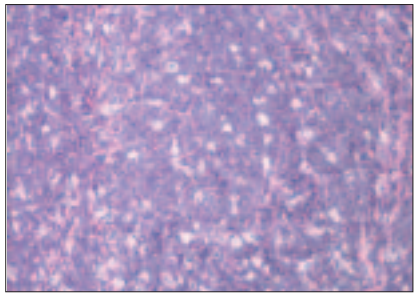

Figure 3: *Diffuse sheets of monomorphic lymphoid cells with scattered macrophages producing a "starry sky appearance."*

abdomen is the most common site of presentation. About 25% of sporadic Burkitt's lymphoma cases involve the head and neck, most commonly in the form of cervical lymphadenopathy. Maxillofacial bony involvement occurs in fewer than 30% of cases. EBV-positive titres are found in only 20% of cases.[7]

Adult Burkitt's lymphoma patients are almost always afflicted with AIDS. Burkitt's lymphoma accounts for 40% of HIV-associated NHL cases.[2] Like sporadic Burkitt's lymphoma, the HIV-associated variant often involves the abdomen and it involves the bone marrow in 30% of cases. Unlike endemic Burkitt's lymphoma, EBV titres are elevated in only 30% of cases of adult HIV-associated Burkitt's lymphoma.[2]

Case Report

A 13-year-old white girl was referred to the oral and maxillofacial surgery service of The Hospital for Sick Children in Toronto with the chief complaint of spontaneous intermittent pain in her lower back teeth and inability to chew food comfortably. A month earlier, she had complained to her parents of progressively loosening teeth. The pain had been present for 2 weeks. She was referred by her general dentist to a periodontist, who immediately referred the patient for oral and maxillofacial surgical assessment. The past medical history revealed a diagnosis of microcytic hypochromic anemia and infectious mononucleosis 3 weeks before presentation. Results of a complete blood count and serology were consistent with these 2 diagnoses.

Physical examination revealed a lethargic young woman with obvious pallor. Bilateral palpable mobile submandibular lymph nodes were found in her head and neck. The mandibular and maxillary divisions of the trigeminal and facial nerves were intact. Generalized teeth mobility ranged from 1+ in upper and lower anterior teeth to 3+ in lower second premolar and second molars. This was noted despite the absence of any visible plaque on the teeth surfaces. Severe buccal expansion of the alveolus next to the lower posterior teeth was noted. Both lower second molars were supra-erupted and in premature occlusal contact with the upper first molars causing a massive open bite. The left lower second molar was more supra-erupted than the right. The gingiva was pale, pink and swollen with spontaneous areas of bleeding.

An orthopantomogram and intraoral periapical radiographs were taken. Severe alveolar bone loss around the lower second premolars as well as the lower second molars was noted (**Figs. 1** and **2**). These teeth were floating. The developing lower third molars were displaced coronally and medially relative to their crypts, indicating possible infiltration of these structures (**Fig. 1**).

Based on the clinical examination and past medical and dental history, a decision was made to extract the lower left second molar and perform an incisional biopsy of the soft tissue in the tooth socket.

Histopathology

The histopathology was consistent with diagnosis of a high-grade B-cell NHL with features of Burkitt's lymphoma. Routine hematoxylin- and eosin-stained sections revealed fibrofatty tissue diffusely infiltrated with sheets of a monomorphic population of lymphoid cells. Numerous scattered phagocytic cells all around the section imparted a "starry-sky appearance" (**Fig. 3**). Immunohistochemical staining was positive for CD20, CD22 and CD79, which are specific for B-cell lymphocytes. CD10 was focally positive, which is consistent with the early phases of B-cell proliferation. MIB1 staining was positive in more than 95% of cells, revealing increased nuclear DNA synthesis.

Definitive Referral

The patient was immediately referred to the hematology–oncology department for assessment and definitive care. Further laboratory results revealed a secondary diagnosis of acute renal failure necessitating emergency life-saving dialysis. The effects of the patient's renal failure

were corrected by the dialysis, she responded well to subsequent chemotherapy and is currently in remission.

Discussion

The differential diagnosis of hypermobile teeth with absent local factors includes: generalized juvenile periodontitis, HIV periodontitis, Langerhan's cell histiocytosis, Papillon-Lefèvre syndrome, hypophosphatasia, cyclic neutropenia, vitamin-D resistant rickets, acrodynia, leukemia and lymphoma. Head and neck involvement occurs in only 25% of sporadic Burkitt's lymphoma cases and most commonly in the form of cervical lymphadenopathy,[2] which can make the diagnosis quite challenging in contrast to endemic Burkitt's lymphoma.

The clinical findings may vary according to the anatomical site of involvement and the timing of presentation. The range may be from no signs and symptoms to airway obstruction, intestinal obstruction and biliary obstruction. Inferior alveolar nerve parasthesia has also been reported to be the only presenting sign of sporadic Burkitt's lymphoma.[8] Signs and symptoms of oral Burkitt's lymphoma, including mobile teeth, toothache, oral masses, gingival enlargement, pain, jaw expansion, swelling and sensory disturbances, have been recorded by some workers with pain being the most common presenting symptom.[7] In this case, pain was also the predominant presenting symptom and generalized mobility of teeth with the absence of any obvious causative factor was the most striking sign. The unusual aspect of this case was the severity of disease, exemplified by the rapidity of the development of acute renal failure, which left untreated would have resulted in a terminal outcome.

Although EBV is strongly considered as a potential etiologic factor of Burkitt's lymphoma, its precise role is not well understood, especially in sporadic Burkitt's lymphoma. EBV is an enveloped herpes virus that contains double-strand linear DNA of 170 to 175 kb in the nucleocapsid.[9] After entering the oropharynx and adjacent structures, this virus preferentially infects B-cells via the C3d complement receptor, CD21. Primary infection during early childhood is mostly asymptomatic, whereas infection during adolescence results in acute infectious mononucleosis in 30% to 50% of cases.[10] Immunodeficiencies may allow viral reactivation and the excessive proliferation of EBV-infected B-cells, which may lead to the development of EBV positive B-lymphoproliferative diseases or lymphomas.[11]

Approximately 90% of African Burkitt's lymphoma tumours contain EBV DNA, whereas only 20% of sporadic Burkitt's lymphomas are EBV associated. However, disrupted and aberrant expressions of the viral genome have recently been discovered in the United States in cases of sporadic Burkitt's lymphoma that were diagnosed as EBV negative in standard screening. This suggests that the viral genome itself may be dispensable at some stage of the tumour's development. There may be greater involvement of EBV in sporadic Burkitt's lymphoma than previously documented, suggesting that EBV DNA may, in some instances, be lost after initiation of the neoplasm. Although screening tests may be insufficient to determine the EBV status of all neoplasms,[12] the data suggest that EBV may play a prominent role in the pathogenesis of Burkitt's lymphoma.[13]

The overexpression of c-myc oncogene and the functional loss of wild type p53 gene are considered as possible etiologic factors as well. Immunodeficient patients, particularly those with AIDS, and cardiac or renal transplant patients are more susceptible to developing NHL.[14] Burkitt's lymphoma may be the first manifestation of AIDS in many cases.[15]

Investigations for suspected Burkitt's lymphoma should include an incisional biopsy to establish a definitive diagnosis. In the maxillofacial region, plain radiography is usually sufficient but may be augmented by computed tomography and magnetic resonance imaging. In most institutions, lumbar puncture to examine the cerebrospinal fluid is a routine measure to look for malignant cells in the central nervous system.[2]

Burkitt's lymphoma is one of the first human malignancies shown to be curable by chemotherapy alone. A combination of cyclophosphamide, doxyrubicin, vincristine and prednisone is one example of a drug therapy. Radiotherapy is reserved for overt central nervous system disease that is resistant to chemotherapy and is reported to be useful in certain emergencies, such as airway obstruction.[7] Bone marrow transplantation may be necessary after completion of chemotherapy cycles. The surgical management of Burkitt's lymphoma is limited to biopsy.[7]

The prognosis of Burkitt's lymphoma depends on the extent of the disease, the patient's age and the timing of diagnosis.[3] It is excellent in children, where it approaches 100% disease-free survival in early stages and 75% to 85% of patients survive free of disease in later life.[7] Adults are less fortunate, with a survival rate of 50% to 75%.[7] Adults are almost always HIV-positive patients and may die of other causes.[16]

Conclusion

The role of the dentist in the early diagnosis and prompt referral of patients with Burkitt's lymphoma cannot be overemphasized. Life-threatening complications occur suddenly and unexpectedly in the development of Burkitt's lymphoma. These complications include airway obstruction, abdominal obstruction and acute renal failure, as in this case report.

Dentists must be suspicious when faced with a child patient presenting with unexplained hypermobility of teeth, supra-eruption of permanent teeth and severe alveolar bone resorption around these teeth, where the local etiologic

factors of periodontal disease are not present. The unexplained displacement of developing teeth from their crypts is another worrisome sign. Unexplained paresthesia of the mandibular branch of the trigeminal nerve is also ominous. When any of these symptoms or signs exists, the dentist must have a high index of suspicion and act promptly. Failure to refer such a patient in a timely manner may rapidly lead to disastrous consequences. ◆

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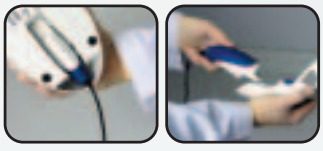

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Mandibular Distraction Osteogenesis for Endosseous Dental Implants

• **David A. Walker,** DDS, MS, FRCD(C) •

Abstract

Patients with complete or partial edentulism who have insufficient bone for endosseous dental implant treatment present a challenge for the dental practitioner. Alveolar distraction osteogenesis is a technique for creating bone and soft tissue, without the need for bone grafting and its potential complications. In this article, alveolar distraction osteogenesis is compared with traditional bone grafting techniques. A case is presented to illustrate successful bilateral mandibular vertical distraction osteogenesis with creation of adequate bone volume for endosseous implant-supported dental restoration.

MeSH Key Words: *alveolar ridge augmentation/methods; dental implantation, endosseous; osteogenesis, distraction/methods*

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This article has been peer reviewed.

Dental practitioners frequently encounter partially edentulous patients. Replacement of the lost dentition by dental implant-supported restoration offers many advantages over fixed bridgework or removable partial dentures.

Some patients present with insufficient bone for conventional implant-supported restoration. Traditional treatment approaches have included augmentation of the alveolar ridge with autologous, homologous or xenogenic bone. Alloplastic materials and various other osteoinductive or osteoconductive biomaterials have also been used for ridge augmentation.[1] Autologous bone grafting has many advantages over other techniques but is not without risks and potential complications, including wound dehiscence, infection, partial or total loss of the bone graft, and donor site morbidity.[2] The difficulties that can be encountered with vertical ridge augmentation by means of bone grafting techniques are frequently limited to soft-tissue tolerances and bone graft resorption.[3]

Alveolar distraction osteogenesis is a surgical technique that encourages creation of new bone and soft tissue through incremental lengthening of osseous segments.[4] The technique is relatively uncomplicated and avoids the need for bone grafting. The secondary effect of stretching and creating new soft tissues, a technique called distraction histogenesis, is particularly helpful in vertical ridge augmentation. The following case illustrates successful alveolar distraction osteogenesis to allow dental implant-supported restoration.

Case Report

A 52-year-old woman reported that she did not like her lower removal partial denture (RPD) and rarely wore it. The mandibular posterior teeth had been extracted 36 years before, and one removable mandibular partial denture had been made 15 years ago. The patient related that the RPD moved under function, which resulted in food trapping, and she never felt comfortable eating while wearing the denture.

The patient had undergone uterine surgery for endometriosis 1 year before the current presentation, and she had undergone cosmetic facial surgery 10 years before, without complications. Her medications included hormone replacement therapy and calcium supplements.

Clinical examination confirmed that the posterior mandibular alveolar ridges were thin bilaterally, and there was adequate maxillary structure for her complete upper denture (**Figs. 1a, 1b**). The patient had a Class II occlusion, with moderate mandibular retrognathia, and there were no significant findings on examination of the temporomandibular joint. Panoramic radiography confirmed a moderate bilateral saddle defect of the posterior mandible (**Fig. 2**). Tomography revealed a bony width of 3 to 4 mm in the crestal region bilaterally in the posterior mandible (**Fig. 3**).

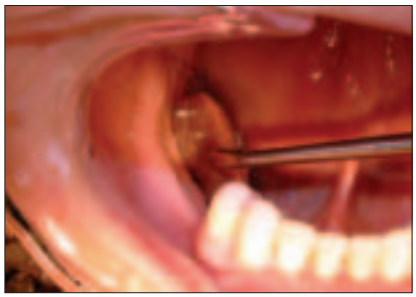

Figure 1a: *Clinical evaluation showing knife-edged right mandibular ridge.*

Figure 1b: *Clinical evaluation showing knife-edged left mandibular ridge.*

Figure 2: *Panoramic radiograph showing moderate saddle defect.*

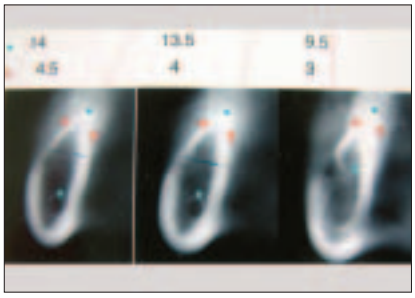

Figure 3: *Tomographic image of the left and right posterior mandible demonstrating 3- to 4-mm width of the crestal region of the alveolus.*

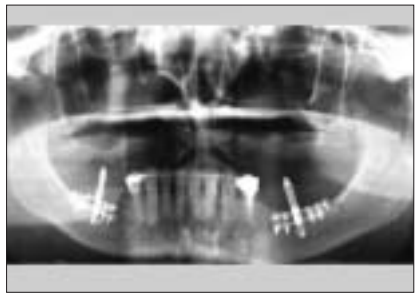

Figure 4: *Panoramic radiograph obtained immediately after placement of the alveolar distraction devices.*

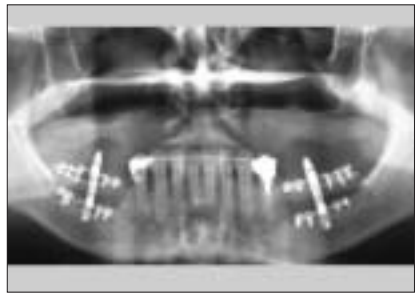

Figure 5: *Panoramic radiograph at the completion of 8 mm of vertical distraction.*

On the basis of the clinical and radiographic evaluation, the patient consented to bilateral mandibular alveolar distraction osteogenesis.

Surgical Procedure

The patient received intravenous sedation and local anesthesia. A vestibular incision was made in the right posterior mandible 5 mm inferior to the junction of the attached gingiva and alveolar mucosa; the incision extended from the retromolar region to the bicuspid region. A subperiosteal dissection was developed inferiorly to allow identification of the mental foramen and the mental neurovascular bundle with minimal dissection on the superior aspect of the alveolus. The alveolar distraction device (KLS Martin Track Plus, Jacksonville, Fla.) was contoured to fit the bony anatomy, and the outline of the osteotomy for the transport disk was marked with a #701 bur. A vertical vector of distraction close to the sagittal plane was selected to avoid lingual distraction of the transport segment. Holes were drilled for placement of monocortical and bicortical 1.5-mm screws, to stabilize the device, and the device was subsequently removed. The trapezoidal osteotomy of the transport segment was carefully completed with the #701 bur, reciprocating saw, and spatula osteotome. Care was taken to protect the vascular pedicle and to leave soft-tissue attachments to the transport segment except in the areas of the flaring vertical osteotomy cuts. The vascularity of the transport segment is predominantly from the lingual periosteum, the mucosa and the mylohyoid muscle. The distraction osteogenesis device was re-applied, stabilized with the monocortical and bicortical 1.5-mm screws, and tested for movement of the transport bone segment. Mucosal closure was accomplished with interrupted 4.0 Vicryl horizontal mattress sutures with running 4.0 gut oversew (Ethicon, Johnson & Johnson, Somerville, N.J.) The same procedure was performed for the left mandible.

The patient was given postoperative instructions to maintain a liquid or pureed diet for 1 month and to progress to a soft diet after that time. Acetaminophen with codeine was prescribed for analgesia, and oral clindamycin 150 mg 4 times daily was maintained for 10 days. Chlorhexidine gluconate 0.12% mouth rinse 15 mL twice daily was used for 2 weeks postoperatively.

The latency (waiting) period, for initial healing, was 5 days, and the distraction rate was 0.33 mm, 3 times a day (for a total of 1 mm/day), which resulted in total device activation of 8.33 mm over 8 days (**Figs. 4** and **5**). During the follow-up period, portions of the superior arm of the distraction device became exposed bilaterally, and 2 loose screws were removed, the first at 3 months and the second at 4 months after the completion of distraction (**Fig. 6**). The patient experienced mild bilateral paresthesia, which completely resolved by 2 months after distraction. Four months after insertion of the distraction devices, they were removed under intravenous sedation and local anesthetic. The distraction regenerate was well ossified and stable. Four

Figure 6: *Alveolar distraction device with a portion of the bone plate exposed, 2 months after the distraction procedure.*

Figure 7a: *Placement of the right mandibular implant through the distraction regenerate 4 months after distraction (the distraction device has been removed).*

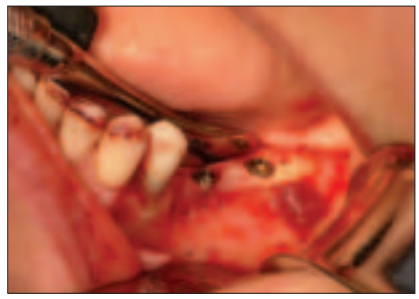

Figure 7b: *Placement of left mandibular implant through distraction regenerate.*

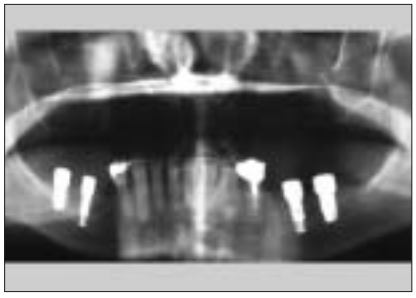

Figure 8: *Panoramic radiograph 6 months after placement of the implant, at the time of abutment placement; the distraction regenerate has matured well.*

Figure 9a: *Placement of healing abutments in the right mandible*

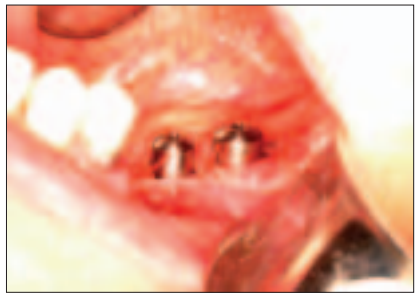

Figure 9b: *Placement of healing abutments in the left mandible*

Figure 10a: *Final restoration, right mandible (prosthodontist Dr. G. Zarb).*

Figure 10b: *Final restoration, left mandible.*

Figure 10c: *Final restoration, occlusal view.*

cylindrical threaded endosseous implants (TiUnite, Nobel Biocare, Goteborg, Sweden) were placed through the transport segment and the distraction regenerate (**Figs. 7a** and **7b**). The following implants were placed: right mandible, 11.5 mm × 3.75 mm fixture and 8.5 mm × 5 mm fixture; left mandible, 11.5 mm × 3.75 mm fixture and 10 mm × 5 mm fixture. The implant treatment was performed in 2 stages, with abutment connection occurring 6 months after placement of the implant fixtures. Clinical and radiographic examination revealed that the implants were osseointegrated at the time of stage II placement of transmucosal healing abutments (**Figs. 8, 9a, 9b**). The fixed prosthodontic rehabilitation was carried out 2 months after placement of the abutment, and the fixtures were loaded over a follow-up period of 8 months (**Figs. 10a, 10b, 10c**).

Discussion

Distraction osteogenesis techniques were pioneered in modern times by a Russian orthopedic surgeon, Dr. Gavriel Ilizarov.[5,6] Distraction osteogenesis involves an osteotomy or cut through the bony segment, a latency or waiting period to allow resolution of inflammation and initial healing, a distraction or callus manipulation period and a bony consolidation period.

Maxillofacial distraction techniques have led to successful lengthening of the mandible and maxilla. The procedures have been particularly helpful in patients with craniofacial syndromes, cleft maxilla or tumour defects of the maxillofacial region.[7–10] Alveolar distraction osteogenesis is the latest application of this exciting technique, and success has been widely documented.[11–13] In addition, develop-

ment of miniaturized distraction devices has made distraction osteogenesis of small bone segments feasible.

Alveolar distraction osteogenesis offers many advantages over traditional bone grafting techniques. An increase in alveolar bone height and concomitant increase in vestibular alveolar mucosa is a result of gradual bone distraction. Onlay bone grafting techniques can present difficulties, mainly because of the acute soft-tissue stretch required to cover block or particulate bone grafts. This factor becomes more complex when a scarred tissue bed is present. Wound dehiscence is a potentially serious complication resulting in exposure of the nonvital bone graft to oral microflora and potential infection. When such infection occurs, the result can be partial or total loss of the graft, which necessitates retreatment.

Donor site complications of the hip (ilium)[2] and tibia[14] have been reported, including infection, peritonitis, persistent pain, hip or tibia fracture, permanent paresthesias and permanent gait disturbance. Potential morbidity of cranial or rib donor sites include scalp hematoma, intracranial hemorrhage and brain injury for the former and pneumothorax and persistent chest wall pain for the latter.[15,16] Potential complications associated with intraoral donor sites include pain, bleeding, infection, and temporary or permanent paresthesia or dysesthesia of the teeth, gingiva, lip and chin.[3,17] Although such donor site complications can be serious, they are uncommon. Nonetheless, alveolar distraction osteogenesis avoids the inherent risks, complications and donor site morbidity associated with bone grafting.

A variety of intraosseous and extraosseous devices are available for alveolar distraction osteogenesis.[18] The extraosseous device used in the case presented here allowed good stability of both the device and the transport bone segment during distraction and consolidation. It also allowed intraoperative adjustments to the vector of distraction. The height of the transport osseous segment was 5 mm and its length was 2 cm bilaterally. Adequate osseous volume is necessary for stabilization of the device and successful creation of the distraction regenerate. The location of the trapezoidal osteotomy was based on the position of the inferior alveolar nerve, the location and vector of the device, and the thickness of the alveolar bone.

A 5-day latency period was allowed, and distraction was started on the fifth postoperative day. The latency period is important for resolution of inflammation from the initial surgical procedure. It also allows cellular induction and differentiation of fibroblasts, formation of collagen and subsequent induction of osteoblasts during the early stages of new bone formation.[19] The distraction rate for this patient was 1 mm/day, performed in 3 activations. The greater the frequency of activation, the more favourable the distraction regenerate.[6] Patient cooperation is important to achieve successful activation of the distraction device.

Adequate consolidation time is required for maturation of the distraction regenerate so that it can support dental implant placement. Various consolidation times have been reported, but 3 to 4 months is typically adequate.[4] Further remodelling of the distraction regenerate occurs during the implant healing period. In this case, the distraction devices were easily removed at the same time as the titanium implants were placed. The endosseous implants were placed in a 2-stage technique, similar to that used with conventional bone grafting techniques. Excellent primary implant stability was achieved at all implant fixture sites.

The patient had mild to moderate requirements for analgesia over the first 5 days and experienced no pain during activation. There was no evidence of infection around the distraction device during the 4-month consolidation period, even though a portion of the stabilization plate became exposed and 2 screws loosened. The distraction regenerate has neovascularity, which appears to be more resistant to infection[20] than is the case with bone grafting. The loosening of 2 screws at 3 and 4 months after distraction appeared to have no clinical impact, as the distraction regenerate was mature enough by then to support the placement of titanium implants.

Continued bony maturation during the consolidation period was evident on the panoramic radiographs. The implants remained stable under functional loading during the 8-month follow-up period. At the time of writing, the patient was contemplating a fixed maxillary implant-supported prosthesis. Because there was insufficient bone stock in the maxilla for distraction osteogenesis, autologous bone grafting was an option.

Conclusions

Alveolar distraction osteogenesis can be used to augment deficient bony ridges to allow subsequent endosseous implants. The procedure is associated with minimal morbidity and avoids the need for bone grafting and potential donor site morbidity. This report has documented the creation of adequate height and volume of bone for placement of an endosseous implant-supported dental restoration. ◆

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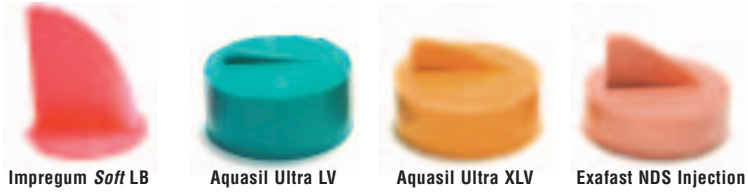

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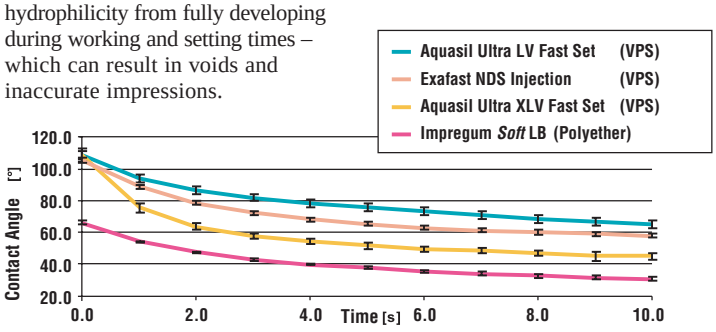

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The results of a study involving leading light body impression materials are illustrated in the graph (below).[2]

For a study to be clinically relevant, the point in time when the flow properties are analyzed has to be considered.

For this study, two test series were carried out for each material: Pressure was applied 25 seconds after mixing begins; and also at the end of the working time as indicated by the manufacturer.

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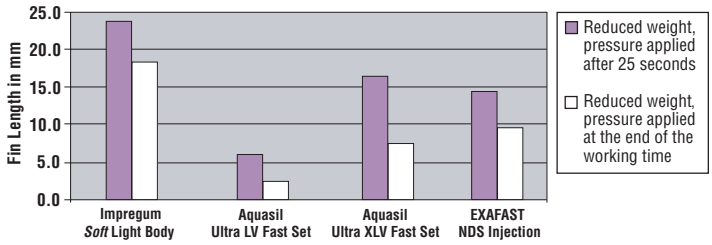
Gap Flow Behavior of Light Body Materials documented by Shark Fin Test



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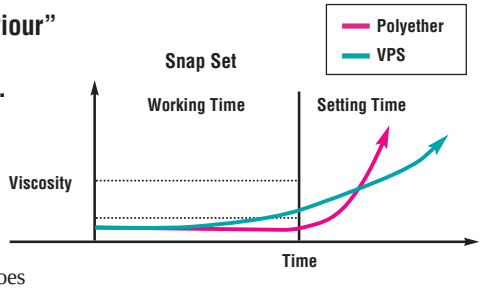

Conclusion

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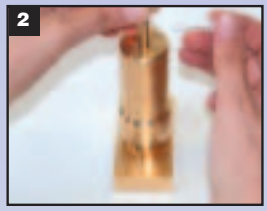

A fixed mold and 147g weight are placed over the receptacle. The pin is released allowing the weight to sink slowly into the material. (The 147g weight accurately reflects the pressure applied during clinical placement in the mouth.)

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[1] Klettke Th., Kuppermann B., Führer C., Richter B., "Hydrophilicity of Precision Impression Materials During Working Time," CED/IADR, Istanbul, 2004, submitted for publication.

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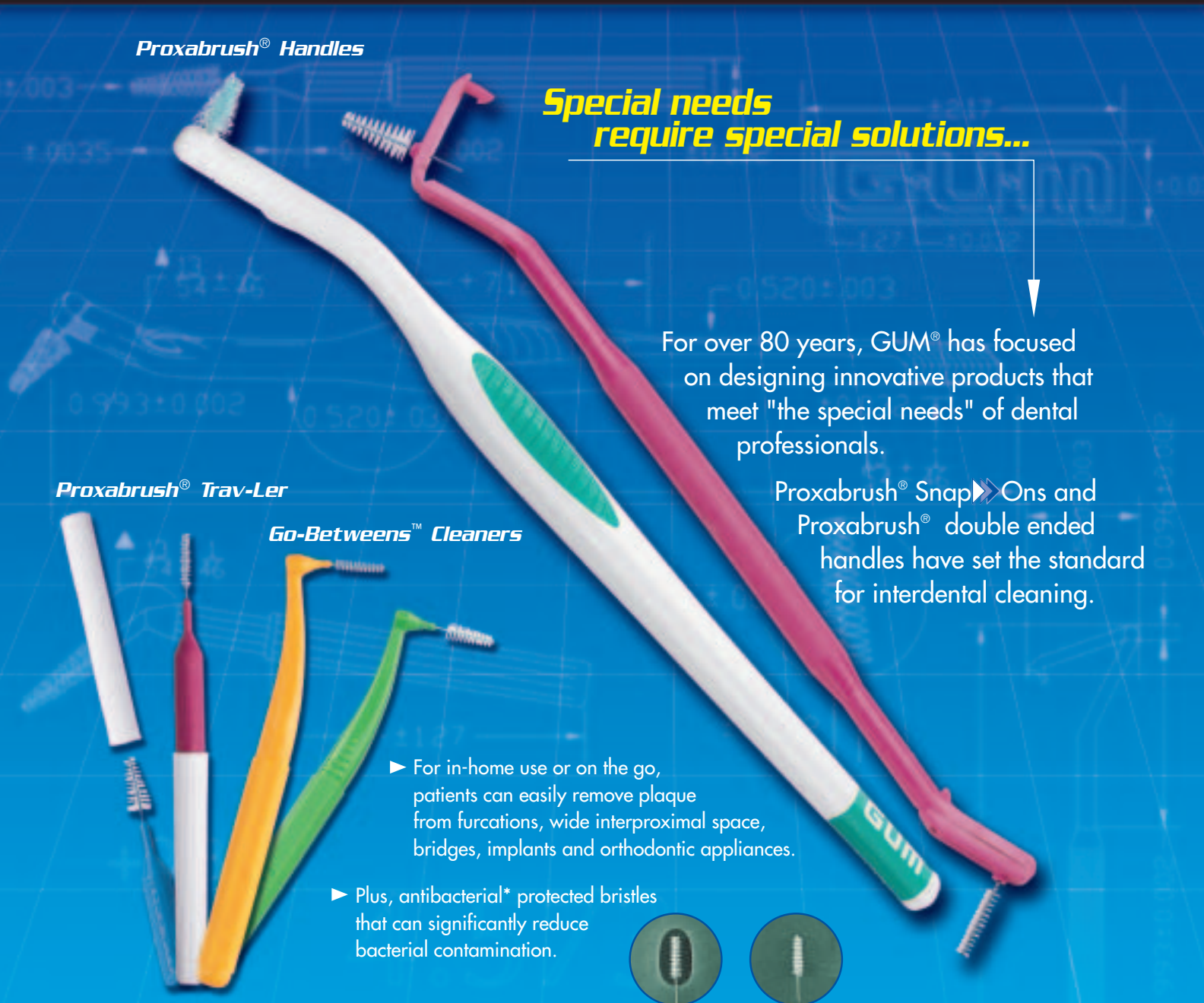

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• **Archibald D. Morrison,** DDS, MSc, FRCD(C) •

Abstract

Objective: *The transmission of pathogens from one patient to another via contaminated devices has been a high-profile issue in infection control. Although single-use devices have been promoted as a preventative strategy, resterilization of instruments has been a common practice in dentistry. The purpose of this study was to investigate the rate of bacterial contamination of instruments resterilized for use in oral and maxillofacial procedures in a hospital-based clinic.*

Methods: *The experiment was a prospective randomized controlled study. The test group consisted of burs that had been used in surgical procedures. These burs were grossly debrided before being cleaned and gas sterilized in the central sterilizing department of the hospital. The burs were transferred in a sterile fashion into a culture medium selected to grow oral bacteria. The control group comprised new unused instruments treated in an identical fashion before culturing. All burs were incubated and monitored daily for 72 h.*

Results: *The rate of bacterial contamination in the test groups was significantly higher than in the control group ($p < 0.05$).*

Conclusions: *Reuse of instruments can be cost-effective if the safety of patients can be assured; however, there is increasing evidence that the sterilization process may not be completely effective. Consideration should be given to the classification of certain types of dental burs as single-use devices if sterilization cannot be guaranteed.*

MeSH Key Words: *cross infection/prevention & control; dental instruments; disinfection methods; equipment reuse*

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Sterilization of instruments ensures that they are free of "all microbial life including microbial spores which are the most difficult of micro-organisms to kill."[1] If the sterilization process is effective in killing bacterial spores, it will also be effective against mycobacteria and all viruses, including herpes simplex virus, hepatitis and HIV.[1]

Resterilization is "the repeated application of a terminal process designed to remove or destroy all viable forms of microbial life, including bacterial spores, to an acceptable sterility assurance level."[2] Resterilization of instruments used on one patient for reuse on another has been common practice in dentistry and oral and maxillofacial surgery. Some instruments used in oral and maxillofacial and orthopedic procedures, such as bone drills and saws, are Class I instruments as defined by the United States' Food and Drug Administration and can be reused if sterility can be guaranteed.[3] However, there is now evidence that the sterilization process is complex and that if strict adherence to an effective protocol is not followed, contamination of instruments may result.

In the past decade, single-use devices (SUDs) have been promoted in many dental and medical practices as a strategy to prevent the transmission of blood- and tissue-borne pathogens from patient to patient. This practice has also been influenced by high-profile legal cases that have brought the issue of SUDs to the attention of the media and the public.[4] For example, in Toronto in 2002, a case involving a patient who contracted the hepatitis B virus via

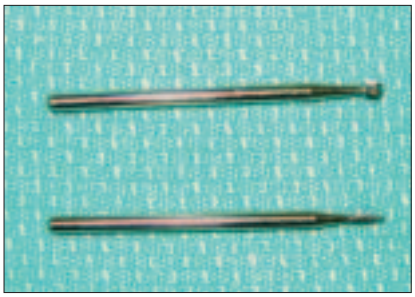

Figure 1: *The 2 types of burs tested were the #701 fissure bur and the #8 round bur.*

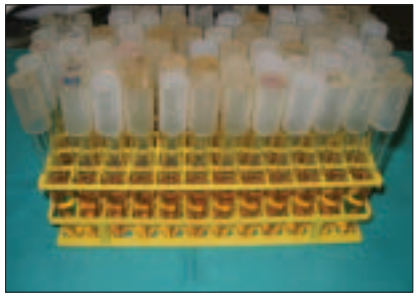

Figure 2: *The instruments were placed into test tubes and stored vertically in racks in a 37°C incubator.*

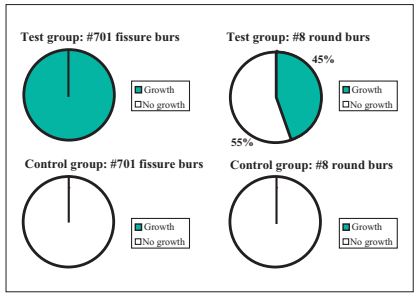

Figure 3: *Bacterial contamination after culture in the 2 types of burs in the test group compared with the control group after 72 h of observation.*

contaminated electroencephalogram electrodes resulted in a $27.5-million settlement against the neurologist and hospital.[4] SUDs are convenient and their use has become widespread in hospitals around the world. However, the use of disposable instruments does not come without a significant cost to the health care system as well as environmental concerns.[5]

Currently, numerous articles address the transmission of blood- and tissue-borne pathogens from one patient to another via contaminated devices.[6–8] Many studies look at the bacterial and viral contamination of dental and medical instrumentation and the safety of sterilizing and reusing these instruments.[9,10]

There have also been concerns over the possible transmission of prions by contaminated surgical instruments.[6] The contact of endodontic files with the peripheral branches of the trigeminal nerve may present a risk of transmission of Creutzfeldt-Jakob Disease (CJD), although there is no evidence of transmission of CJD in dentistry.[6,11]

Although SUDs have been promoted as a strategy to prevent cross-infection of patients, resterilization of previously used instruments is still common as cost is a significant factor in the decision to reuse instruments in dentistry and oral and maxillofacial surgery.[12] The practice of reprocessing used instruments is becoming more and more prevalent with the overall goal of saving money and decreasing environmental pollution.[2] Supporters of resterilization believe that the labelling of some devices as SUDs by manufacturers is done so that they can increase profits and avoid liability with regard to cross-infection of patients on whom their instruments are used.

Modern dental and medical equipment can be intricate and contain small lumens, as in endoscopic equipment, and therefore requires more rigorous procedures to ensure sterilization. Some instruments cannot be consistently and reliably sterilized; because of the risk of cross-contamination with these instruments, disposable devices became established in the health care industry. There is still much debate regarding the reuse of instruments in both dentistry and medicine.[4,6–8]

The purpose of this study was to investigate the rate of bacterial contamination of instruments resterilized for use in oral and maxillofacial procedures in a hospital-based clinic.

Materials and Methods

The test group consisted of 2 types of bone burs: #8 round burs and #701 fissure burs that had been used in a hospital-based clinic during surgical procedures requiring bone removal or re-contouring or sectioning of teeth (**Fig. 1**). The staff who worked in the clinic processed the burs initially; they grossly debrided the 2 types of burs before sending the instruments to the central sterilizing department (CSD) of the hospital. In the CSD, the burs were unpackaged and placed in an ultrasonic cleaner for 3 minutes to remove gross organic and microbial contamination. Following this, they were run through a washer–decontaminator station that flushed them with water heated to 98°C. The burs were then processed in a drying station and packed in paper and plastic peel-back packages before entering the gas sterilization cycle.

Gas vapour sterilization involved a gas mixture consisting of 10% ethylene oxide and 90% CO_2. The burs were subjected to a 1-h conditioning cycle, 3-h sterilization (55°C) cycle, 20-minute exhaust cycle, and a 12-h aeration cycle. The gas vapour sterilization process was monitored using physical, chemical and biological indicators. On completion of the procedure, the burs were transferred in sterile fashion into test tubes containing a culture medium selected to grow oral bacteria (Todd-Hewitt broth). The control group comprised new unused instruments treated in an identical fashion before culturing. All samples (n = 160) were then placed in an incubator maintained at 37°C (**Fig. 2**) to mimic body temperature. The burs were examined daily over 72 h to check for evidence of bacterial growth. Chi-squared tests were used to test for significant differences between the 2 groups and subgroups.

Table 1 **Statistical analysis**

Groups compared	X^2 value	DF	*p* value
Test group (n = 80) vs. control group (n = 80)	87.870	1	$p < 0.0001$
Fissure burs, test group (n = 40) vs. round burs, test group (n = 40)	27.649	1	$p < 0.0001$
Fissure burs: test group (n = 40) vs. control group (n = 40)	76.050	1	$p < 0.0001$
Round burs: test group (n = 40) vs. control group (n = 40)	20.717	1	$p < 0.0001$

DF = degrees of freedom.

Results

In the test group, 100% of the #701 fissure burs and 45% of the #8 round burs showed evidence of bacterial growth after 72 h of observation (**Fig. 3**). No instruments in the control group showed any evidence of bacterial growth after 72 h (**Fig. 3**). The bacterial growth on the dental burs was examined. The colony structure and Gram staining were consistent with the growth of streptococcus species. Chi-squared tests showed significant differences between the groups ($p < 0.05$) (**Table 1**).

Discussion

This study showed that the sterilization technique used in the hospital clinic and CSD was not effective in cleaning some of the instruments used in oral and maxillofacial surgical procedures. Surprisingly high rates of bacterial contamination were noted with both types of bone burs. All of the #701 fissure burs showed evidence of bacterial contamination after 72 h of observation.

Other studies have also shown that reuse of instruments is common and that cleaning of these instruments may not always be effective. For example, Lowe, Burke and others[12] conducted a survey of general dentists in Scotland and found that 93% of those who answered the survey reused matrix bands on multiple patients in their practices. Although 99% of respondents used a steam autoclave to sterilize instruments, they used a variety of presterilization cleaning methods, ranging from a pre-soak only to a combination pre-soak, ultrasonic cleaning and hand scrubbing. The importance of pre-cleaning instruments before steam autoclaving has been well reviewed.[13]

In a subsequent study, Lowe, Bagg and others[14] looked at blood contamination of matrix bands; they collected used matrix bands and matrix band retainers from general dentists in the community. The instruments had been sterilized according to the regular protocol within each office, which included steam autoclaving after pre-cleaning. They found that 34% of hand scrubbed and 4% of ultrasonically cleaned matrix bands had evidence of blood contamination, and blood was detected on 32% of hand scrubbed and 3% of ultrasonically cleaned matrix band retainers. These results show the benefit of ultrasonic cleaning before steam autoclaving as confirmed by other studies.[15] The results are also similar to the present study in that they showed a high rate of contamination. The data confirm that there was a failure of the sterilization process, and Lowe, Bagg and others[14] agree with the possibility of using disposable systems to eliminate risks, although cost may be a deterrent to the widespread acceptance of this practice.

Endodontic files are another type of instrument that is commonly reused. In a survey of general dentists in the United Kingdom, Bagg and others[11] found that 88% of practitioners reused endodontic files. Smith and others[6] compared used endodontic files that had been collected from general dental practices with files from a dental hospital, and found that 76% of the former were visibly contaminated when inspected under a dissecting microscope, as opposed to 14% of those from the dental hospital. These authors also concluded that the cleaning methods used were insufficient to remove the organic material on the endodontic files. They suggested that a cost–benefit analysis would be helpful in determining whether these files would be suitable for designation as single use.

The clinical applicability of studies that look at the risk of cross contamination as a result of using contaminated instruments depends on the amount of the pathogen transferred, the infectivity of the pathogen and host resistance.[16] The ultimate outcome depends on the long-term course of the disease caused by the pathogen. Attention has been focused on bacterial infection, but as the oral cavity is a contaminated environment to begin with, the clinical applicability of the research is difficult to elucidate. There has been public concern over handpiece and waterline contamination issues as these topics were widely covered in the media. There have also been ethical studies looking at the issues of reuse and reprocessing and whether the patient is at risk from these practices.[17] Resterilization is a controversial issue that has yet to be resolved.

This study revealed a high rate of bacterial contamination of rotary instruments despite pre-cleaning and gas sterilization in a hospital-based sterilization department. Other studies have shown that pre-cleaning and sterilization in dental offices may not be as effective at rendering instruments free from contamination as is commonly thought. Cost–benefit analysis may show that for some instruments it may be more cost-effective to use them once and discard them rather than attempt a cleaning and sterilization process that may not be effective.

Conclusions

Sterilizing instruments is a labour-intensive process that requires careful attention to detail. Reuse of rotary instruments can be a cost-effective measure in the practice of oral and maxillofacial surgery if the safety of patients can be assured. Yet there seems to be increasing evidence that the sterilization process may not be completely effective due to human, mechanical or microbial factors. Consideration should be given to the classification of rotary instruments as SUDs if sterilization cannot be guaranteed. ◆

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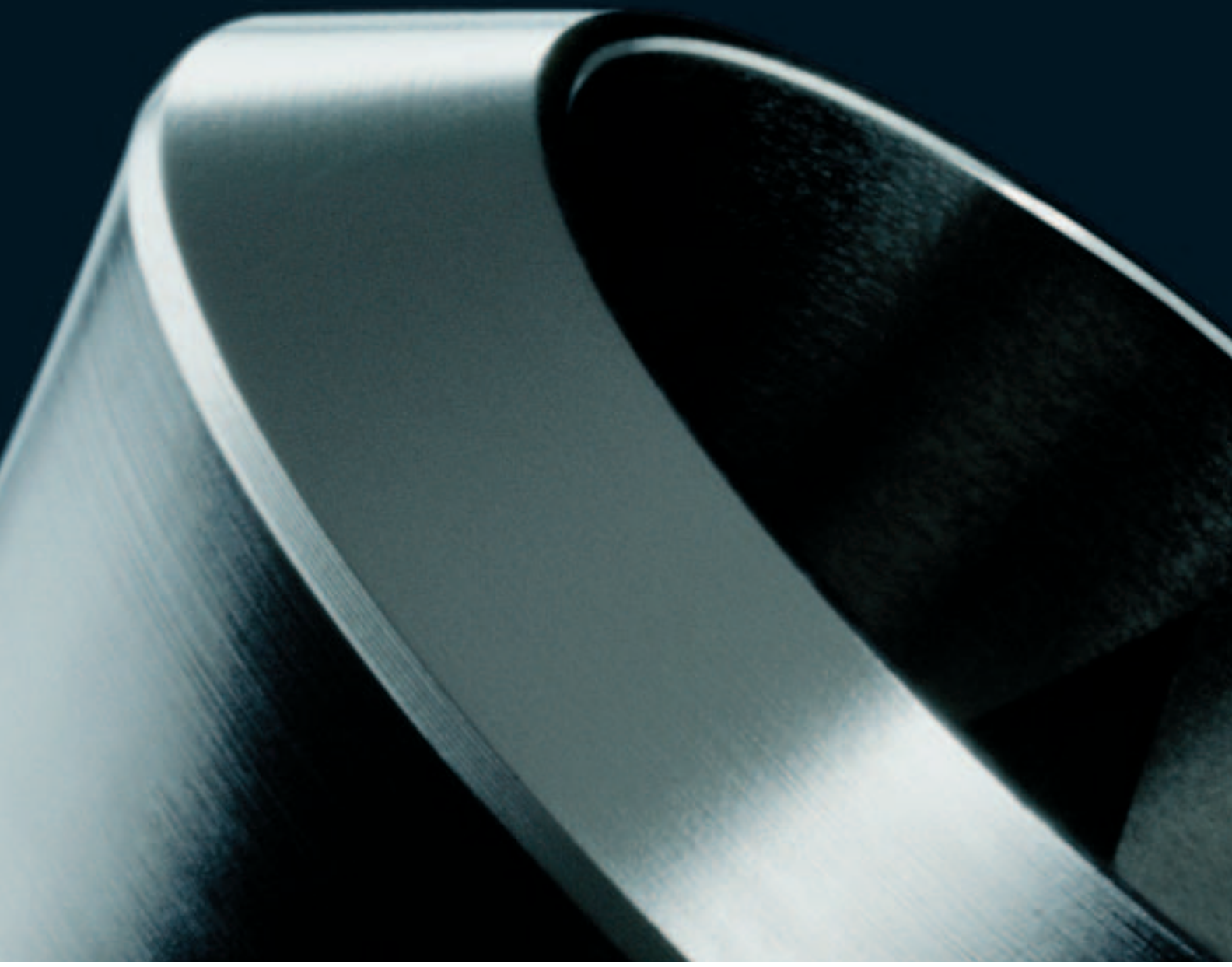

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Iatrogenic Paresthesia in the Third Division of the Trigeminal Nerve: 12 Years of Clinical Experience

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Abstract

Background: *Iatrogenic paresthesia in the third division of the trigeminal nerve remains a complex clinical problem with major medicolegal implications. However, most lawsuits can be prevented through better planning of procedures and by obtaining informed consent. The purpose of this article is to present the authors' clinical experience over the past 12 years, to review the principles of prevention and management of trigeminal paresthesia and to highlight the resulting medicolegal implications.*

Methods: *The files of all 165 patients referred to the oral and maxillofacial surgery department for evaluation of iatrogenic paresthesia in the third division of the trigeminal nerve were reviewed. The characteristics of the subgroup of patients who had taken an attending dentist to court were compared with those of the other patients.*

Results: *Surgical extraction of impacted molars was the main cause of paresthesia in 109 (66%) of the 165 subjects. The alveolar nerve was affected in 89 (54%) subjects, the lingual nerve in 67 (41%) subjects, and both nerves were affected in 9 (5%) subjects. There were more female than male patients (ratio 2.2:1). Lawsuits were initiated in 33 (20%) of the cases; patients who initiated lawsuits were younger, were more likely to have experienced anesthesia and were more likely to need microsurgery (all* $p < 0.001$*). Poor surgical planning and lack of informed consent were the most common errors on the part of the dentists.*

Conclusions: *An accurate evaluation of surgical indications and risk, good surgical technique, preoperative informed consent and sufficient postoperative follow-up should help to reduce the frequency of neurosensory deficits after dental treatment and attendant lawsuits.*

MeSH key words: *molar, third/surgery; postoperative complications; sensation; trigeminal nerve/injuries*

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Changes in feeling in the orofacial region may interfere with speaking, chewing and social interactions.[1] Even apparently minor changes can significantly affect a patient's quality of life.[2] Trauma to a peripheral nerve may result in a deficiency ranging from total loss of sensation (anesthesia) to a mild decrease in feeling (mild hypoesthesia). These sensory deficits may be either temporary or permanent. Some patients may also experience dysesthesia, which is characterized by abnormally painful sensations. Such pain may be caused by a neuroma located at the site of the trauma, changes in the autonomic nervous system (sympathetically mediated pain) or alterations in the central nervous system (central neuropathic pain). Allodynia is a type of dysesthesia characterized by a painful response to normally nonpainful stimuli, such as light touching or shaving. Hyperalgesia is an exaggeration of the pain response to stimuli, whereas hyperpathia is an exaggerated response to pain that persists even after the stimulus has been removed.[3] The pathophysiology of these neuropathies is complex, and treatment

Table 1 **Causes of paresthesia in the third division of the trigeminal nerve**

Cause of injury	Nerve affected; no. (and %) of patients			
	Alveolar nerve (*n* = 89)	Lingual nerve (*n* = 67)	Both (*n* = 9)	Total (*n* = 165)
Exodontics	50 (56)	52 (78)	7 (78)	109 (66)
Injection	5 (6)	14 (21)	0	19 (12)
Osteotomy	15 (17)	0	2 (22)	17 (10)
Implant	8 (9)	1 (1)	0	9 (5)
Endodontics	5 (6)	0	0	5 (3)
Accident	4 (4)	0	0	4 (2)
Parodontics	2 (2)	0	0	2 (1)

Table 2 **Factors influencing probability of lawsuits**

Factor	No. (and %) of patients			
	Lawsuit (*n* = 33)	No lawsuit (*n* = 132)	Total (*n* = 165)	*p* value
Mean age (years)	32.8	36.1	35.4	< 0.001
Sex ratio (F/M)	21/12 (1.75)	93/39 (2.38)	114/51 (2.2)	0.46
Anesthesia	9 (27)	9 (7)	18 (11)	< 0.001
Dysesthesia	5 (15)	31 (23)	36 (22)	0.35
Microsurgery required	17 (52)	16 (12)	33 (20)	< 0.001
Lingual nerve affected	14 (42)	62 (47)	76 (46)	0.68

results are often disappointing.[4] The presence of anesthesia, dysesthesia or spontaneous pain also indicates poor prospects for recovery without surgical intervention. Overall, 25% of patients with iatrogenic paresthesia suffer permanent effects.[5]

The risk of iatrogenic paresthesia of the third division of the trigeminal nerve depends on the procedure performed, the technique used and the surgeon's experience. Iatrogenic paresthesia remains a complex clinical problem with major medicolegal implications. The purpose of this article is to present the authors' clinical experience over the past 12 years, to review the principles of prevention and management of trigeminal paresthesia and to highlight the resulting medicolegal implications.

Methods

The files of all patients referred to the authors' oral and maxillofacial surgery department between 1990 and 2001 for evaluation of iatrogenic paresthesia in the third division of the trigeminal nerve were reviewed. All patients had been seen and treated by the same surgeon. The data extracted from the files included age, sex, description of the trauma, lesion location, initial diagnosis, need for microsurgery and type of surgery performed. The sample was divided into 2 subgroups according to whether the patient had initiated a lawsuit against the dentist who had performed the surgery. These subgroups were compared by the Student *t*-test to determine whether any of the independent variables were associated with initiation of lawsuits.

Results

The cohort consisted of 165 patients. The most common cause of paresthesia in the third division of the trigeminal nerve was extraction of impacted third molars (109 patients), followed by trauma due to injection (19 patients) (**Table 1**). In 135 patients, the lesion was located at the level of a single nerve, the lower alveolar nerve in 82 (61%) of these patients and the lingual nerve in 53 (39%). Twenty-one patients had bilateral pain in the lower alveolar or the lingual nerve, and 9 patients had pain in both of these nerves on the same side. One hundred and fourteen (69%) of the subjects were female (ratio of women to men 2.2:1). During the initial evaluation, most patients presented with hypoesthesia (103 [62%]) or anesthesia (17 [10%]). Dysesthesia was seen in 36 (22%) of the cases, and the proportion of female subjects was significantly higher in this subgroup ($p = 0.007$). Thirty-three patients (20%) underwent microsurgery for ablation of a neuroma, reanastomosis or neural decompression.

Legal proceedings were initiated by 33 (20%) of the 165 patients. Patients who initiated lawsuits were younger, were more likely to have experienced anesthesia and were more likely to have needed microsurgery (**Table 2**). The average amount granted in the legal proceedings was $17,956, which was 42% of the average amount requested, $43,047 (**Table 3**). The highest amount awarded was $35,347 and the lowest $5,167. Most disputes were settled amicably or out of court. In general, higher amounts were granted to patients who had recourse to a lawyer's services.

Table 3 **Settlements for lawsuits**

Lawsuit	No.	Average amount ($)	
		Requested	Awarded
Amicable settlement without legal proceedings or lawyer	6	19,478	12,838
Amicable settlement without legal proceedings but with lawyer	8	40,437	19,997
Legal action and unfavourable judgement to the patient	2	60,868	28,733
Legal action and favourable judgement to the patient	1	39,000	0
Legal action, settled out of court	6	59,878	17,062
Legal action, not settled	5	138,689	NA
Denial of responsibility with lawyer, without any action taken	3	30,031	NA
Discontinuation of suit before court case	1	38,000	NA
Preventive notice without any action taken	1	NA	NA
Overall	**33**	**17,956**	**43,047**

NA = not applicable

Table 4 **Indications and contraindications for extraction of lower third molars**

Indications
Prevention and treatment of infection
Prevention and treatment of dental and periodontal pathology
Prevention and treatment of cysts and odotongenic tumours
Orthodontic considerations (facilitate alignment, prevent relapse)
Contraindications
Advanced age (> 30 years)
Very young age (< 12 years)
Imminent damage to adjacent structures
Possibility that tooth might erupt or serve as an abutment
Orthodontic considerations (tooth needed as an anchor or for the alignment of teeth)
Patient refusal to accept risks associated with extraction

Discussion

The reported incidence of paresthesia after extraction of impacted third molars varies between 0.2%[6] and 22%[7] for the lingual nerve and between 0.4%[8] and 7%[9] for the lower alveolar nerve. These variations can be explained by differences in procedures and technique, in particular with regard to clinical evaluation and diagnostic criteria, as well as differences in the surgeon's experience. The risk of paresthesia depends on the clinical situation. It may be almost nonexistent under the best conditions (young patient, incompletely formed roots, mandibular canal not in close proximity) but could exceed 50% in other circumstances (elderly patient, unfavourable position of the tooth, proximity of the mandibular canal). A good clinical evaluation can be used to inform the patient about the potential risks of surgery. Written informed consent, after the patient has received a complete description of these risks, must be obtained in all cases of nontherapeutic surgical removal of the molars (i.e., preventive treatment). Consent is also strongly recommended in cases of therapeutic surgical extraction (treatment of pathology) for semi-impacted or impacted third molars.

Among patients with iatrogenic paresthesia in the third division of the trigeminal nerve, 75% regain normal sensitivity without further treatment.[5] In most cases, complete recovery occurs 6 to 8 weeks after the trauma, although it may take up to 24 months. If paresthesia is not completely resolved within about 2 months, the probability of a permanent deficit increases significantly; it is unlikely that complete resolution will occur if the deficit is still present after 9 months.[10] The prognosis of spontaneous recovery is better for the lower alveolar nerve than for the lingual nerve.[8]

In the preoperative evaluation for nontherapeutic extraction of impacted third molars, the surgeon must decide whether the risks of surgery exceed the expected benefits. This study and the authors' clinical experience have shown that, too often, the risk of surgery had been poorly evaluated and, in certain cases, the treatment is not even indicated. The surgeon must be familiar with the indications for removal of impacted third molars (**Table 4**). He or she must also be familiar with the radiologic signs indicating the proximity of the lower alveolar nerve. The presence of a radiolucent band at the apex of the third molar, loss of continuity of the upper or lower bony cortex in the lower alveolar canal and shrinking or deviation of this canal are all reliable signs indicating closer proximity of the lower alveolar nerve to the root of the wisdom tooth (**Figs. 1** to **3**).[11]

Management

Perioperative Precautions

If the patient feels a sensation like an electric shock when the needle is inserted, the needle should be withdrawn by a few millimetres before the solution is administered. If the position of the extracted tooth allows the lower alveolar nerve to be seen at the bottom of the alveolus, many surgeons prefer to place a piece of absorbable gelatin in the alveolus (e.g., Gelfoam, Pharmacia & Upjohn Co, Kalamazoo, Mich.) before closing. However, the

Figure 1: *A 34-year-old patient who underwent extraction of tooth 48. Anesthesia in the area of the lip and chin was noted upon initial examination. Neural decompression with debridement revealed that the nerve had been partially cut, and there was intense scarring at the affected site. Legal proceedings were initiated against the dentist. Note the presence of a radiolucent band at the apex of the third molar.*

Figure 2: *A 32-year-old patient who underwent extraction of tooth 38. After the surgery, the patient presented with severe dysfunctional hypoesthesia as well as hyperalgesic neuralgia and eventually launched a lawsuit. Note the classic signs of very close proximity between the lower alveolar nerve and the apex of the third molar, i.e., loss of continuity of the bony cortex of the lower alveolar canal, as well as its shrinking and deviation at the apex.*

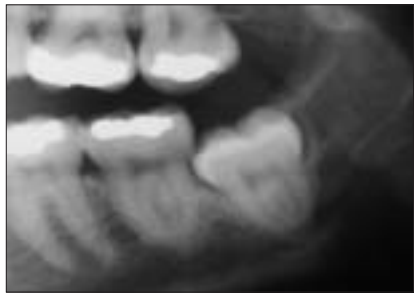

Figure 3: *A 32-year-old patient who was evaluated for hypoesthesia of the lip and chin and the vestibular mucosa after extraction of tooth 38. There is major deviation of the lower alveolar canal, indicating close proximity between the canal and the tooth.*

Figure 4: *Mapping of the affected area can delimit the scope of the problem and can be used to follow its development.*

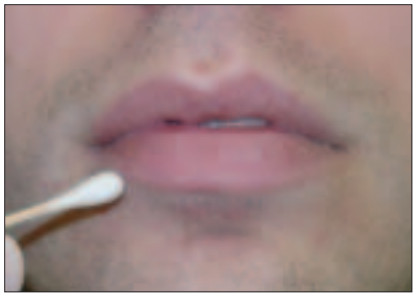

Figure 5: *A swab may be used to evaluate the patient's sensations in the affected area. Only the point of the swab should come into contact with the subject's tissues, so as to obtain a reliable reading.*

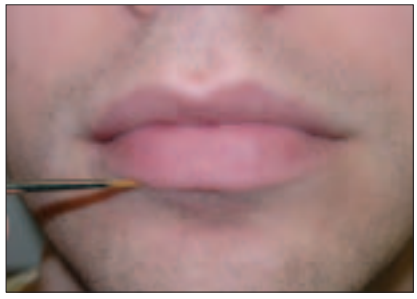

Figure 6: *A soft hairbrush can be used to assess the patient's ability to detect direction of movement.*

Figure 7: *The flat tip of a 27-gauge needle is used to evaluate the patient's perception of painful stimuli.*

effectiveness of this measure, which aims to minimize fibrosis and thus prevent paresthesia, has not been established.

Clinical Evaluation

Patients with postoperative paresthesia must be treated promptly and should be seen as soon as possible for clinical evaluation. The clinical evaluation should comprise the following elements:

1. Map the affected area by pencil outline on a drawing or a photograph of the patient (**Fig. 4**).
2. Determine the sensations felt by the patient when a cotton swab is lightly applied to the affected area (**Fig. 5**).
3. Determine the ability of the patient to detect the direction of a sweeping motion (in an area of about 1 cm), applied with a resin applicator or the tip of a rolled-up tissue (**Fig. 6**).
4. Describe the patient's sensations when a 27-gauge hard needle is applied in the affected region with sufficient pressure to indent the skin without penetrating it (**Fig. 7**).

The presence of dysesthesia or spontaneous pain must be noted. Each test must be conducted at 3 sites: the lower lip, the lip–chin fold and the chin. Any patient with paresthesia should receive corticosteroids to minimize the inflammatory response.[12] Empiric treatment with prednisone (50 mg once daily) for 7 days is often used in the authors' oral surgery department. This medication must be started as soon as possible, ideally the day after surgery.

Seven-day antibiotic treatment with penicillin, the gold standard for patients without penicillin allergy, or clindamycin is commonly prescribed to prevent infection, which would slow the healing process and decrease the likelihood of full recovery of the nerve. Clinical evaluation should be repeated once a month to assess the presence or absence of functional recovery.

Referring the Patient

Some patients must be referred to an oral and maxillofacial surgeon. Microsurgery may be indicated in the following cases: confirmed transection of a nerve; total anesthesia of the affected area 2 months after the trauma; lack of protective reflexes (on biting or burning of the tongue or lower lip) 2 months after trauma, with little or no improvement; or dysesthesia.[13]

Microsurgery involves general anesthesia, a period of convalescence and a few weeks off work. The surgeon dissects the affected nerve and, if the damage is extensive, joins the proximal and distal portions. This surgery should ideally be done within 4 months after the trauma to prevent atrophy of the distal part of the nerve.[14] Therefore, if it is felt that the patient's condition might be improved through surgery (on the basis of the criteria listed above), he or she should be referred immediately to allow the surgeon to make his or her own assessment and measure the lack of functional recovery over a period of 2 months before intervening. Although considerable functional improvement is seen in many patients after surgery,[13,15] regaining normal sensation is not possible. Just under half of patients experience no improvement, and all patients who undergo surgery will have some permanent sensory deficit. In cases of dysesthesia, a more medical approach is required, since surgery is rarely useful in these cases, especially for patients with sympathetically mediated pain or central neuropathic pain.[16]

Conclusions

Most cases of iatrogenic paresthesia can be prevented. However, when this problem occurs, follow-up must be initiated quickly, since the first few months may determine the degree of nerve healing. If there is a high risk of nerve trauma, the patient should be referred preoperatively to an oral and maxillofacial surgeon. Most patients recover normal sensation without treatment. However, permanent deficits are often poorly tolerated, as indicated by the high proportion of lawsuits in such cases. More than half of lawsuits are associated with lack of preoperative informed consent.[17] In-depth knowledge of anatomy and surgical principles is also imperative. It is often easy to treat slight hypoesthesia, but treatment becomes complex in cases of sympathetically mediated pain or central neuropathic pain. If a large area has been affected, it is impossible to regain normal sensation regardless of the therapeutic measures undertaken. The well-informed general dentist should be able to perform an initial assessment and then refer the patient to a maxillofacial surgeon at the appropriate time to maximize the chances of functional recovery of the affected nerve. ➧

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Point of Care

The Point of Care section answers everyday clinical questions by providing practical information that aims to be useful at the point of patient care. The responses reflect the opinions of the contributors and do not purport to set forth standards of care or clinical practice guidelines. This month's responses were provided by speakers at the Annual Spring Meeting of the Ontario Dental Association, to be held May 5–7, 2005, in Toronto, Ontario.

Question 1

A patient of mine has reported that she is "allergic to freezing." What are the causes of local anesthetic-related allergies?

Anesthetic-related allergies, even mild ones, constitute less than 1% of medical emergencies in the dental office. Nonetheless, it is important to understand which substances within a local anesthetic solution are possible allergens and to determine the source of a patient's allergic reaction.

Local anesthetics are classified as esters or amides. Today, all injectable local anesthetics used in dentistry are amides (**Box 1**). A wide variety of esters and amides are available as topical anesthetics, for example, benzocaine (an ester), tetracaine (an ester) and lidocaine (an amide).

If a patient is allergic to an ester-based anesthetic, the allergen is not the anesthetic itself but a breakdown product, *p*-aminobenzoic acid (PABA), which is generated on metabolization of any ester. Therefore, if a patient is allergic to one ester-type local anesthetic, he or she will be allergic to all such anesthetics. The same is not true for amides, which break down into a variety of metabolites; thus, allergy to one amide should not preclude the use of another, unless testing reveals an unusual situation of multiple amide allergies. In fact, allergy to any amide-type local anesthetic is extremely rare, although some cases have been documented.[1] If a patient demonstrates an allergy to the contents of an amide-based anesthetic cartridge, the likely culprit is the preservative for the vasoconstrictor, sodium metabisulphite. Such patients might report sulphite allergy in their medical history. They are typically sensitive to any products that contain sulphite preservatives (**Box 2**). This type of allergy is not the same as a sulpha allergy, which is an allergy to a class of antibiotics called sulphonamides. People with sulpha allergies do not demonstrate cross-sensitivity to sulphites. Therefore, if a patient is allergic to sulphite preservatives but not to the local anesthetic itself, he or she can safely tolerate a solution with no vasoconstrictor. The incidence of sulphite allergy is higher among allergy-prone asthmatic patients than among nonasthmatic patients.

At one time a bacteriostatic agent called methylparaben was available in dental anesthetic cartridges. Methylparaben is also metabolized to PABA, so it was a potential allergen. This product is needed only in multidose vials and is no longer available in dental cartridges.

When there is a question as to the cause of an allergy, the patient should be sent to an allergist. The dentist should request testing for a few different anesthetics and for the preservative sodium metabisulphite. It is also a good idea to give the patient a variety of anesthetic samples to take to the allergist, including a solution that does not contain vasoconstrictor.

There is also the possibility of allergy to the latex within the cartridge. Latex particles can enter the cartridge after the needle perforates the diaphragm or via the plunger (in some cartridges). However, it is unlikely that latex within

Box 1 Injectable local anesthetics available in Canada

Drug	Available as plain solution
Articaine	No
Bupivacaine	No
Lidocaine	No
Mepivacaine	Yes
Prilocaine	Yes

Box 2 Foods that contain sulphite preservatives

Salads served in salad bars
Dried fruits
Alcoholic drinks
Potato chips
Deli meats
Pickles
Cheese
Lemon and lime juices, some other fruit juices
Gelatin
Muffin mix
Canned and dried soups
Canned fish
Cider and vinegar

the cartridge can induce latex hypersensitivity, as there are no published reports of an allergic response to the latex component of a dental cartridge.[2] In any case, companies are now moving toward use of latex-free components.

If a patient reports an allergy to a local anesthetic, it is of paramount importance to determine the events that led to the report. Sensitivity to epinephrine or an intravascular injection commonly leads to misinterpretation of the reaction as an allergy. Affected patients may experience symptoms such as palpitations, sweating, nausea, and a feeling of faintness, and some might call this an allergic reaction. Another clinical situation that can be mistaken for an allergic reaction is an overdose of local anesthetic. In this situation, the patient may demonstrate a range of signs and symptoms, including a feeling of discomfort, tingling, metallic taste, confusion, talkativeness, hypertension and increased pulse. In more extreme overdose situations, seizures and coma may occur. Allergies do not typically present in this way. Patients must be counselled on the differences between allergic reactions and the symptoms of overdose and epinephrine-induced reactions. ➧

Dr. David Isen *maintains a private practice in Toronto, Ontario, where he treats patients who require advanced anesthetic care. He has lectured extensively on topics related to local anesthesia, medical emergencies and nitrous oxide sedation. E-mail: d.isen@rogers.com.*

Dr. Isen's session at the ODA meeting, titled "Advanced local anesthesia - what you need to know," will be presented on Thursday, May 5.

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Question 2

What should I know about treating dental patients who are undergoing chemotherapy and when is it the best time for dental treatment?

Background

The Canadian Cancer Society estimates that 145,500 Canadians will develop cancer during 2004 and that 68,300 cancer-related deaths will occur. The management of many malignancies includes the use of chemotherapeutic drugs. As these treatments have become more intensive and therapeutically successful, the complications have increased. The mouth is a frequent site of such side effects. In chemotherapy, most complications are the result of immunosuppression, myelosuppression and direct cytotoxic effects on oral tissues (**Figs. 1** to **3**). Oral complications in chemotherapy patients are usually acute and subside shortly after the chemotherapeutic drugs leave the system. Such side effects include mucositis, infections, hemorrhage, xerostomia and neurotoxicity. Mucositis, the most common acute oral complication of chemotherapy, typically appears 5 to 7 days after the start of treatment (it may appear as early as 3 days after initiation of cancer therapy). Unfortunately, most chemotherapeutic drugs affect normal tissue as well as the neoplastic cells and tissues. It is this lack of specificity in the majority of current therapies that contributes to the wide range of oral complications.

It is important to determine the cytotoxic, immunosuppressive and myelosuppressive nature of a chemotherapeutic regime. A cytotoxic drug will induce mucositis, whereas an immunosuppressive drug will allow microorganisms to flourish, putting the patient at high risk for periodontal and odontogenic abscesses as well as viral and fungal infections. A myelosuppressive drug complicates treatment by reducing platelet counts, making emergency surgery and routine oral hygiene dangerous.

Most chemotherapy regimens for cancer comprise a combination of drugs. It is therefore not unusual for a patient to experience both mucositis and immunosuppression. This type of regimen may leave the patient extremely susceptible to opportunistic infections.

Dental Management of Cancer Patients

The most logical time to perform dental treatment for a cancer patient is before the patient's cancer therapy begins. Most of the cancer patients who are treated in a dental oncology clinic, however, are seen on emergency referral from the oncologist or the dentist and are undergoing active chemotherapy. Most dental emergencies during active chemotherapy could be avoided through a prechemotherapy intraoral examination and a thorough periodontal cleaning and appropriate mouth care. Thus, it is unfortunate that few oncologists recommend to their patients that they seek treatment from the family dentist before chemotherapy commences.

During cancer chemotherapy, dental treatment should be undertaken only on an emergency basis. Such treatment may include periodontal cleaning, if the patient's hygiene has been neglected and he or she has active periodontal disease. Therefore, such emergency treatment involves any

Figure 1: *Secondary bacterial and fungal infections caused by chemotherapy-induced mucositis.*

Figure 2: Candida albicans *infection caused by the xerostomic and immunosuppresvie effects of chemotherapy agents.*

Figure 3: *Herpes simplex virus on the dorsum of the tongue and* C. albicans *on the commisure of the lips caused by the immunosuppressive effects of chemotherapy.*

dental treatment required to remove a source or potential source of infection. The practice guidelines listed below are appropriate and safe for any general practice dentist treating a patient who is undergoing cancer therapy. As for any situation, the dentist's judgement should be based on his or her own comfort zone.

1. Dental treatment should be undertaken only after consultation with the patient's oncologist or a dental oncologist (if there is one in your area), to coordinate the dental treatment with the patient's optimal hematological status.
   - White blood cell count must be greater than 1.0×10^9/L.
   - Platelet count must be greater than 40×10^9/L and the international normalized ratio must be normal.
   - Antibiotic prophylaxis is required when the absolute neutrophil count is less than 2.0×10^9/L.
   - Patients with indwelling catheters (also called central venous catheters or Hickman lines) require prophylactic antibiotic coverage.
2. The optimal time to perform dental treatment is just before a cycle of chemotherapy begins, to maximize the time before the patient's condition reaches a nadir.
3. At any time, symptomatic teeth with pulpal involvement can be opened, debrided and closed with a temporary restoration.
4. Decay can be excavated and sedative fillings placed anytime during chemotherapy treatment.
5. Generally, extractions are contraindicated except in extreme emergencies (i.e., when an infected tooth may be the source of systemic infection).
6. A nonflavoured, nonalcohol 0.12% chlorhexidine rinse should be prescribed for use 4 times daily and up to every 2 hours in the event of oral mucositis. Because there are no clinical practice guidelines for the treatment of chemotherapy-induced mucositis, chlorhexidine is used at our cancer centre to treat this condition.
7. Petroleum products should be avoided in the treatment of dry, cracked lips; instead, lanolin should be recommended. ◆

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Dr. Saunders' session at the ODA meeting, titled "Dental care for the cancer patient," will be presented on Friday, May 6.

Further Reading

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Question 3 What are the choices of antibiotics for the treatment of acute odontogenic infections?

Background

The complexity of the oral and dental flora has prevented clear elucidation of specific causative agents in most forms of odontogenic infections. Anaerobic bacteria, which are part of the normal oral and dental flora, represent at least 350 morphological and biochemically distinct bacterial groups.[1]

Most odontogenic infections result initially from the formation of dental plaque and continue to develop in areas of tissue damage or trauma. Dental caries, periodontal disease, pericoronitis and postsurgical wounds are common factors in odontogenic infections. Once pathogenic bacteria become established, they can cause a wide variety of local and disseminated complications. The most common infections include dentoalveolar infections, gingival infections, and periodontitis. These can be categorized as localized infections (such as acute periodontal abscesses), spreading infections (such as early cellulitis and infections with deep space involvement) and life-threatening infections (such as necrotizing fasciitis and Ludwig's angina).[2]

Odontogenic infections are generally caused by mixed aerobic and anaerobic polymicrobial bacteria from the same families of oral microorganisms (obligate anaerobes and gram-positive aerobes). The microorganisms recovered from infections generally reflect the host's indigenous oral flora. Therefore the choice of antibiotic to treat odontogenic infections must be made according to the polymicrobial nature of such infections and local resistance patterns.

In all instances of odontogenic infections it is essential that the airway be assessed and secured if necessary, as the initial life-saving manoeuvre. If there is an abscess to be drained or necrotic tissue requiring removal or debridement, this must also be done.[2,3] Attention can then turn to antibiotic choices. One common mistake is the tendency to underdose the antibiotic, which is assumed to be one of the causes of antibiotic treatment failures.[4] Practitioners must be aware of the appropriate pediatric and adult dosages of antibiotics that are useful in odontogenic infections[4] (**Box 1**). Moreover, the course of the infection must be monitored continuously both clinically and by following the results of culture and sensitivity testing. Widespread resistance of pathogens is another important cause of antibiotic treatment failures. General practitioners must be prepared for early referral of such cases to a specialist if the infection is not responding to treatment, especially if there are any airway or neurological concerns.

Box 1 **Antibiotic choices and dosages for dental practitioners treating acute odontogenic infections**

Antimicrobial drug	Adult dosage	Pediatric dosage
Penicillin V	600 mg 4 times a day	30–50 mg/kg per day in 4 divided doses
Amoxicillin	500 mg 3 times a day	20–50 mg/kg per day in 3 divided doses
Amoxicillin–clavulanate	500/125 mg 3 times a day	40 /10 mg/kg per day in 3 divided doses
Metronidazole	500 mg 3 times a day	15–30 mg/kg per day in 3 divided doses
Clindamycin	150–300 mg 4 times a day	10–30 mg/kg per day in 3 divided doses
Ciprofloxacin	250–750 mg twice a day	40 mg/kg per day in 2 divided doses

Choice of Antibiotics

The gold standard first-choice antibiotic has historically been penicillin for patients not allergic to this drug. Phenoxymethyl-penicillin, or penicillin V, can be used to treat the vast majority of odontogenic infections. It is more resistant to gastric acids than its predecessor, penicillin G, and it is very well tolerated orally. However, resistant bacterial species, particularly those that elaborate β-lactamase, have made the treatment of odontogenic infections more complex and difficult. Amoxicillin has a spectrum similar to penicillin, and its effectiveness against *Haemophilus influenzae* can be useful. Amoxicillin can also be effective against bacterial species that produce β-lactamase if combined with clavulanic acid. Diarrhea may be one major side effect of the amoxicillin–clavulanate combination. Cephalosporins offer no major advantages over the penicillins and are much more expensive.

Although penicillin is still a good first choice today, its spectrum of activity may need to be augmented. One possibility is metronidazole, a bacteriostatic agent that is highly active against most anaerobes but which has poor coverage of aerobic species. Metronidazole should never be used on its own to treat an acute odontogenic infection. The use of metronidazole may not be entirely benign, and side effects may occur; for example, metronidazole may cause an Antabuse-type reaction if combined with alcohol, and peripheral neuropathies have been reported.

Erythromycin and tetracycline have limited application in dentistry. Erythromycin is a bactericidal antibiotic with a poor performance record in odontogenic infections. There are serious compliance issues because of the intense nausea and vomiting that this drug can cause. When given intravenously, erythromycin tends to be extremely irritating to the veins. The usefulness of tetracycline has been diminished by widespread resistance.

Clindamycin is the drug of choice for patients with a history of penicillin allergy. Clindamycin has the advantage of reliable coverage against gram-positive aerobic and anaerobic bacteria, with the possibility of attaining high intra-bony levels with both intraoral and intravenous administration. The biggest disadvantage of clindamycin is its association with pseudomembranous colitis. The 2 groups at greatest risk appear to be elderly patients and patients who have recently had long-term hospital stays and are therefore at risk for nosocomial (hospital-acquired) infections. The incidence of clindamycin resistance also seems to be increasing.

Ciprofloxacin may be one other antibiotic to consider. Like the other fluoroquinolones, this unique fluoroquinolone antibiotic has potent gram-negative activity inhibiting DNA gyrase and topoisomerase IV.[5] Ciprofloxacin is also effective against gram-positive organisms and may be used together with clindamycin. ➧

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Dr. Sándor's sessions at the ODA meeting, titled "Keeping general practitioners out of trouble when performing dento-alveolar surgery" and "The ever changing face of odontogenic infections," will be presented on Friday, May 6.

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Question 4

I use oral sedatives in my office for children and anxious patients. Should I use pulse oximetry?

Like all drugs, sedatives produce a range of effects depending on patient factors. In most patients, mild anxiolysis or light sedation results, but at the other end of the spectrum (in rare cases) a near catatonic state can occur. Sedatives can cause a patient to become unresponsive, which can lead to hypoventilation or an inability to maintain the airway. Luckily, standard benzodiazepines, alcohols and hypnotics have a wide therapeutic margin and are generally safe. So safe, in fact, that current Royal College of Dental Surgeons of Ontario guidelines do not require pulse oximetry or other mechanical monitors when these drugs are given as a single agent by mouth. However, if a practitioner chooses a mechanical monitor during single-agent sedation, a pulse oximeter is an excellent first choice.

What Does a Pulse Oximeter Do?

Pulse oximeters measure the level of oxygen in the blood. Oximetry is generally accurate, non-invasive and sensitive to changes in hypoventilation. The oximeter, which is attached to the patient's finger using a small clip, shines a light through the nail bed and measures the ratio of oxygenated to deoxygenated hemoglobin (**Fig. 1**). This measurement is calculated continuously and averaged over 5–60 seconds, depending on the machine settings. This means that changes in the amount of oxygen in the blood will be seen on the oximeter as soon as the value is calculated.

When a patient loses consciousness to the point that he or she is unable to maintain the airway, breathing stops. The level of carbon dioxide in the blood rises, creating the urge to breathe that one normally feels when holding one's breath. As minutes tick by, oxygen dissociates from heme molecules in the red blood cells and is used by the body. At first, the amount of oxygen in the blood drops slowly (**Fig. 2**), but as hemoglobin releases oxygen, oxygen's affinity for the heme molecule decreases and it is released ever more quickly. To the clinician, this is important because the drop in a patient's oxygen saturation from 100% to 90% is relatively slow (usually minutes), but the drop from about 85% to 10% is very rapid (usually seconds). At the point where this acceleration begins, the patient will appear blue (cyanotic) and the problem becomes quickly apparent. If oxygen saturation remains low for more than 4–6 minutes, death will result. The bottom line is that oxygen saturation below 85%, in a sedated patient, must be treated immediately to prevent dire consequences.

Figure 1: *Oxygen saturation monitor with finger clip (the patient is breathing room air and oxygen saturation is 98%).*

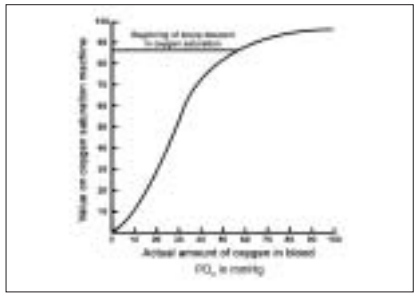

Figure 2: *The oxygen dissociation curve showing steep drop of 85% on the vertical axis.*

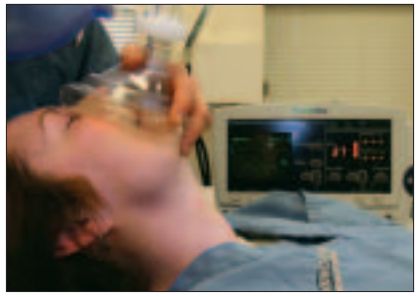

Figure 3: *If a patient has an oxygen saturation of 37% (critically low), ventilate using a bag-valve mask and 100% oxygen.*

Practical Use of an Oximeter

The good news is that the body has a certain store of oxygen, so the drop in oxygen can be measured and the process reversed before the results become permanent. If a patient is on an oximeter and oxygen saturation begins to fall, basic steps can usually reverse the problem (assuming it is related to excessive sedation).

1. If the patient is conscious, tell him or her to take some deep breaths.
2. If the patient is conscious, give supplemental oxygen with a mask.
3. If the patient is unconscious, try to rouse him or her, then open the airway.
4. If the airway is patent, use a bag-valve mask (BVM) with supplemental oxygen.
5. If the patient is unconscious but breathing, "assist" the breaths with the BVM until oxygen saturation is 96% or more; if the patient is not breathing, give 1 breath every 5 seconds until that saturation level is reached (**Fig. 3**).
6. Consider a reversal agent (flumazenil for benzodiazepines or naloxone for narcotics) to wake the patient.

Like all pieces of equipment, the pulse oximeter can give inaccurate readings. The most common reasons for a false low value are movement, cold fingers (causing inadequate peripheral circulation for accurate measurements) and nail polish. If your office conducts sedation, consider a pulse oximeter and take the following steps:

- Carefully read the manual to learn over how long a period the values are averaged, how to maintain the equipment and how long the battery will last without power.
- Ensure that support equipment (supplemental oxygen) is readily available, familiar to all staff and well maintained.
- Run office emergency drills to practise dealing with some of the situations listed above.
- Ensure that the protocols you use and the drugs you give are in accordance with the provincial guidelines.

A pulse oximeter is an inexpensive, easy-to-use piece of equipment to monitor patients accurately during any level of sedation. Using it can increase the margin of safety with sedated patients and provide an extra measure of comfort to the staff providing care. ✦

Dr. Ian Furst *is an oral and maxillofacial surgeon with the Coronation Dental Specialty Group and staff surgeon at Cambridge Memorial Hospital, Cambridge, Ontario. He is president of the Ontario Dental Society of Anaesthesiology. E-mail: ifurst@cdsg.ca.*

Dr. Furst's sessions at the ODA meeting, titled "Anesthesia and anesthetics in a general dental practice," will be presented on Thursday, May 5.

Further Reading

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Clinical Showcase

Endoscopically Assisted Caldwell-Luc Procedure for Removal of a Foreign Body from the Maxillary Sinus

Joseph Friedlich, DDS, FRCD(C), Dip ABOMS
Brian N. Rittenberg, BA, DDS, MSc, FRCD(C)

Traditionally, foreign bodies displaced into the maxillary sinus are retrieved either through the entrance wound (such as an extraction site) or through a secondary site. The Caldwell-Luc approach was the gold standard for access to the maxillary sinus for treatment of various problems, including retrieval of foreign bodies, until the development of functional endoscopic sinus surgery (FESS). Both techniques have limitations and potential complications. This case presentation demonstrates the use of a modified Caldwell-Luc approach for retrieval of a foreign body from the maxillary sinus in a case where retrieval would not have been possible with the FESS technique because of the large size of the foreign body. The technique employed in this case takes advantage of lessons learned from minimally invasive surgery and FESS.

Case History

A 54-year-old man was seen for an emergency consultation after removal of teeth 26 and 27. The patient's history indicated that the high-speed surgical bur used for removal of the teeth had become dislodged somewhere within the patient's oral cavity. The patient had well controlled hypertension and bipolar disorder.

Clinical examination identified active epistaxis and bleeding from a patent oroantral fistula. The findings on neurological examination were unremarkable. The patient had no visual disturbance, and he was hemodynamically stable.

Patient Management

Primary treatment included local measures to achieve hemostasis and an attempt to locate the dislodged bur. The bur could not be visualized clinically at that time, and the wound was closed primarily to achieve hemostasis and close the oroantral fistula. Panoramic and plain film radiography indicated that the surgical bur was within the maxillary sinus (**Fig. 1**). The patient was admitted to the oral and maxillofacial surgery service for further investigations, including computed tomography. This imaging confirmed that the surgical bur lay within the sphenoidal recess of the maxillary antrum (**Figs. 2** and **3**).

The surgical plan was to encourage closure of the oroantral fistula and then to retrieve the foreign body by an endoscopically assisted Caldwell-Luc procedure. It was felt that the endoscope would allow for direct visualization of the surgical bur and would facilitate controlled removal. The patient was given antibiotics and topical and systemic decongestants and was discharged. After approximately 3 weeks of healing, the oroantral fistula had closed, and an appointment was scheduled for retrieval of the foreign body.

With the patient under general anesthesia, standard surgical technique was used to create a small osteotomy in the lateral antral wall superior to the root apices of the premolar teeth. The position of the infraorbital nerve was identified, and the nerve was protected. The size of the opening was restricted but sufficient to allow passage of a 4.0-mm endoscope (Karl Storz Endoscopy America Incorporated, Culver City, Calif.) and a probe. The aperture of the ostium was approximately 1.25 cm in diameter. The antrum was thoroughly examined through the endoscope (**Fig. 4**). The surgical bur was easily identified; it was embedded in the medial–superior recess (**Fig. 5**), as had been predicted by the radiographic assessment. A surgical grasper was inserted, and the bur was gently removed (**Figs. 6** and **7**). Associated inflammatory tissue was debrided. The wound was irrigated copiously and closed primarily. The patient was maintained on a course of postoperative antibiotics and decongestants for 10 days following surgery.

Outcome

The patient's immediate and long-term recovery was uneventful. There was minimal surgical edema. The integrity of the maxillary division of the trigeminal nerve was preserved; the patient had no complaints and testing showed no signs of nerve injury. There were no postoperative antrum-related complaints; the wounds healed completely, and there was no residual oroantral fistula.

Lessons to be Learned

Special care must be taken to ensure that adjacent hard and soft tissues are protected at all times from iatrogenic injury. This case demonstrates the potential for a surgical instrument to become embedded in contiguous structures. In this case, a surgical bur lodged just millimetres from the orbital contents within the ethmoidal recess of the maxillary antrum. It is the authors' opinion that the surgical bur

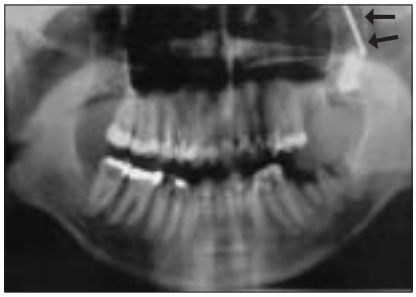

Figure 1: *Preoperative panoramic radiograph. The foreign body, a surgical bur, appears to be lodged within the left maxillary sinus (black arrows).*

Figure 2: *Computed tomography (sagittal view) demonstrates the surgical bur in the superior aspect of the left maxillary sinus (black arrow).*

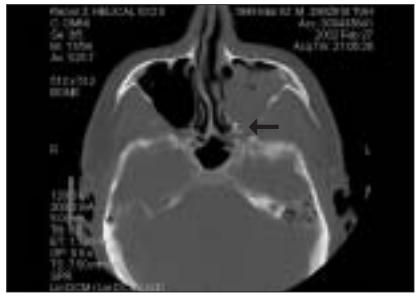

Figure 3: *Computed tomography (axial view) demonstrates the surgical bur in the most medial and posterior part of the left maxillary sinus (black arrow).*

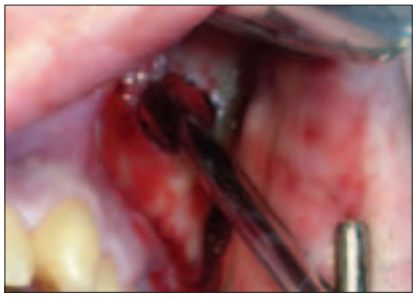

Figure 4: *A 4.0-mm endoscope is passed through a modified Caldwell-Luc opening into the left maxillary sinus.*

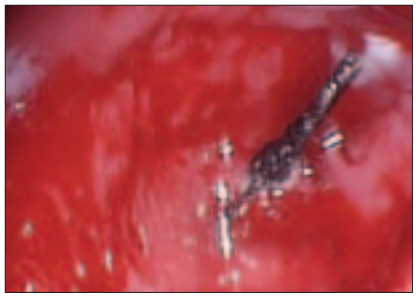

Figure 5: *Endoscopic view of the surgical bur lodged within the left maxillary sinus.*

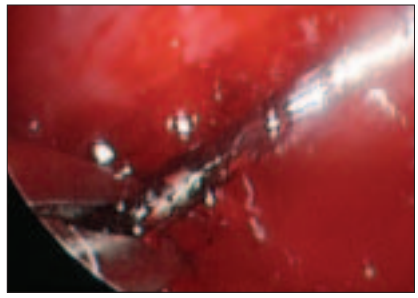

Figure 6: *Endoscopic view of the surgical bur being removed from the left maxillary sinus with a micro rongeur.*

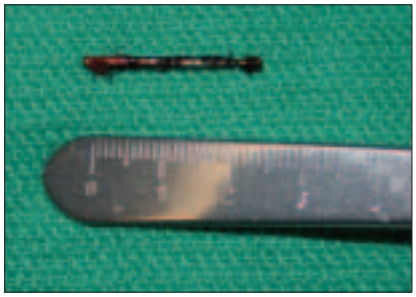

Figure 7: *Surgical bur after its removal from the left maxillary sinus.*

used for removal of 2 of the patient's teeth was not suited to the standard dental high-speed handpiece. Therefore, care must be taken to ensure compatibility between the surgical bur and the handpiece.

A minimally invasive approach to retrieval of a foreign body from the maxillary antrum, as in this case, has numerous short-term and long-term benefits. In the immediate perioperative period the reduced exposure of the lateral maxilla required to facilitate this approach decreased swelling, pain and bleeding. Over the long term, the resulting bony defect of the lateral antral wall will be smaller than with other methods, and there will be less expression of antral inflammation in the overlying soft tissues. Perhaps most important, this approach clearly decreases the inherent risk of damage to adjacent vital structures, particularly when retrieving a large, sharp foreign body from the maxillary antrum. ◆

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CDSPI Reports

ARE YOU READY TO BECOME DISABLED?

By Susan Roberts

Your chances are like the flip of a coin: As surprising as this may sound, actuarial statistics reveal the disturbing reality that dentists stand about a 50-50 chance* of becoming disabled for an extended period at some point during their careers.

Given the relatively high probability of experiencing a disabling illness or injury, it's prudent for all dentists to prepare for the prospect. In doing so, consider the following suggestions.

Ensure Your Disability Insurance Fully Protects You

The amount of disability insurance you're eligible to purchase depends on your income. That's why it's crucial to carefully review your coverage each year. If your income significantly increases and you don't alter your coverage to reflect that change, you could suffer needless financial hardships in the event of a disability.

Additionally, the Canadian Dentists' Insurance Program's Long Term Disability (LTD) Insurance plan offers options that can enhance your disability insurance protection. For example, the Future Insurance Guarantee (FIG) Option allows you to increase your coverage at specific points in your life without having to submit medical information. Call to learn more about FIG and other options to enhance your coverage.

If you're responsible for paying all or a portion of your practice costs, you should also consider obtaining the Program's Office Overhead Expense (OOE) Insurance plan — which covers certain office-related costs in order to keep your practice going when a disability prevents you from practising. It's important to consider obtaining this coverage even if you share office expenses with a partner, since the terms of your professional agreement could legally bind you to pay for your share of overhead costs — even during a disability.

To ensure you're properly protected by your disability insurance coverages, speak to your personal insurance advisor at Professional Guide Line Inc. for a no-cost review.

Establish an Emergency Fund

Before disability insurance claim payments begin, you must first satisfy an elimination period. During this period — beginning with the onset of a disability — benefits are not payable. Depending on the elimination period you chose when you purchased your Program LTD coverage, it could be as long as 120 days before payments begin. Therefore, consider establishing an emergency fund that would sufficiently cover your living expenses until your benefits start coming in.

When deciding upon how much to put aside in your emergency fund, bear in mind that a disability could introduce new expenses into your budget — such as the cost of expensive medication.

Grant Power of Attorney

If a disability left you incapacitated, who would be authorized to make decisions about your personal financial affairs and how your practice would operate in your absence? You can prepare for this contingency by granting power of attorney to someone you trust. Contact your lawyer for advice.

You may also wish to spell out in a document how your practice should be operated in your absence. For example, it could include the name of a colleague who would be willing to treat your patients until a locum is found, and who would be authorized to pay expenses on your behalf. Once drafted, consider discussing your disability contingency plan with your family and staff.

Know What to Expect When Filing a Disability Insurance Claim

Here is an overview of the initial steps involved should you need to file a claim under your Insurance Program LTD and/or OOE coverage:

First, you'll need to contact CDSPI's Claim Support Centre — which serves as a liaison between claimants and the insurer (the insurer is the sole adjudicator of your claim). The Claim Support Centre representative will take some preliminary information about your claim, inform the insurer about your intent to file a claim, and then send you a Claim Kit that includes forms you'll need to complete for the insurer.

The Claim Kit will include a form that will need to be completed by your physician, as well as forms pertaining to your finances to determine your benefit amount. You'll also need to submit supporting documents with these financial forms, which may include: complete copies of your personal tax return and Notice of Assessment documents for your 2 most recent taxation years, copies of financial statements, partnership agreements, corporate tax information and financial agreements with management companies and locums. In the case of an OOE claim, you will also be required to submit a breakdown of your office expenses in the 3-month period prior to when your disability commenced.

(During the claim process, you'll also be in contact with the insurer's claims consultant, who may request additional financial and medical information.)

If you become disabled, you will need to supply many different types of financial documents to the insurer (within 90 days of the date your disability commenced) at a time when you may not find it easy to assemble these papers. Since a disability could leave you incapacitated, consider whether someone acting on your behalf could easily procure these documents — and perhaps create a filing system where they could be easily found.

Takes Steps to Reduce Your Chances of Becoming Disabled

Not all types of disabilities common to dentists are preventable, but many others are. That's why CDSPI's Claim Support Centre created an informative booklet called *Long Term Disability and You — Reducing the Risk.* It contains information specific to dentists about ways to lessen the likelihood of suffering a disability. To download a free copy, click on "Loss Prevention" at www.cdspi.com/claims.

Susan Roberts *is the service supervisor for the Canadian Dentists' Insurance Program.*

*For no-cost insurance planning advice,** speak to your personal insurance advisor at Professional Guide Line Inc. — A CDSPI Affiliate. Dial 1-877-293-9455 (toll-free) or 416-296-9455, extension 5002.*

The Canadian Dentists' Insurance Program's Long Term Disability and Office Overhead Expense Insurance plans are underwritten by The Manufacturers Life Insurance Company (Manulife Financial).

**Source: Commissioner's IDA Morbidity Table, Society of Actuaries.*

***Restrictions may apply to advisory services in certain jurisdictions. Residents of Quebec and PEI, please call CDSPI at 1-800-561-9401, extension 5000, for insurance plan information.*

Information provided by Canadian Dental Service Plans Inc.

Caution to readers

Dental offices have contacted the Canadian Dental Association (CDA) expressing their dissatisfaction with a dental supply company named **Canada Wide Dental Supplies**. A sales representative for this company repeatedly telephones dental offices to solicit business, despite explicit requests to stop calling. Several offices describe the calls as "harassing" and are frustrated with the actions of this sales representative.

CDA reminds readers to exercise caution by not disclosing credit card details to companies with whom they are unfamiliar.

Take Action

Offices can advise such harassing callers to place them on a "do not call" list. Legitimate dental supply companies should respect such a request and discontinue contact by telephone.

The Canadian Marketing Association offers its Do Not Contact service free of charge (www.cmaconsumersense.org/marketing_lists.cfm). This service removes your name and telephone number from telemarketing call lists and helps reduce the number of marketing offers received by mail, telephone and fax.

Bell Canada offers privacy services on most of its business or residential lines for a monthly fee (www3.bell.ca/ecare/PrsCSrvMgAc_Phone.page). These services include a Call Screening option, which can block up to 12 incoming telephone numbers. A Call Privacy option forces callers from "private" or "unknown" numbers to enter their phone number or a 10-digit number before your office phone will ring.

Bell Canada also suggests compiling a list of the harassing phone calls, noting the date, time and phone number of the calls. Bell will then register and distribute this information to participating phone service providers across the country.

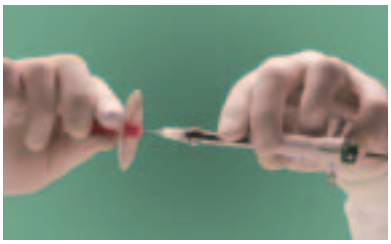
Stay Informed

CDA first notified its members about Canada Wide Dental Supplies in a *CDAlert* distributed by e-mail on January 27, 2005. A complete archive of these electronic bulletins can be found on the members' side of the CDA Web site (www.cda-adc.ca/english/members/cda_members/member_news/cdalert/default.asp).

If you would like to receive future *CDAlerts*, contact a CDA membership services representative at 1-800-267-6354 or e-mail reception@cda-adc.ca.

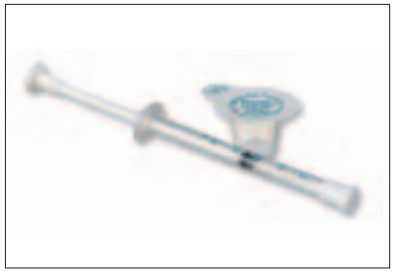
New Products

The New Products section provides readers with brief descriptions of recent innovations in dentistry. Publication of this information, which is condensed from news releases provided by companies, does not imply endorsement by JCDA *or the Canadian Dental Association. If you would like material to appear in New Products, send all news releases and photographs to Rachel Galipeau, coordinator, publications, at rgalipeau@cda-adc.ca. English- and French-language material will be given priority.*



ITL Dental introduces **VibraShield**, a needle-capping protector. VibraShield is a simple and economical solution to recapping needles. Its large size provides for a more than adequate shield when recapping the needle and also acts as a stand for the syringe when not in use. VibraShield fits most disposable dental needles. One VibraShield is used daily then discarded. The VibraShield comes in a convenient dispenser box containing 30 shields.

• ITL Dental, 800-277-0073, www.itldental.com •



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MCC offers the **System 9 Series** for clinicians wanting full rear delivery and support. MCC System 9 cabinets provide convenient and accessible storage and work surfaces for materials, instruments and supplies. All MCC cabinets feature built-in conveniences such as counter waste drops, glove/towel/cup dispensers, doctor and assistant sinks at optimal heights, and ample room for additional appliances. Computer integration can also be accommodated through a CPU storage area and keyboard access from doctor or assistant side.

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April	March 10
May	April 8

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Offices & Practices

ALBERTA - Lethbridge: A city of 66,000 servicing a surrounding population of about 150,000, Lethbridge is one of the fastest growing cities in Alberta. Recreation, sunshine, location and quality of life are its appeal. One of Lethbridge's premier dental offices is now for sale in the second busiest mall in the city. This vibrant office offers both exclusivity and exposure. Go to www.drchuck.ca and www.lethbridgepages.com D1683

ALBERTA/BRITISH COLUMBIA - Wanted: A solo practice to purchase. E-mail dentalbuyer@telus.net, tel. (403) 969-8786. D1691

ALBERTA - Edmonton: Location well-suited for periodontist, available beside established prosthodontist. Exceptionally located and attractive property offers 1,600 ft. of space for lease in brand new building. Prime exposure on street level in Edmonton, Alberta. Call (780) 420-1604 to enquire about this opportunity. D1622

ALBERTA - Rimbey: Opportunity to purchase practice or associate with transition to ownership in this family oriented, solo, rural practice. New graduates welcome. Owner willing to assist with transition. Excellent long-term staff. Practice grossing $580,000/year on 4 days/week. Good leaseholds. Low overhead. One hour south of Edmonton. Priced reasonably. Contact: Anne, tel. (403) 843-2173. D1569

ALBERTA - Edmonton: Well-established, solo dental practice for sale, few blocks away from West Edmonton Mall; 3 operatories, very bright and beautiful office; 1200 active and pleasant patients. The present dentist is moving out of Edmonton, will help in transition. Tel. (780) 987-9198. D1495

BRITISH COLUMBIA - Kelowna: Prosthodontic practice for sale. Attractive, high-income (7-figure billings), modern, 3-operatory office. Computerized office, digital x-ray, new panoramic machine. All facets of prosthodontics - fixed/removable, implants, cosmetic procedures. Hygienist on staff. Very desirable area. Independently appraised. Complete transition available (owner willing to stay on as an associate). Well-established referral base. E-mail prosthodontist@hotmail.com. D1651

BRITISH COLUMBIA - Courtenay: Comox Valley, Vancouver Island. A rapidly growing community with recreational and educational advantages for the whole family - skiing at Mt. Washington, freshwater and salt water fishing, hiking, biking, swimming, beachwalking, etc. Three excellent high schools, excellent community college. Well-established, quality care general practice. Preventive based, high-end restorative; 1,400 active charts. Two hygiene operatories and 4 restorative operatories in 2,200 sq. ft. Building and equipment 11years old. Three different health care offices in building. Gross mid $500,000 on 180 days. Tel. (250) 338-6080 (private). D1656

BRITISH COLUMBIA - Surrey: Long-time, well-established practice, approximately 2,200 active patients and approximately 5,500 on file. Great new patient flow. Seven operatories all furnished and plumbed. Grossing approximately $750,000 a year with 1 dentist. Well-trained, long-term and highly motivated staff. Owner leaving to specialize. Please e-mail Dr. R. Standerwick, hollypark7@hotmail.com. D1655

BRITISH COLUMBIA - Kitimat: Well-established general practice for sale. Hygienist-supported recall and perio program, in a great town with a solid long-term industrial base. All kinds of outdoor and indoor recreation available minutes from your doorstep. No traffic jams and good income on 4-day week. Owner relocating for family reasons. Tel. (604) 576-1176 for more information. D1423

BRITISH COLUMBIA - Victoria: Exceptional family practice for sale in busy plaza location. Well-established practice with long lease. Gross a million +. Six operatories with modern equipment, computerized intraoral camera. High new-patient flow, approximately 2400 active patients. Exceptional opportunity for a progressive, professional. Principal will stay for transitional period if required. Please contact: Bob, fax (250) 475-3216 or e-mail crluck2@shaw.ca. D1537

NOVA SCOTIA - Halifax: Exceptional opportunity in downtown Halifax. Modern well-established dental practice for sale. Prime location with great patients and staff, high new patient flow. Excellent leaseholds and high-tech equipment. Professional practice valuation available upon request. Gross $700,000 + per year, on 4 days per week. Owner is relocating out of province. Contact: Peter, tel. (902) 497-6700 or check our Web site www.scotiadental.com. D1634

SASKATCHEWAN - Prince Albert: For sale, 39-year-old, well-established, well-managed practice with 3,600 + active patients and excellent hygiene program in place. Completely computerized office with 5 operatories and oral camera. Grossing just under $900,000 working 170 days/year. Situated in Prince Albert with low cost of living, reasonable indoor and outdoor amenities including 30 minutes away from cottage country. Dentist motivated to sell, staff poised to facilitate quick successful transition. Enquiries to: Box 2194, Prince Albert, SK S6V 6Z1; tel. (306) 764-8145 or fax (306) 922-9240. D1627

VERMONT, US - Brandon: Dental practice for sale. Small-town life at its best… Yankee magazine picked Brandon as one of the top 2 towns in New England. Close to skiing and lakes. An excellent financial opportunity for any dentist interested in owning an active general practice. Long-term, dedicated staff and patients. Please contact: Susan Hayden, 5 Carver St., Brandon, VT 05733; tel. (802) 247-3473. D1688

UNITED STATES: Practice ownership opportunities! Affordable Care Inc. (ACI) offers a unique business model that allows dentists to own a dental practice with no personal financial investment. ACI develops general dentistry practices for dentists who choose to affiliate. ACI manages the traditional "headache" areas of business operations, marketing, payroll, human resources and more. You're free to focus on what you do best... delivering high-quality patient care! ACI provides practice management services to over 110 affiliated dental practices in over half the U.S. These general practices, each owned by an individual dentist, focus on full and partial dentures, extractions, relines, repairs and a niche market, providing Sendax MDI implants. Each practice enjoys the service of a dedicated on-site dental laboratory, enabling same day service in most cases. We are currently identifying dentists who have interest in affiliated ownership of a practice modeled after this growing, progressive, highly successful practice model with a 30-year history. Learn more about how you can capture this opportunity earning more than you ever thought possible while building equity into your practice for retirement. All with no financial investment from you! I urge you to call us today for details of these outstanding opportunities. Available locations include: Minneapolis, Rochester and Duluth, Minnesota; Milwaukee, La Crosse and Wausau, Wisconsin; Cleveland, Ohio; Utica, New York, Las Vegas and Reno, Nevada; Phoenix and Tucson, Arizona; Chico Redding and Fresno, California; Eugene and Medford, Oregon; Spokane, Washington; Traverse City, Michigan; Hartford, Connecticut; Wichita and Topeka, Kansas and Tallahassee, Florida. For more information, please call Alan Wallace at (800) 313-3863, ext. 2234, fax (252) 527-7384 or e-mail awallace@affordablecare.com. D1681

Positions Available

ALBERTA - Edmonton: Part-time/full-time associate required to join a family-oriented practice. Applicants must possess team spirit, pay attention to detail and be committed to providing professional quality care and service. Please fax resume to (780) 414-6045, attention: Business Manager. D1678

ALBERTA - Westlock: Implant internship. We are seeking a compassionate individual committed to continuing education for an implant internship. Recent or new graduates welcomed for a successful, modern surgical and teaching facility with an outstanding team specializing in cosmetic and implant dentistry. Join us and learn about the exciting field of implant dentistry while perfecting your overall dental skills. Rural lifestyle with a relaxed atmosphere offers many rewards and outdoor pursuits. Only 45 minutes north of Edmonton. If you would like to become a part of our dynamic team, please reply to e-mail kim@albertadentalimplants.com or fax your CV or resume to (780) 349-2626, attention: Kim. Feel free to visit our Web site www.albertadentalimplants.com D1692

ALBERTA - Calgary: Full-time associate required for general dental practice in south Calgary. Opportunity for future buy-in is available to the right candidate. This is a progressive, well-established dental office employing the latest technology and techniques with an excellent, well-trained team. Please fax your resume to (403) 271-9180. D1658

ALBERTA - Northwest Calgary: Associate, June 1, 2005. Excellent opportunity for dynamic, experienced family dentist. Full-time position with 2 evenings per week and every second Saturday. Large existing practice with 30-40 new patients/month. Fax (403) 259-2622 or e-mail Ejtamm@aol.com. D1632

ALBERTA - Milk River: Dentist required to establish practice in Milk River. Modern, renovated facility is available for lease and prepared for immediate dental practice occupation. Large space can accommodate practices ranging from small scale to state of the art. Dental services are in high demand for clientele from southern Alberta and northern Montana. For information on this exciting opportunity, please contact the Town of Milk River, tel. (403) 647-3773, fax: (403) 647-3772, e-mail main@milkriver.ca. D1635

ALBERTA - Calgary: Associate required, full time, for office in trendy high-traffic location beside a Starbucks. Special opportunity. E-mail info@universitydentalcare.net, tel. (403) 262-1581. D1644

ALBERTA - Edmonton: Associate needed for busy, 4-5 day/week position. Excellent opportunity with great staff in a well-established office. E-mail drh@drherchen.com, fax (780) 989- 9649, tel. (780) 477-6649. D1652

ALBERTA - Lloydminster: Associate position available Feb. 1, 2005, in very busy 2-dentist practice. Averaging 80 new patients a month. Willing to transfer many of the current patient base (6,000 patients) to new dentist. Excellent staff, excellent patients. Call Craig, (780) 875-4222. D1613

ALBERTA - Slave Lake: Full-time associate required for a busy practice. Well-established office with six operatories. Excellent opportunity for new graduates or experienced dentist. Please contact: Jose Antony, Office Manager, tel. (780) 849-4477 or fax resume to (780) 849-6332. D1621

ALBERTA - Cold Lake: Our well-established family practice is currently looking for an associate to join our friendly team of professionals. We are looking for a compassionate, motivated dentist with excellent communication skills to assume existing patients as the owner gears down for retirement. There is an opportunity for the right individual to buy all or part of this outstanding practice. We have a successful accelerated perio-hygiene department complete with intraoral cameras. You will enjoy providing all aspects of general dentistry in a busy, progressive, computerized family office. If you are looking for a rewarding and satisfying career with a team committed to providing exceptional dental health, please give us a call! We are located just 3 hours northeast of Edmonton. You can enjoy a quality lifestyle in this beautiful lakeside city. For further information, contact: Kelly Avery, tel. (780) 594-5984 or fax your resume to (780) 594-5965. D1581

ALBERTA - High Prairie: Caring, enthusiastic and hard-working associate needed immediately for a very busy general practice. Emphasis on oral surgery and implants. Be as busy as you want to be and enjoy the outdoors. Only 4 hours from Edmonton. Suits new graduate or experienced practitioner. Locums on a regular basis welcome. Fax resume to (780) 523-4434. D1555

ALBERTA - Rural: Help! Associate required as full-time partner is leaving practice to pursue non-dental interests. Step in and assume full patient load. Young, energetic staff. Relaxed atmosphere. Family-oriented practice. New graduates welcome and buy-in for the right individual. Only 2 hours from Edmonton. Full or part-time applicants welcome. Contact: Neil, tel. (780) 484-5868. D1487

BRITISH COLUMBIA - Vancouver: Opportunity for a certified periodontist to associate or purchase a well-established, progressive periodontal practice in downtown Vancouver and the North Shore. We emphasize quality periodontal treatment and dental implants. Our office is almost brand new and in an ideal location. If interested please fax resume to (604) 913-1610. D1679

NAMGIS DENTAL CLINIC

(Alert Bay, British Columbia)

is seeking a

Dentist

We are seeking a highly motivated dentist to operate our modern three-operatory dental clinic. The 'Namgis Dental Clinic serves the residents of Alert Bay and other northern-Vancouver Island communities. The successful candidate will provide a full range of treatment services. An attractive compensation package with a combination of salary and shared billings, plus no overhead, make this an excellent opportunity for someone seeking the rewards and challenges of dentistry without the usual financial stress.

The community of Alert Bay is located in Johnstone Strait, off the northeast tip of Vancouver Island. We offer some of the world's best fishing, whale watching, kayaking, and other outdoor pursuits. The community is also a growing centre for Aboriginal artistic expression in all forms including carving, dance, and other traditions. For more information on the community, please visit our website at www.namgis.org

For more information on the position, please contact:
Ian Knipe, Administrator
P.O. Box 290, Alert Bay, B.C. V0N 1A0
ph: (250) 974-5522, fax: (250) 974-2736 e-mail: IanK@namgis.bc.ca

D1598

BRITISH COLUMBIA - Dawson Creek: Locum wanted. Help! Full-time locum required for maternity leave from May 1 to Sept. 1, 2005. Booking 2 months ahead so expect a running start! Five-operatory practice with 3,000 + patient base. Set your own schedule. Lots of potential for developing all your skills. Possibility of associateship. New graduates welcome! Call (250)782-4440 or fax resume to (250)784-0133, e-mail information to drsevier@telus.net. D1680

BRITISH COLUMBIA - Castlegar: Associate required for a busy general practice. Castlegar is a wonderful caring community. We enjoy all the seasons have to offer. Just go outside your back door or travel less than 1 hour to all activities. We have a community college, sports and pool complex and the regional airport. New graduates welcome. Make a 1-year commitment to get some experience and pay off some debt. If this is the place for you, owner would like to arrange for a future buy-in or purchase of the practice. E-mail donellis@shaw.ca. D1686

BRITISH COLUMBIA - Vernon: Full-time associate position available in busy, well-established family practice with excellent long-term staff. Full range of dentistry provided in a vibrant, rapidly growing community. Practice in an amazing multi-season recreation area with world-class skiing, boating, hiking, biking and many other opportunities. Experienced applicants preferred as large patient load available. Eventual buy-in agreement for the right individual. Please call (250) 545-1141 (evgs.). D1657

BRITISH COLUMBIA - Revelstoke: Full-time associate required to take over full book from outgoing colleague. We are looking for an enthusiastic, friendly dentist with the skills and motivation to provide a high quality of patient care. Custom-built office designed by THE of Texas, full range of support staff including visiting orthodontist and two full-time hygienists. Our town is situated in a pristine alpine setting with superb recreational opportunities. This position could provide an excellent career opportunity for the right individual. Informative Web sites: www.thedesign.com; www.cityofrevelstoke.com; www.skirevelstoke.com. For further details contact: Dick Russell, tel. (250) 837-3359 (res.) or e-mail jrruss@telus.net. D1663

BRITISH COLUMBIA - Kelowna: Outstanding opportunity for a warm, caring associate to join an established practice. Long-term staff and exceptional patients. Recent major renovations. New Adec equipment. Six operatories. Opportunity to buy into the practice. Reply to: Dental Associate, PO Box 694, Kelowna, BC V1Y 7P4. D1628

BRITISH COLUMBIA - Grand Forks: Associate with desire to purchase half of my busy general practice required for 4 days per week. Position starting Jan. 1, 2005. Please contact: Dr. Tracy Tambosso, tel. (250) 442-2731. D1631

BRITISH COLUMBIA - Williams Lake: Full-time associate opportunity available for July 2005. Established associate position with excellent earnings track record going back 25 years. Large family practice with well-organized hygiene department and computerized office support. Williams Lake is a small city

Tenure Track Faculty Position in Community Dentistry/Public Health College of Dentistry University of Saskatchewan

The College of Dentistry invites applications from qualified individuals for a faculty position in community dentistry/public health. The College of Dentistry is implementing an active program of curriculum renewal, faculty renewal, research intensification, and community outreach. The successful candidate will be an integral part of this process. Responsibilities will include teaching and coordination of the undergraduate academic program in community oral health in all its aspects. A significant part of this position will be devoted to the development of outreach programs that will include provision of oral health care but will include the development of a total community awareness initiative that will provide students with an in depth understanding of the community that each practitioner will ultimately serve. This outreach engagement will also include international programs that have been part of the college for over 25 years. There will be ample scope within this appointment to engage in and initiate active research programs within the college and the interdisciplinary health sciences. Participation in the Masters of Public Health graduate program now under development at the university is encouraged. The candidate should have significant and successful experience in community health or oral health programs and initiatives and bring to the college an enthusiasm for furthering and enhancing the role and profile of the college in the community. The candidate should have an advanced degree in dental public health or equivalent at the Masters or PhD level. Rank and salary will be commensurate with experience and qualifications. The university is committed to employment equity. Members of designated groups (women, Aboriginal people, people with disabilities and visible minorities) are encouraged to self-identify on their applications. All qualified candidates are encouraged to apply; however, Canadians and permanent residents will be given priority. Further information about our college and its programs is available at **www.usask.ca/dentistry**.

A letter of application, accompanied by a *curriculum vitae*, professional credentials, a statement of teaching and research interests, and the names of three referees should be sent to:

Dr. James E. Stakiw
College of Dentistry
University of Saskatchewan
105 Wiggins Road, Saskatoon, Saskatchewan S7N 5E4
Tel (306) 966-5122 • Fax (306) 966-5132
E-mail james.stakiw@usask.ca

Applications with complete documentation will be accepted until April 30, 2005 or until a suitable candidate is found.

D1671

GENERAL DENTIST

Grenfell Regional Health Services invites applications for the position of permanent general dentist on a full-time basis for northern Newfoundland and southern Labrador, effective April 1, 2005. This is a challenging and interesting area where dental services are provided from regional bases in Newfoundland and travelling clinics on the south Labrador coast. The travelling requirement is approximately 1/3 of the total working time.

Salary for this position is on an 11 point government scale of $75,433-$94,916. Initial placement on this scale will be dependent on years of experience. An isolation bonus payment ranging from $5,000-$10,000 will be payable upon the completion of 1 full year of service. Currently, a retention incentive of $10,000 annually, payable bi-weekly, is also in effect.

Fringe benefits include 6 weeks paid leave in a 12 month term. Assistance with relocation and continuing education costs are available. Accommodations are available at a reasonable rate.

Applicants must be eligible for registration with the Newfoundland and Labrador Dental Board. Preference will be given to applicants who are agreeable to working for a minimum 24 month term. Experience in oral surgery is desirable. Experience in general dentistry is essential.

Successful applicant will be required to submit a Certificate of Conduct.

Interested individuals are requested to submit resumes, along with names and addresses of referees, stating competition number, 05.03, to:

Scott Smith
Manager, Human Resources
Grenfell Regional Health Services
St. Anthony, NL A0K 4S0
Canada
Tel. (709) 454-0347
Fax (709) 454-3301
E-mail humanresources@grhs.nf.ca

D1664

in the interior of British Columbia. It is a great family town with mountain biking, skiing, golfing, hiking, etc., all close by. This is an opportunity to enjoy small town living and make a good income. Please call Dr. Allistair Menzies or Dr. Perry Vitoratos collect, (250) 398-7161 (days), (250) 398-2615 or (250) 398-9085 (evgs.), e-mail vitoratos@shaw.ca, fax (250) 398-8633. D1620

BRITISH COLUMBIA - Kamloops: Associate required for a busy general practice. Wide range of dentistry and a wonderful staff. Buy-in an option for the right candidate. Interested applicants please call (250) 374-4544 or e-mail abtucker@telus.net. D1596

BRITISH COLUMBIA - Chilliwack: Full-time associate position available to dentist committed to continuing education/excellence in patient care. Area offers year-round recreation including skiing, boating, hiking, etc., 100 km east of Vancouver, mild climate. Present associate has busy practice and is leaving the area. There is potential for partnership. Reply to: Dr. Michael Thomas, 102-45625 Hodgins Ave., Chilliwack, BC V2P 1P2; tel. (604) 795-9818 (res.), (604) 792-0021 (bus.). D1553

BRITISH COLUMBIA - Invermere on the Lake: Lifestyle in paradise! Ski in the winter at Panorama Mountain Village and enjoy the lake in the summer. Full-time associate required, ultimately leading to partnership. Well-established family practice in a newly built office at a thriving resort town. Promising opportunity for right individual. Tel. (250) 342-0776, e-mail rskanan@telus.net. D1561

MANITOBA - Winnipeg: If you are looking for an associate position, here is a fantastic opportunity! We are seeking a motivated, quality-minded dentist to join our progressive, well-established family practice. We have recently moved to a brand new, state-of-the-art facility and there is great potential for the right individual to practise high-quality dentistry in comfortable, relaxed surroundings. A special interest in pedo, perio or oral surgery would complement the principal. Please contact: Dr. Ron Tough, tel. (204) 253-1834 (evgs.) or fax (204) 256-8381. D1690

DALHOUSIE UNIVERSITY
Inspiring Minds

Faculty Position
Division of Endodontics
Department of Clinical Sciences

The Faculty of Dentistry, Dalhousie University, Halifax, Nova Scotia, is seeking applications for a 2-year full-time limited term, possibly leading to tenure track faculty position, in the Division of Endodontics in the Department of Dental Clinical Sciences. The time associated with the term position may be fully credited to the time frame of the tenure track position if granted.

Responsibilities will include undergraduate teaching, collaborative research, continuing education and associated administrative duties, depending on the successful applicant's credentials and experience. The successful candidate will also be responsible for the development of a plan for a graduate endodontic program. Preference will be given to candidates with an established teaching and/or research record.

The successful candidate will have an opportunity to collaborate with other Divisions, Departments, and Faculties. Start-up funds may be available.

Applicants should have graduate education in endodontics and have a master's degree. It is expected that the successful applicant will have demonstrated experience in research, undergraduate teaching, and administration. Salary and rank will be commensurate with qualifications and experiences.

Individuals currently enrolled in an accredited graduate, endodontic program are also invited to apply.

The successful applicant must be eligible for licensure in Nova Scotia. Private practice privileges for patient care will be negotiable.

All qualified candidates are encouraged to apply; however, Canadians and permanent residents will be given priority. Dalhousie University is an Employment Equity, Affirmative Action employer. The University encourages applications from qualified Aboriginal people, persons with disability, racially visible persons, and women.

Dalhousie University is one of Canada's leading universities widely recognized for outstanding academic quality and the opportunities presented by our broad range of educational and research activities. Dalhousie, part of the vibrant Halifax community since 1818, attracts high-achieving, motivated, and engaged students from around the world. We provide a unique interactive and collaborative environment with diverse, challenging academic programs and career-oriented learning opportunities. We inspire our students, faculty, staff, and graduates to make significant contributions to our region, Canada, and the world.

Review of applications will begin in January, 2005. Applicants should submit a letter of application with Curriculum Vitae, up to three reprints of research publications, and the names, addresses, and internet addresses of three referees to:

Dr. Helen Ryding, Chair, Search Committees
Faculty of Dentistry, Dalhousie University
Halifax, NS B3H 3J5

D1687

MANITOBA - The Pas: Looking to be more busy or for a change? Come work for us in a busy general practice clinic where you can be as busy or relaxed as you want. We pay a high guaranteed commission on top of your regular percentage. Your accommodation and travel are reimbursed as well. Work full time or in terms with extended holidays. Flexibility, high net income and best of all no hassles. Call for details, (204) 623-1494 or fax resume to (204) 623-6162. D1647

NORTHWEST TERRITORIES - Inuvik: Replacement for 3 weeks. Looking for a dentist from Mar. 21 to Apr. 8, 2005. Other dates also available. Schedule already booked, excellent remuneration, accommodations included. Come experience the far North. Please contact: Nancy or Lynda , tel. (867) 777-3008 or e-mail alexandre.vial-nadeau@hec.ca. D1650

NORTHWEST TERRITORIES - Yellowknife: Associate needed to join an established, very busy, modern dental clinic (6 dentists) in a thriving community - the diamond capital of North America. The clinic offers all modern equipment including intraoral cameras, abrasion units, etc., with an excellent and friendly support staff, providing very high-quality dentistry, with the emphasis on quality rather than quantity. This is an excellent opportunity for anyone wishing to enjoy a wonderful lifestyle whilst practising dentistry at its best. Please send resume to: Administration, PO Box 1118, Yellowknife, NT X1A 2N8; tel. (867) 873-6940, fax (867) 873-6941. D1159

NUNAVUT - Iqaluit: Associate position(s) available for immediate start. Established clinic offers generous package and full appointment book to associates. All round clinical skills are your ticket to a wide range of recreational activities! No travel required and housing available in Canada's newest and fastest growing capital city. Please apply to: Administration, PO Box 1118, Yellowknife, NT X1A 2N8; or tel. (867)873-6940, fax (867) 873-6941. D1497

ONTARIO - Brampton: Part-time and full-time dental associates required for Brampton office. Please fax resume to (905) 791-0644 indicating which days available. D1693

ONTARIO/QUEBEC: Looking for bilingual associate for 5 mature and busy practices, south-west Quebec and/or Cornwall, Hawkesbury, Ontario area. Full schedule (crown/bridge, endodontics, etc.). Stability, flexibility and respect assured. Possible sale. Seeing is worth believing. Luc, tel. (450) 370-7765. D1674

ONTARIO - Cambridge: Part-time associate required for 2-3 days in a 9-year-old, fast-growing, family-oriented, multilingual general dental practice. Please fax resume to (519) 622-3608, e-mail sgeorgn625@rogers.com. D1682

ONTARIO - Northwestern: Associateship available immediately. Full-time associateship with option to purchase. Busy family practice located in Northwestern Ontario, conveniently located on Trans-Canada Highway. Twenty-eight-year-old, well-established clinic, 2 full-time hygienists, 4 operatories. Excellent opportunity for someone who enjoys the outdoors and a low-stress enjoyable work situation with flexible hours and vacation time. Reply to: CDA Classified Box # 2846. D1684

ONTARIO - Niagara Region: Full-time dental associate position available for a family-oriented, well-established practice. Please fax your resume to (905) 871-3977. D1689

ONTARIO - Lake Huron: We are looking for a full-time associate to join our practice. If you are interested in being fully scheduled, want to work with an experienced staff and think you might enjoy life in a beautiful resort town, we have the position you are looking for. Our modern office is fully equipped with 6 operatories, intraoral cameras and computers. We have recently replaced our charts, re-vamped our hygiene program and routinely attend continuing education courses. Buy-in option would be available for the right candidate. This would be an excellent investment opportunity for a new graduate. Please call Michael Walden at (519) 396-2641. D1654

ONTARIO - Ottawa east: Associateship full time. Very busy practice. Buy-in, cost sharing options available. French speaking an asset. Call Jocelyne, (613) 748-8266 D1668

ONTARIO - Amherstburg/Windsor Area: Full-time dentist wanted to associate in our busy, well-established dental practice in Amherstburg, Ontario. Our office is just a 20-minute drive from Windsor. Presently retain over 6,000 active charts and growing. Looking for a kind, active, professional and highly motivated individual. Offering up to 50% compensation. Excellent opportunity for any associate willing to commit themselves to long-term relationship and future growth in this wonderful community. Tel. (519) 980-4073. D1639

ONTARIO - West of Toronto: Full-time associate position in a well-established practice, replacing associate who is returning to school for graduate studies. Your schedule will be booked from day 1 and you will have the opportunity to be exposed to all aspects of dentistry such as cosmetics, implants and much more as we have a team of specialists working alongside of us! If you are a team player and are looking for a positive working environment, fax to (905)846-5593. D1641

ONTARIO - Brockville and Morrisburg: Experienced associate required for 1 of 2 well-established, busy practices. Enjoy a small-town atmosphere and the scenic beauty of the 1000 Islands region with easy access to large city centres. Only 30 minutes to Kingston and 60 minutes to Ottawa. For more information contact: Dr. George Christodoulou, Altima Dental Canada, tel. (416) 785-1828, ext. 201, e-mail drgeorge@altima.ca. D1269

QUEBEC - Abitibi: Rouyn-Noranda. Our family practice offers you a unique opportunity to join our team for a replacement during a maternity leave starting mid-April for a period of six months. Very busy practice, booked over two months in advance, full-time position guaranteed thereafter. Excellent work schedule; 4 days/week Monday to Thursday, no weekends. Very nice area, with lakes and forests nearby for the nature lover. For more information, please contact Aline at (819) 762-1972. D1659

Tenure Track Faculty Position in Oral/Maxillofacial Surgery College of Dentistry University of Saskatchewan

The College of Dentistry invites applications from qualified individuals for a faculty position in oral/maxillofacial surgery. The college is implementing an active program of curriculum renewal, faculty renewal, and research intensification. This position is a key part of that process. Start date is July 1, 2005 or when a suitable candidate is found. Responsibilities and duties include didactic and clinical instruction of undergraduate students in oral/maxillofacial surgery, an ongoing research commitment, and college administration. The applicant must have relevant postgraduate and clinical qualifications at the FRCD(C) or equivalent level and research experience. Possession of an advanced degree is desirable. The MD degree would be an asset. The ideal candidate will be from a CDA/ADA-approved oral/maxillofacial surgery residency program with significant experience in dentoalveolar and orthognathic surgery, TMD, anesthesia, implantology, pathology and trauma management. On-site private practice privileges are available. The Royal University Hospital and College of Medicine are adjacent to the College of Dentistry and the successful candidate is expected to become involved with programs and initiatives in these institutions. Rank and salary will be commensurate with experience and qualifications. The university is committed to employment equity. Members of designated groups (women, Aboriginal people, people with disabilities and visible minorities) are encouraged to self-identify on their applications. All qualified candidates are encouraged to apply; however, Canadians and permanent residents will be given priority. Further information about our college and its programs is available at **www.usask.ca/dentistry**.

A letter of application, accompanied by a *curriculum vitae*, professional credentials, a statement of teaching and research interests, and the names of three referees should be sent to:

Dr. James E. Stakiw
College of Dentistry
University of Saskatchewan
105 Wiggins Road, Saskatoon, Saskatchewan S7N 5E4
Tel (306) 966-5122 • Fax (306) 966-5132
E-mail james.stakiw@usask.ca

Applications with complete documentation will be accepted until April 30, 2005 or until a suitable candidate is found.

D1672

Tenure Track Faculty Position in Pediatric Dentistry College of Dentistry University of Saskatchewan

The College of Dentistry invites applications from qualified individuals for a faculty position in pediatric dentistry. The College of Dentistry is implementing an active program of curriculum renewal, faculty renewal, and research intensification. The successful candidate will be an integral part of this process. Applicants will have postgraduate training in pediatric dentistry at the Master's or PhD level with relevant clinical qualifications (FRCD(C) preferred), and the successful candidate will have research experience. Responsibilities will include didactic and clinical instruction of undergraduate students, research programs and administration. Pediatric general anesthetic services are currently available. On-site private practice privileges are available. The Royal University Hospital and College of Medicine are adjacent to the College of Dentistry and the successful candidate is expected to become involved with programs and initiatives in these institutions. Rank and salary will be commensurate with experience and qualifications. The university is committed to employment equity. Members of designated groups (women, Aboriginal people, people with disabilities and visible minorities) are encouraged to self-identify on their applications. All qualified candidates are encouraged to apply; however, Canadians and permanent residents will be given priority. Further information about our college and its programs is available at **www.usask.ca/dentistry**.

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University of Saskatchewan
105 Wiggins Road, Saskatoon, Saskatchewan S7N 5E4
Tel (306) 966-5122 • Fax (306) 966-5132
E-mail james.stakiw@usask.ca

Applications with complete documentation will be accepted until April 15, 2005 or until a suitable candidate is found.

D1673

PROSTHODONTICS
McGill University

The Faculty of Dentistry, McGill University, invites applications for tenure-track and clinical-track positions in prosthodontics at the level of Assistant or Associate Professor. Candidates must have completed an undergraduate degree in dentistry and specialty training in prosthodontics. Rank and salary will be commensurate with education and experience.

Responsibilities will include undergraduate and graduate teaching and administration. A working knowledge of French will be advantageous. Intramural private practice facilities are available.

The additional requirements for the tenure track include a PhD or equivalent degree and the ability to conduct independent research in a relevant field. An Ambrose Clinical Professorship may be awarded to an outstanding clinical-track candidate.

Applications, including a curriculum vitae, a statement of research and teaching interests, and the names, postal and e-mail addresses of three referees, should be sent to the following address by April 15, 2005.

Dr. Jeffrey Myers
Chair, Search Committee
Faculty of Dentistry, McGill University
1650 Cedar Avenue, Room A3.132
Montreal, QC, Canada H3G 1A4
E-mail Jeffrey.myers@muhc.mcgill.ca
Fax (514) 934-8352

McGill University is committed to equity in employment. All qualified candidates are encouraged to apply; however, Canadians and permanent residents will be given priority.

D1676

QUEBEC - Montreal: Oral and maxillofacial surgery associate for well-established, solo, bilingual practice. Progression to buy-in and role reversal anticipated for the right individual who is skilled, personable and who considers patient care a priority. Confidential reply to: CDA Classified Box # 2845. D1669

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D1611

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VERMONT, US: Dentists and oral surgeons. Opportunities for general dentists in Rutland, Montpelier and Lake Champlain areas. Openings available for employment, private practice and practice acquisitions. Enjoy the splendor of the Green Mountains and Lake Champlain, all part of the unbeatable Vermont lifestyle. Contact: Lynn Harris, tel. (800) 288-1730, fax (518) 266-9289, e-mail lynnharris@harrisbrand.com. D1538

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