



JCDA

Journal of the Canadian Dental Association

Vol. 70, No. 8

September 2004



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Hygiene Practice**

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Tooth Pain**

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CONTENTS

Journal of the Canadian Dental Association

DEPARTMENTS

Editorial	507
President's Column	509
Letters	511
Advertisers' Index	512
News	515
The Dental Advisor	521
Clinical Abstracts	554
Point of Care	558
Clinical Showcase	564
New Products	572
Classified Ads	573

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SPECIAL FEATURE

Dentistry at McGill — The First 100 Years	525
--	-----

Rob Bull, BA, BJ

PROFESSIONAL ISSUES

Is Dentistry a Profession? Part 1. Professionalism Defined ...	529
---	-----

Jos V.M. Welie, MMedS, JD, PhD

Attitudes to Independent Dental Hygiene Practice: Dentists and Dental Hygienists in Ontario	535
--	-----

Tracey L. Adams, PhD

CLINICAL PRACTICE

A Closer Look at Diagnosis in Clinical Dental Practice: Part 5. Emerging Technologies for Caries Detection and Diagnosis	540
---	-----

Iain A. Pretty, BDS(Hons), MSc, PhD

Gerardo Maupomé, PhD

Diagnostic Challenges of Neuropathic Tooth Pain	542
--	-----

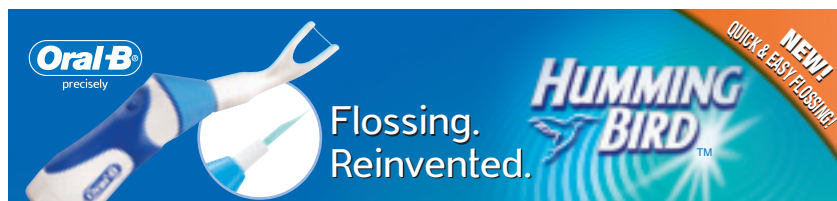
Michael J. Matwychuk, DMD

Clinical and Radiographic Features of Chronic Monostotic Fibrous Dysplasia of the Mandible	548
---	-----

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Please see our advertisement opposite the Editorial page.

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Editorial

LET'S NOT BE FOOLED AGAIN



Dr. John P. O'Keefe

If a bargain looks too good to be true, it probably is. That is what many dentists across Canada who did business with Gilbert's Medical Dental Supplies have found out to their considerable cost. In recent months I have spoken to numerous colleagues that are furious with the business practices of this company, which has also traded under alternative names such as Excel-Dent and Dental Wholesalers of Canada.

CDA became actively involved in the Gilbert's file in May when a member told me of his experiences with the company. This colleague was angry and frustrated that the company billed his credit card on a number of occasions for dental materials that had not been ordered. Once he or a staff member noticed the problem, they had to make numerous frustrating attempts to contact Gilbert's and their credit card company to arrange for a reimbursement — inevitably by post-dated cheque.

My colleague told me that he knew other dentists in different parts of the

country with similar experiences. It was clear to me that CDA had to do all it could to put an end to these shady practices occurring nationwide. But we needed solid evidence before we could approach the relevant authorities that could stop Gilbert's in their tracks.

To gather evidence, we contacted all provincial dental associations to help us identify dentists who had lodged complaints about Gilbert's. We put a notice in *JCDA* describing the company's modus operandi and asked dentists who had unsatisfactory dealings with them to notify us. We also approached the Dental Industry Association of Canada for leads.

These tactics brought us into contact with approximately 50 colleagues in 8 provinces. The story in each dental office was virtually identical. Most seemed to get their money back eventually, although some practitioners told us that reimbursement cheques from Gilbert's have bounced. It became evident that these unsavoury business practices have gone on for a long time, despite clear warnings appearing in provincial dental association publications.

On the strength of these contacts with Canadian dentists, we put together a comprehensive dossier on Gilbert's, as well as information on the various Ontario numbered companies and business names that the company operated under — all registered by one individual.

Our file was submitted to Visa, MasterCard, the federal Competition Bureau, Phonebusters (a national anti-fraud organization), and the Ontario Ministry of Consumer and Business Services. Interestingly, police forces behave very cautiously in civil matters that may cross the line to fraud.

We have heard encouraging news from the credit card companies indicating that Gilbert's have lost their status as a merchant in good standing with the company that processed their

credit card transactions. The heat seems to have driven Gilbert's underground — they don't seem to be answering their telephones. Because of this, I fear that some colleagues may not get reimbursed for amounts billed by Gilbert's in recent months. There is also no guarantee that Gilbert's won't surface under other business operating names in future.

We therefore have to be vigilant to ensure that we are not fooled by the likes of Gilbert's again. Please make sure that your staff does not reveal your credit card details to any company that solicits your business. Check all invoices very carefully and reconcile them with goods received. If a company bills your credit card for goods not received, always insist on reimbursement to your credit card, not by cheque.

I just cannot understand how this affair has continued for so long. One of the credit card companies speculates that the reimbursements by post-dated cheque may have prevented the claims processors from appreciating the scale of Gilbert's misdeeds. I wonder if many dentists endured the hassle of credit card over-charges, simply putting it down to lessons learned. Maybe others were ashamed of sharing with colleagues the fact they were "taken" by such a scheme.

Scammers do not like the light being shone on their schemes. If a national-level scam has an impact on Canadian dentists, CDA wants to know about it and we will do everything we can, as quickly as we can, to get such shady operators out of business. Our online members' discussion forum is an ideal way of informing colleagues and CDA if undesirable elements are affecting your business. You are not alone!

John O'Keefe
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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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12 hour plaque protection worth recommending

President's Column

ON TRAVEL AND OTHER THOUGHTS...



Dr. Alfred Dean

In keeping with one of the great Canadian summertime traditions, I have been on a bit of a road trip lately.

As part of my duties as CDA president, I recently attended provincial meetings in Newfoundland, Prince Edward Island and Nova Scotia. At every meeting I saw the same thing; dentists coming together for a cause they believe in — the dental profession.

I saw older dentists mentoring younger dentists. I saw families enjoying each others' company. In spite of differences of opinion on the meeting floor, I saw people socializing together. I was welcomed with open arms and included in all discussions. Most of all, I saw people having a lot of fun.

I attended the annual meeting of the Academy of General Dentistry (AGD) in July. In discussions with the Canadian section of the AGD, we acknowledged our specific roles and responsibilities in organized dentistry.

We recognized the need for interaction and acknowledged that we have different niches to fill. We discussed the fact that there are benefits to all levels of organized dentistry and identified areas where we could work together.

One of the representatives from Ontario told me how happy he was with the work being done by CDA. He was particularly impressed with the recent National Oral Health Month campaign, in which we partnered with Colgate. He stressed how meaningful this was to his practice and his patients. As a person actively involved in the AGD, he recognizes the importance of all levels of organized dentistry.

Of the AGD's 36,000 members, 1,300 dentists are from Canada — including dentists from Quebec. On September 24, 2004, barring an unforeseen miracle, the Quebec Dental Surgeons Association (QDSA) will be expunged from the CDA by-laws. As a result of a decision taken by their leadership, the QDSA will no longer be a corporate member of CDA.

It boggles my mind that a large group of Canadian dentists will not be represented at the national level. It would be easy to say, "Well, it's the same old Canadian story of the 2 solitudes — it's the language and cultural differences." I don't believe it. I believe it is politics, pure and simple.

The dentists of Quebec have the same professional concerns as other dentists in Canada. Have Quebec dentists been lulled into believing that they practise in a vacuum with no influence from the outside world? What about educational and accreditation issues? What about federal government lobbying?

In July, I attended a joint meeting between the officers and staff of CDA and the American Dental Association. The discussions were 2-way in nature,

with input provided equally from both parties. We discussed many areas of joint concern. These included, but were not limited to, the immigration and certification of foreign-trained dentists, different models for delivering dental services, and international issues related to dentistry at the FDI. I was proud to be representing the members of CDA.

Aren't the topics we discussed at the joint meeting of concern to Quebec dentists? How will dentists in Quebec have a voice at the international level on professional issues being discussed around the world? Right now, the profession in Canada is preparing a new strategic plan for CDA. It would be a far better process if the dentists of Quebec could be present to have their opinions heard.

CDA has a history of being inclusive. Our bilingual publications are a great example. The Board of Directors is always looking for ways to make the organization more relevant to all dentists in Canada.

We must stop thinking of ourselves as individual entities and start recognizing that we are each part of a bigger whole. The profession will only progress if we work together. Canadian dentistry will only progress when all provincial and territorial associations come together under the CDA banner. This does not mean that CDA is superior to other organizations. It simply means that for concerns of a national or international nature, which require input from all parties, CDA is the strongest voice for Canadian dentists.

We need your help. Please help us.

*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.

Doing the Right Thing Isn't Always Easy

The debate between Drs. Schwartz and McFarlane¹ brings to the forefront a dilemma faced by any dentist who has ever made a mistake. The practising dentist confronted with an untoward iatrogenic incident must balance the need for an apology (whether perceived by the dentist or patient) with the potentially litigious consequences of such an apology.

Though Dr. Schwartz's attitude towards apologizing for errors is laudable, the present reality requires caution in our approach to apology. While the forcefulness, effectiveness and ethical correctness of an apology cannot be denied (as Dr. Schwartz is no doubt aware from the large body of supportive alternative dispute resolution literature), one must also be aware of the litigious times we practise in. As Dr. McFarlane points out, "the courts would ultimately interpret the context of an apology."

It seems that the context of an apology is all-important. Context can include the type of incident, the patient involved, or the timing, wording and manner in which an apology is given. As an example, I have negotiated legal settlements where an apology was given and accepted without any implications of liability, as part of a confi-

dential "without prejudice" mediation settlement. Though a spontaneous heartfelt apology at the time of the incident (with a mutually agreed upon compensation if necessary) would have been the ideal outcome, we must balance this utopian goal with the realities of everyday practice.

Given the average practising dentist's inability to foresee the legal interpretive consequences of an apology, it leaves those of us faced with an immediate iatrogenic problem in a difficult position. It is impractical to retreat to your office and hope to have a representative of the Royal College of Dental Surgeons of Ontario (RCDSO) guide you as to what (if any) type of apology to give when an incident such as Dr. Schwartz's example occurs.

For the present, dentists may need legal assistance in scripting their "spontaneous" apologies. It would be helpful if RCDSO provided some guidance in navigating this ethical and legal minefield. This could be accomplished by presenting scenarios and "recommended responses" through *Dispatch* or RCDSO-sponsored seminars.

Dr. Leon Freudman
Toronto, Ontario

Reference

1. Schwartz B. The need for apology in dentistry. *J Can Dent Assoc* 2004; 70(7):448-9.

Congratulations for Communicating

I would like to congratulate Dr. Barry Schwartz for his article in the July/August *JCDA*.¹ In a time of reported increase in health care litigation in most western societies, the importance of communication, empathy and trust between the practitioner and patient is paramount.

A recurring theme amongst practitioners is that this increase in litigation is due to predatory lawyers and

patients with unrealistic treatment expectations. As Dr. Schwartz elucidates, the patients' need to find out what went wrong and for someone to take responsibility for the mistake is a major reason for the instigation of litigation.

An apt analogy was drawn by Dr. Mark O'Brien at the 3rd National Health Care Complaints Conference in Australia in 2001 — comparing the automobile mechanic/customer relationship with the practitioner/patient relationship. After acknowledging that a human could not truly be compared to a car, Dr. O'Brien emphasized how communication leads to trust: "If he (the mechanic) is good at explaining and is able to communicate to me that he understands my concerns...I will presume that he is competent. If he is rude, dismissive, doesn't listen to what I say and then something goes wrong — well, I am out for REVENGE!" Is the relationship with our patients any different?

Allow me to impart some advice after 20 years practising as a general dentist and then a specialist — explain the clinical difficulties and uncertainties to your patients before you undertake treatment. If something goes wrong, they will have an understanding of the issues involved. All competent practitioners occasionally have clinical work that doesn't go as planned. If this occurs, explain the situation to the patient, repair or remedy the problem, perform the work *gratis*, and always keep the patient informed.

In other words — communicate.

Dr. David John Manton
Albury, NSW, Australia

Reference

1. Schwartz B. The need for apology in dentistry. *J Can Dent Assoc* 2004; 70(7):448-9.

Oral Lichen Planus With Melanotic Hyperpigmentation: A Rare Clinical Appearance

A 56-year-old white female was referred to the School of Dentistry of Piracicaba in July 2003, complaining about dark macules on the cheeks that had been present for 3 years. Intraoral examination showed a brownish extensive pigmented reticular lesion occupying almost the entire surface of the cheeks (Fig. 1). There were no skin lesions. Clinical diagnosis was lichen planus hyperpigmented. After incisional biopsy, microscopic examination showed parakeratosis, acanthosis and epithelium basal cell layer degeneration. A band-like chronic inflammatory infiltrate occupied the proximity of the basal cell layer and numerous melanophages and free melanin granules were found. The final diagnosis was oral lichen planus with melanotic hyperpigmentation. No medication was prescribed because the lesions were asymptomatic. The patient has been followed and the lesion remains unchanged.

Lichen planus is a chronic inflammatory disease of the skin and mucous membranes.¹ It is a relatively common disorder that affects 0.5% to 2.0% of the population.^{1,2} Oral involvement is an important characteristic of lichen planus, occurring in 30% to 70% of cases.³

A new pattern of cutaneous lichen planus has been described as lichen planus pigmentosus (LPP).^{4,5} This variant was first described by Bhutani and others⁶ as hyperpigmentation regularly encountered in patients from Asia. LPP affects mainly the head and neck region (80% of cases). Microscopically, LPP presents as epidermal thinning, basal cell degeneration, incontinence pigment and band-like lymphohistiocytic infiltrate in the lamina propria.^{6,7} Five cases were reported affecting the oral mucosa.^{5,7,8}

This pattern of lichen planus on the mouth, although uncommon, is an important feature differentiating



Figure 1: Extensive pigmented reticular lesions on the buccal mucosa.

it from oral lesions of lupus erythematosus, leukoplakia, and most of the other oral pathologies.³ Moreover, there no was report of malignancy transformation of LPP.

Based on clinical aspects, the better term to define this uncommon clinical appearance is lichen planus with melanotic hyperpigmentation. Due to its unusual clinical characteristics, clinicians should keep in mind this rare clinical appearance of oral lichen planus.

Dr. Claudio Maranhão Pereira

Dr. Pablo Agustin Vargas

Dr. Jacks Jorge

Dr. Oslei Paes de Almeida


*Dr. Márcio Ajudarte Lopes
Piracicaba, São Paulo, Brazil*

References

1. Edwards PC, Kelsch R. Oral lichen planus: clinical presentation and management. *J Can Dent Assoc* 2002; 68(8):494-9.
2. Sugerman PB, Savage NW, Zhou X, Walsh LJ, Bigby M. Oral lichen planus. *Clin Dermatol* 2000; 18(5):533-9.
3. Kanwar AJ, Ghosh S, Dhar S, Kaur S. Oral lesions of lichen planus. *Int J Dermatol* 1993; 32(1):76.
4. Murti PR, Bhonsle RB, Daftary DK, Mehta FS. Oral lichen planus associated with pigmentation. *J Oral Med* 1979; 34(1):23-4.
5. Laskaris GC, Papavasiliou SS, Bovopoulou OD, Nicolis GD. Lichen planus pigmentosus of the oral mucosa: a rare clinical variety. *Dermatologica* 1981; 162(1):61-3.
6. Bhutani KL, Bedi, RT, Pandhi, KR, Nayak NC. Lichen planus pigmentosus. *Dermatologica* 1974; 149(1):43-50.
7. Kanwar AJ, Dogra S, Handa S, Parsad D, Radotra BD. A study of 124 Indian patients with lichen planus pigmentosus. *Clin Exp Dermatol* 2003; 28(5):481-5.
8. Singh S. Violaceous hue in oral lesions of lichen planus. *Int J Dermatol* 1994; 33(8): 603-4.

A D V E R T I S E R S ' I N D E X

3M ESPE Dental Products	504
Ash Temple	502
CDA RSP	568
CDSPI	563, 579
CIT Group	510
Clinical Research Dental Supplies Services	539, 541
Colgate-Palmolive Canada Inc.	508
Del Pharmaceutics (Canada) Inc.	514
Dentistry Canada Fund	524
DIS Brochures	570-571
Ivoclar Vivadent Inc.	513
Johnson & Johnson Inc.	547, 569
Miami Winter Meeting & Dental Exposition	538
Modular Curriculum in Conscious Sedation	532
Nobel Biocare	533
Oral-B Laboratories	505, 506, 528
Patterson Dental Canada Inc.	567
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News

CDA to Update Infection Control Guidelines

The U.S. Centers for Disease Control and Prevention (CDC) issued new guidelines for infection control in dental health care settings in December 2003.

CDA has been reviewing the CDC guidelines and has determined that certain modifications to CDA's infection control guidelines are required.

Following the meeting of CDA's Committee on Community and Institutional Dentistry in June, former chair of the committee Dr. Trey Petty agreed to update CDA's position.

"Dr. Petty was instrumental in crafting our current guidelines, and is a subject expert in the area of infection control for dentistry. CDA is very pleased that he will be undertaking this substantial task on behalf of Canadian dentists," explained CDA's director of membership and professional services, Dr. Benoit Soucy.

Among other changes, the new CDC guidelines propose a shift from the concept of "universal" precautions to "standard" precautions in preventing disease transmission. Standard precautions expand upon universal precautions to protect against pathogens spread by blood or any other body fluid, excretion or secretion. The guidelines also consolidate recommendations, such as hand hygiene and needlestick injuries, that previously existed in separate documents.

Many of CDA's procedural recommendations remain the same, or involve only minor changes from existing procedures. However, other areas such as recommendations on dental unit waterlines and oral surgical procedures will require more significant modifications.

In accordance with CDA's recently amended committee structure, the new Committee on Clinical and Scientific Affairs will oversee revisions to the guidelines.

CDA's current infection control

procedures and recommendations for the implementation of procedures can be found in the members' section of the CDA Web site at: http://www.cda-adc.ca/english/members/cda_members/cda_guidelines/default.asp. ♦

Lasers Becoming More Popular with Canadian Dentists

Lasers for soft and hard tissue management are becoming increasingly popular with Canadian dentists, according to the Dental Industry Association of Canada's (DIAC) Eighth Annual Future of Dentistry Survey.

In 2004, 5.9% of dentists surveyed owned a laser, up from 1.5% in 2001. The number of dentists who plan to purchase a hard and soft tissue laser within the next 2 years has almost doubled, from 5.9% in 2001 to 10.5% in 2004. Lasers ranked third on the list of items dentists would buy first in the future, behind digital radiography equipment and intraoral cameras (lasers were ranked fifth in 2003 and ninth in 2002).

More than 1,000 dentists participated in the 2004 survey. Prizes were awarded to 11 randomly selected respondents. Dr. Christena Chruszez of Toronto, Ont., was the grand prize winner of a \$1,000 travel voucher. The 10 consolation prize winners of \$100 travel vouchers were: Dr. J.C. Tobin, Smiths Falls, Ont.; Dr. Lyn Fitzpatrick, Lower Sackville, N.S.; Dr. Alan Heinrichs, Medicine Hat, Alb.; Dr. Romy Rohit Chopra, Etobicoke, Ont.; Dr. Bruce Robinson, Newmarket, Ont.; Dr. Bob Adler, Toronto, Ont.; Dr. Ronald Fulton, Langley, B.C.; Dr. Terry Fryer, Blind River, Ont.; Dr. Jerry Thomas, Edmonton, Alb.; Dr. Jacques Boisvert, Quebec City, Que.

The DIAC survey was conducted by Eric P. Jones and Associates of St. Catherines, Ont., and mailed

COVER ARTIST

The cover photograph for the September *JCDA* is the work of Dr. Garry Lunn of Vancouver, B.C. A graduate of the University of Alberta, Dr. Lunn has held various positions at the local, provincial and national levels of organized dentistry, including the presidency of the International College of Dentists. He is a member of the Pierre Fauchard Academy and the American College of Dentists, as well as an associate member of the Canadian Academy of Restorative Dentistry.

Dr. Lunn admits that his growing passion for photography has been spurred by developments in digital technology: "My interest in photography started with intraoral photography and has grown from there. The advent of digital photography, Photoshop and computer programs has made it much more fun to compose pictures. The cover picture, for example, was taken in Australia with a coolpix Nikon 4500 and then revised in Photoshop and developed on a Canon i950 printer." ♦



with *JCDA*. The survey ensures that DIAC member companies — manufacturers, dealers, laboratories and service providers — can tailor their offerings to meet the changing needs of Canada's dentist population.

For more information on the DIAC survey, contact Bernie Teitelbaum, executive director, DIAC, tel.: (416) 782-5272, e-mail: bernie.diac@sympatico.ca. ♦

CRD New Ultradent Distributor for Canada

Clinical Research Dental Supplies & Services Inc. (CRD) is the new Canadian distributor for Ultradent Products, Inc.

Ultradent manufactures and distributes over 500 products, devices and instruments for use by dentists around the world. These products are now available through CRD, which also distributes Bisco Inc.'s product line in Ontario and the Maritime Provinces, and is a Canadian distributor for Cosmedent, Garrison Dental Solutions and Clinician's Choice dental products. ♦

WEB RESOURCES

FDI Launches New Web Site



The FDI has redesigned its Web site to better reflect its worldwide profile and international character.

The information on the site is now organized into 4 distinctive parts: Federation, Resources, Public Health, and Congress & Partners. The Public Health section is a new addition that highlights the increased public health

profile of the FDI. It focuses on the activities of the FDI and the World Development Fund in global oral health development.

To better serve its diverse membership, the site contains information available in several languages. For example, FDI statements are currently available in English, French, Spanish and German. The site also includes dental facts and figures for more than 70 countries.

The site, which boasts colourful graphics and easy navigation, can be accessed at www.fdiworldental.org. ♦

Adverse Orofacial Consequences of Drug Therapy

A recent review article on the adverse orofacial manifestations of drugs was recently published in the journal *Critical Reviews in Oral Biology & Medicine*, 2004; 15(4):221-39. The article provides a comprehensive list of drug-related disorders divided into 9 categories: disorders of the salivary glands, disorders of taste, mucosal disorders, mucosal pigmentation, swellings, cheilitis, neuropathies, oral malodour and tooth discolouration. The more common adverse oral consequences of drug therapy are dry mouth, taste disturbances, oral mucosal ulceration and gingival swelling. The authors, C. Scully and J.V. Bagan, recommend that clinicians "take careful drug history and always exclude drugs as a cause of oral and perioral symptoms and signs."

The full text of the article is available at <http://crobm.iadrjournals.org/cgi/content/short/15/4/221>. ♦

Access and Care Symposium

The Web site for the symposium *Access and Care: Towards a National Oral Health Strategy* has been updated to include a summary report and slide presentations of selected speakers.

The goal of the symposium was to bring together stakeholders to help develop recommendations to improve oral health in Canada. Symposium

participants identified 4 priority actions: 1) collect data on the overall oral health status of Canadians; 2) improve public awareness and attitudes to oral health; 3) address the needs of marginalized populations; 4) advocate to acquire a national Chief Oral Health Officer. A conference is planned in 2006 to follow up and build on these priorities.

For more information, visit <http://individual.utoronto.ca/accessandcare>. ♦

Health Canada Fact Sheet on Tooth Whitening

Health Canada recently posted a fact sheet on tooth whitening on its Web site. Titled "The Safe Use of Home Tooth Whitening Kits," the article provides information on how home tooth whiteners work and how consumers can minimize their risks when using these products.

The fact sheet can be found on the *It's Your Health* section of the site under "Lifestyles" at <http://www.hc-sc.gc.ca/>. ♦

APPOINTMENTS

Ontario Dentist Elected to AAPD



Dr. Keith Morley

Dr. Keith Morley of Barrie, Ont., was elected secretary-treasurer of the American Academy of Pediatric Dentistry (AAPD) at its 57th annual session held in June in San Francisco,

Calif. Since 1980, Dr. Morley has served in various capacities with the AAPD, including as board liaison to the Council of Clinical Affairs. A 1969 graduate of the University of Manitoba, Dr. Morley is the chief of dentistry at the Royal Victoria Hospital. ♦

Saskatchewan Names New Dean



Dr. James E. Stakiw

Dr. James E. Stakiw has been appointed to a 2-year term as acting dean of the College of Dentistry at the University of Saskatchewan. He has been given the mandate to guide the College in its merger with the College of Medicine. Former dean Charles Baker will continue as a faculty member in dentistry and as the academic project leader for the Academic Health Sciences Centre.

Dr. Stawik is a 1966 graduate of the University of Manitoba. ♦

New President of NBDS



Dr. Ron Buckley

Dr. Ron Buckley of Rothesay has been elected president of the New Brunswick Dental Society (NBDS). Dr. Buckley received his Doctor of Dental Surgery from Dalhousie University in 1982 and a Bachelor of Administration from the University of New Brunswick in 1983. He maintains a private practice with his wife Dr. Janet Bailey. ♦

DAPEI Elects New President



Dr. Robin MacLean

Dr. Robin MacLean is the new president of the Dental Association of Prince Edward Island (DAPEI). Dr. MacLean is a 1997 graduate of Dalhousie University. She is a member of the Academy of General Dentistry and the International Association of Orthodontics. Dr. MacLean maintains a private practice in Summerside. ♦

New President of NSDA



Dr. Scott MacLean

Dr. Scott MacLean was recently installed as the new president of the

Nova Scotia Dental Association (NSDA). Dr. MacLean obtained his dental degree from Dalhousie University in 1991. In his graduating year, he received the CDA President's Award. Dr. MacLean is also a graduate of Acadia University (1984) and an inductee to the Acadia University Sports Hall of Fame. He practises general dentistry in Halifax. ♦

ADSBC Elects New President



Dr. Ed O'Brien

Dr. Ed O'Brien of Vancouver is the new president of the Association of Dental Surgeons of B.C. (ADSBC) for 2004-05. Dr. O'Brien, a 1978 graduate of the University of British Columbia, has received an Honorary Fellowship from the Pierre Fauchard Academy and the ADSBC's Merit Award for his work in employment standards. ♦

Continuing Dental Education

CDA maintains a current listing of continuing dental education courses to help dentists stay informed about various learning opportunities offered to them in Canada and abroad. To view the complete calendar of CDE events, visit CDA's Web site at www.cda-adc.ca.

FACULTY NEWS

What's New in Dental R&D **Dalhousie's Research Gains Momentum**

From time to time, CDA likes to check in with the faculties of dentistry across Canada to learn more about ongoing research projects. We met recently with Dr. Debora Matthews of Dalhousie University.

"There is a fresh impetus on research at Dalhousie, likely prompted by 2 factors: a significant increase in funding and an influx of new faculty members eager to kick off their research careers," explained Dr. Matthews.

Since 2002, Dalhousie's faculty of dentistry has received over \$12 million in funding from a variety of agencies. One in particular, the Nova Scotia Health Research Foundation (NSHRF), has shown a commitment to support oral health research in the province. NSHRF has been the catalyst for many of Dalhousie's research projects.

Dr. Matthews is enthusiastic about the Collaboration of Oral Health Research (COHR), an innovative public health research collective at Dalhousie comprised of basic scientists, clinical researchers and public health researchers. COHR is dedicated to improving the oral health of all Nova Scotians. Sixty percent of the full-time dental and dental hygiene faculty are members of COHR.

In March 2004, Dr. Joanne Clovis convened a COHR workshop on issues related to the oral health of seniors. As a result of the workshop, a pilot study has been launched to look at oral health-related quality of life indices and the barriers to access to care for seniors in Nova Scotia. Delegates also discussed ways of building a national consensus on the best way to assess the state of seniors' oral health in Canada. Unlike the United States, there is currently no central database on the oral health status of Canadians. Dr. Matthews

feels the proposed pilot project could serve as a framework around which to develop such a national consensus.

COHR has received funding from NSHRF and the Canadian Institutes of Health Research (CIHR). The group also received support for the pilot project from the Nova Scotia Department of Health and Health Canada's National Advisory Council on Aging.

Dalhousie is also providing fertile ground for faculty members to develop their own research projects.

"One of Dalhousie's brightest stars is professor J. Michael Lee. Professor Lee was instrumental in bringing together the faculties of medicine, dentistry and engineering at Dalhousie to establish Eastern Canada's first department of biomedical engineering," says Dr. Matthews. The core research in this new department is tissue mechanics. The lab also has broad expertise in biomaterials, image analysis, physical biochemistry, thermoelasticity, polymers, and applied computing. Professor Lee was also a key player in the development of a network in Atlantic Canada for materials research.

Dr. Richard Price is currently examining the development of tooth-coloured, glass fibre-reinforced composites to replace the traditional carbon-fibre materials for dental posts. He is also studying factors affecting the polymerization reaction of dental resins.

Dr. Kathy Russell is exploring how nasal morphology may predict esthetics in cleft lip and palate patients. She recently developed a database of cleft lip and palate patients in Nova Scotia — a province with a high incidence of such conditions.

Dr. Mark Filiaggi's research involves the coating of dental implants with calcium phosphate to actively promote localized bone formation and improve fixation of the implants. Involving both Acadia and Dalhousie universities, this study will create research opportunities and training for students in Nova Scotia.

This fall, Dr. Robert Loney of Dalhousie's division of prosthodontics is planning a survey of dentists in Nova Scotia to look at issues related to partially or totally edentulous patients. His survey will examine why patients are not being offered implants as a treatment alternative.

One of the newest faculty members, Dr. Matts Kronstrom, is beginning a 3-year clinical research project examining the efficacy of 2 mandibular implants (versus the traditional 4) to support an overdenture and the impact of immediate loading.

It is clear from speaking with Dr. Matthews that there is a multitude of oral health research projects taking place at Dalhousie University. From the public oral health concerns of COHR to the research of individual faculty, Dalhousie's faculty of dentistry is becoming a world-class dental research centre. ♦

More R&D News **CIHR Renews Funding for Dental Research**

The Canadian Institutes of Health Research (CIHR) recently renewed its funding for research being done at the faculties of dentistry of the University of Western Ontario and the University of Toronto.

The *CIHR Group in Skeletal Development and Remodeling* at UWO and the *CIHR Group in Matrix Dynamics* at the U of T will receive \$1.3 million and \$1.6 million, respectively, over the next 5 years. Both groups are housed within the Institute of Musculoskeletal Health and Arthritis.

The goals of the UWO group, explains director Dr. Jeff Dixon, "include the development of new approaches for the prevention, diagnosis and treatment of musculoskeletal and dental diseases." The UWO group comprises 7 scientists with complementary expertise in cellular physiology, molecular biology and biochemistry of mineralized tissues.

The 6 principal investigators in the

U of T group share similar expertise. The group's focus, according to director Dr. Christopher McCulloch, is "discovering proteins that might be crucial targets for new drugs. The discovery of new drugs that can maintain the proper function of joints, muscles, cartilage, bone and ligaments will lead to substantial health benefits for individuals with high prevalence diseases such as congestive heart failure and periodontitis."

The interdisciplinary environment of these 2 research groups affords excellent opportunities for graduate and postgraduate training; for more information, visit www.med.uwo.ca/research/skeletal-web.htm and www.cihrmatrix.ca. ♦

U of T Professor Receives National Dentistry Teaching Award

The Dentistry Canada Fund (DCF) and the Association of Canadian Faculties of Dentistry (ACFD) recently announced that Dr. Dorothy McComb of the University of Toronto is the 2004 recipient of the 3M ESPE National Dentistry Teaching Award. The 3M ESPE National Dentistry Award was created to recognize exceptional contributions to dental education at Canadian universities. It honours a faculty member who has displayed the quali-



Dr. McComb received the 3M ESPE Award at the ACFD Annual General Meeting in Seattle, Washington, on March 8. (Left to right): Dr. James Brown, faculty of dentistry, University of Toronto, representing ACFD; Dr. Dorothy McComb, faculty of dentistry, University of Toronto; Mr. Chuck Hudson, professional services manager, Dental Products Division, 3M ESPE; Dr. Bernard Dolansky, president and chair, DCF.

ties of an outstanding teacher.

Dr. McComb is professor and head of restorative dentistry and director of comprehensive care at the University of Toronto. She was recognized for her knowledge, enthusiasm and commitment to her students through her leadership, professionalism and clinical skills. Dr. James Brown, who nominated Dr. McComb, praised the work she has done in the past: "Dorothy has been a mentor to all her fellow teachers in the restorative discipline. We have all been her students and she has taught us well.... She has set the standard for dedication and excellence in teaching. I strongly believe that we have all developed into better teachers under her stewardship." ♦

O B I T U A R I E S

Bourassa, Dr. Frank: A 1962 graduate of the University of Montreal, Dr. Bourassa of Regina, Sask., passed away on January 12. Dr. Bourassa was a past president of the College of Dental Surgeons of Saskatchewan and a former member of the CDA Board of Governors.

Breen, Dr. Ross: A 1946 graduate of the University of Toronto, Dr. Breen of Etobicoke, Ont., passed away on March 3. He was a life member of CDA.

Bussière, Dr. Claude: Dr. Bussière of Ste-Foy, Que., passed away on April 20. He was a 1967 graduate of the University of Montreal.

Bussièrès, Dr. Julien: Dr. Bussièrès of Oka, Que., passed away on March 30. He was a 1947 graduate of the University of Montreal.

Cottick, Dr. Alexander H.: A 1944 graduate of the University of Toronto, Dr. Cottick of Winnipeg, Man., passed away on February 29. He was a life member of CDA.

Debien, Dr. Réal: A 1944 graduate of the University of Montreal, Dr. Debien of Montreal, Que., passed away on April 23. He was a life member of CDA.

Freeman, Dr. Herschel B.: A 1944 graduate of the University of Toronto, Dr. Freeman of Scarborough, Ont., passed away on February 14. He was a life member of CDA.

Friedberg, Dr. Edmund J.: Dr. Friedberg of Toronto, Ont., passed away on April 15. He was a 1967 graduate of the University of Toronto.

Green, Dr. Fred S.: A 1939 graduate of the University of Alberta, Dr. Green of Winnipeg, Man., passed away on March 30. He was a life member of CDA.

Jansen, Dr. Stan: Dr. Jansen of Yorkton, Sask., passed away on January 10. Dr. Jansen was a 1961 graduate of McGill University.

Kehoe, Dr. James Edward: A 1950 graduate of McGill University, Dr. Kehoe of Pointe Claire, Que., passed away on February 25.

Lee, Dr. William Il-Chul: Dr. Lee, of Etobicoke, Ont., passed away on March 1. He was a 1990 graduate of the University of Toronto.

Maillet, Dr. Lionel P.: A 1949 graduate of the University of Montreal, Dr. Maillet of Moncton, N.B., passed away on February 17. He was a life member of CDA.

Michaud, Dr. Gaston: Dr. Michaud of Montreal, Que., passed away on January 17. He was a 1965 graduate of the University of Montreal.

Schacter, Dr. Joseph J.: Dr. Schacter of North York, Ont., passed away on January 10. A 1937 graduate of the University of Minneapolis, Dr. Schacter was a past president of the College of Dental Surgeons of Saskatchewan and a life member of CDA. He practised in Saskatoon until his retirement in 1973.

Silverstone, Dr. Ralph: A 1940 graduate of McGill University, Dr. Silverstone of Montreal, Que., passed away on February 20.

For direct access to the Web sites mentioned in the News section, go to the September *JCDA* bookmarks at <http://www.cda-adc.ca/jcda/vol-70/issue-8/index.html>.

SURVEY OPT-OUT FORM



CANADIAN
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From time to time, the Canadian Dental Association (CDA) conducts surveys to seek your opinion about various issues relating to dentistry. If you do **not** wish to receive such surveys, please let us know by filling out and mailing the form below to:

Sarah Shank, Coordinator, Membership Database
Canadian Dental Association
1815 Alta Vista Drive, Ottawa ON K1G 3Y6
Or fax it to (613) 523-7736
Or e-mail us at member-service@cda-adc.ca

Name _____

To assist us in locating your record in our database, please provide the following:

Membership number if applicable: _____

Phone number, with area code: _____

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 Leave my address as is.

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PROMOTIONAL MATERIALS OPT-OUT FORM



CANADIAN
DENTAL
ASSOCIATION

From time to time, the Canadian Dental Association makes arrangements with select companies and organizations to send their promotional materials to dentists across Canada. If you do **not** wish to receive any promotional materials, please let us know by filling out and mailing the form below to:

Sarah Shank, Coordinator, Membership Database
Canadian Dental Association
1815 Alta Vista Drive, Ottawa ON K1G 3Y6
Or fax it to (613) 523-7736
Or e-mail us at member-service@cda-adc.ca

Name _____

To assist us in locating your record in our database, please provide the following:

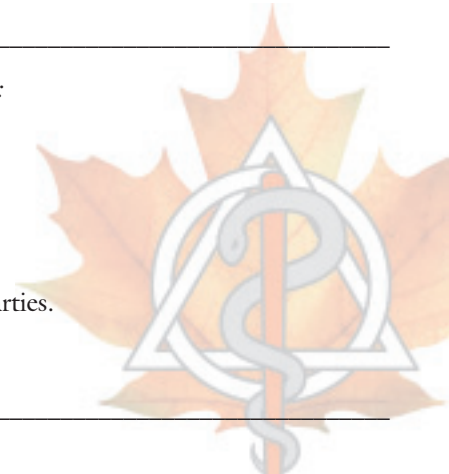
Membership number if applicable: _____

Phone number, with area code: _____

Postal code: _____

- I do **not** wish to receive any promotional materials from third parties.
 Leave my address as is.

Change my address to _____



THE DENTAL ADVISOR

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"Improved Patient Care through Research"



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Non-metal Posts

The advent of more advanced composites and ceramics has led to the development of a wide variety of esthetic posts. Posts should provide good retention without overstressing root dentin. Fiber-reinforced posts have a stiffness closer to dentin and thus minimize the chance of root fracture. In addition, fiber-reinforced and ceramic posts can be bonded to dentin and to a composite core, creating better stress distribution and transfer when loaded. For severely compromised roots, an adhesively bonded fiber post may provide improved fracture resistance.

Glass and quartz fiber-reinforced resin and ceramic posts provide improved esthetics. The decision as to what post system to use should be based on both the mechanical and esthetic needs of the tooth to be restored. No single post system is ideal for all conditions.

Types of Posts

Fiber Posts

Fiber-reinforced posts can be separated into three groups: carbon, glass and quartz fiber. The fiber content ranges from about 35-65%, with a higher fiber content post typically having greater strength and stiffness. The fibers are bound with epoxy or polyester resins.

Carbon fiber posts are black and opaque with a stiffness similar to dentin. They have a higher strength than other fiber posts and are easier to remove.

Glass fiber posts are white, either translucent or opaque, and have a stiffness similar to dentin. The translucent posts allow light transmission (*Snowlight*, *Luscent*).

Quartz fiber posts are also white, either translucent or opaque, but are stronger than glass fiber posts. The translucent posts also allow for light transmission (*Light-Post*, *D.T. Light-Post*).

Ceramic Posts

Ceramic posts are zirconia-based and have high strength and stiffness. Ceramic posts have good esthetic properties and are biocompatible. Only *Cerapost* is available for in-office use. The post space need not be made parallel, but impression material should surround the non-parallel areas around the post in the pick-up impression.

Ceramic posts are white and opaque with a high stiffness and strength. They must be sand-blasted and silanated to improve the bonding but can be difficult to remove.

Post Selection Tips

- Use fiber posts to retain a core, not to reinforce a tooth.
- Ovoid and elliptical canals can have minimal preparation and still use a bonded fiber post with the remaining space filled with resin cement.
- The use of a carbon fiber post, even under a porcelain-fused-to-metal crown, can result in darkening of the gingival margin.
- Do not use carbon fiber posts that cannot be adequately opaqued for an all-ceramic crown.
- Fracture of fiber posts is rare.

Continued on page 523

Rating Non-metal Posts

Product	Company	Shape	Tapered End	Vented	Retentive Head	Color-coded	Drill-matched	Radiopacity*	Diameters Available	Lengths Available	Cost, \$/Post†	Cost, \$/Post†
Carbon Fiber:												
CARBOPOST	DANVILLE MATERIALS/ CARBOTECH	Parallel	●				●	L	4	1	8.00	na
CF CARBON FIBER POST	J. MORITA USA	Parallel	●				●	L	4	1	3.99	na
CORE-POST	DEN-MAT	Parallel	●					L	5	1	6.50	91%
Glass Fiber:												
CORE-POST	DEN-MAT	Parallel	●					L	5	1	6.50	91%
FIBREKOR POST	PENTRON CLINICAL TECHNOLOGIES	Parallel		●	●		●	M	3	1	4.50	91%
FRC POSTEC	IVOCLAR VIVADENT	Tapered	●				●	M	2	2	10.55	86%
GF GLASS FIBER POST	J. MORITA USA	Parallel	●				●	L	4	1	3.99	na
LUSCENT	DENTATUS	Tapered	●			●	●	L	3	3	7.67	na
PARAPOST FIBER WHITE	COLTENE/WHALEDENT	Parallel		●	●	●	●	M	4	2	9.37	92%
PERMAPOST FIBER	ULTRADENT	Parallel	●	●	●		●	L	2	1	4.95	na
TWIN LUSCENT	DENTATUS	Hourglass	●	●		●	●	L	3	3	8.33	na
SNOWPOST and SNOWLIGHT	DANVILLE MATERIALS/ CARBOTECH	Parallel	●			●	●	M	4	1	8.00	86%
Quartz Fiber:												
AESTHETI-PLUS	BISCO	Parallel	●		●		●	L	3	1	9.80	na
D.T. LIGHT-POST	BISCO	Tapered	●				●	M	3	1	11.00	92%
LIGHT-POST	BISCO	Parallel	●		●		●	L	3	1	9.80	na
U.M. AESTHETI-PLUS	BISCO	Tapered	●		●		●	L	3	1	9.80	na
Zirconia:												
CERAPOST	BRASSLER USA	Tapered	●			●	●	H	3	1	4.39	88%
COSMOPOST	IVOCLAR VIVADENT	Parallel	●					H	2	1	19.20	91%
*L=low, M=medium, H=high												
†Costs are listed for comparison only and are not used to calculate the ratings.												

THE DENTAL ADVISOR Recommends:

Carbon Fiber: **Core-Post**

Glass Fiber: **ParaPost Fiber White, Core-Post, FibreKor Post**

Quartz Fiber: **D.T. Light-Post**

Zirconia: **CosmoPost**



Core-Post
(Den-Mat)



ParaPost Fiber White
(Coltene/Whaledent)



FibreKor Post
(Pentron Clinical Technologies)

Non-metal Posts *continued*

Canal Preparation Tips

- Use a diagnostic radiograph to estimate post length.
- Use a post at least as long as the coronal tooth height to be restored.
- Have 4-5 mm of gutta percha at the root apex to maintain an apical seal.
- Use reamers to establish post length and to remove gutta percha from the canal walls. Use the smallest drill to establish initial length.
- Use an endodontic file stopper to maintain proper length.
- Terminate canal preparation coronal to any root curvature.
- Keep post diameter equal to the original endodontic canal preparation without widening the canal.

Post Cementation Tips

- Bond non-metal posts using resin cement.
- Silanate glass and quartz fiber posts to improve bonding.
- Shorten fiber posts using a medium or coarse diamond or separating disc.
- Shorten ceramic posts from the coronal portion using a diamond bur.
- Ensure that the apical end of the post space can be accessed by Microbrushes.
- Eugenol sealers inhibit the set of resin cement. Ask the endodontist to use a non-eugenol sealer.

- Use a cavity cleaner to remove lubricants and contaminants before cementation.
- Agitate etchant within the canal with a Microbrush, rinse thoroughly, and gently dry with air and paper points. Scrub bonding agent into the canal walls and remove excess with a paper point.
- Use a lentulo spiral or injection tip to place cement in the canal.
- Insert post slowly and hold in place for several seconds before curing cement.
- Light cure the coronal portion of a dual-cured resin cement to secure the post.
- Use only composite cores with fiber posts.

Post Removal Tips

- Use a commercial fiber post removal kit.
- Carbon fiber posts are typically easiest to remove. Start a pilot hole down the center to length and expand the opening with progressively larger reamers.
- Ceramic posts are difficult to remove if not loose. Attempts at removal with conventional burs may create sparking. Refer removal of ceramic posts to a specialist who can vibrate or trephine the post out.
- Refer removal of tooth-colored posts that are hard to see. ■

Guide to Post Features

Color-coded

Color-coded systems allow visual size matching of posts to respective post drills and makes re-ordering easier.

Diameters and Sizes

The diameter of the post has little impact on retention. Prepare the post space conservatively.

Radiopacity

High radiopacity of a post makes radiographic visualization and verification easier and may reduce unwarranted retreatment of teeth.

Retentive Head

Retentive heads (grooves, taper, ball) mechanically bind a core to the coronal portion of the post. Larger heads may limit their use in shortened or narrow teeth. Adjust the length from the apical portion of the post.

Shape

Non-metal posts are non-threaded and passive. Retention is increased by using a parallel post, increasing post length, and adhesive resin cementation. Long, tapered posts are less retentive than parallel posts but require less dentin removal. An hourglass-shaped post improves retention by a smooth undercut in the mid-section of the post.

Size-matched

Size-matched systems allow for quicker selection and better adaptation of the appropriate posts.

Tapered End

These posts allow for less dentin removal. Resin cement distributes root stresses more evenly with tapered posts.

Vented

Vented posts allow excess cement to exit from the canal when seating a post as hydraulic pressures are created – important with more viscous cements.

Note: Use bonding agents and core materials as recommended by the manufacturer of the post system whenever possible.



Dentistry Canada Fund
the charity for oral health in Canada

2004 Dental Celebration Raffle

Tickets: \$ 100

Only 2900 tickets printed

Prizes

1st Prize: 1x Dentech Advance Operator (*Dentech Conex, Value: \$30,000*)



Grand Prize
Dentech Advance Operator

- 2nd Prize: 1 x Statim Sterilizer (*SciCan, Value: \$7,500*)
3rd Prize: 1 x Cavitron Jet Ultrasonic Unit with SPS Technology (*Dentsply Canada Limited, Value: \$6,489*)
4th Prize: 1 x Diagnodent (*SciCan, Value: \$4,250*)
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Dentistry at McGill — The First 100 Years

• Rob Bull, BA, BJ •



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In September 2004, Montreal's 2 faculties of dentistry — at McGill University and the University of Montreal — will each celebrate their 100th anniversary at their respective institutions.

Both faculties can trace their origins back to the Dental College of the Province of Quebec — Canada's second dental school founded in 1892. The bilingual college, a small, Montreal-based professional school, became part of the faculty of medicine at Bishop's University. In 1904, after the faculty's dean passed away, the English- and French-language medical and dental students and staff were divided between 2 institutions. The English-speaking group was absorbed by the faculty of medicine at McGill, while the French-language group joined the Montreal campus of what was then the faculty of medicine of Laval University.

So it is appropriate that both institutions are sharing in the centennial celebrations. As well as hosting various galas and parties, the 2 faculties are holding a joint research symposium on September 17 and 18 entitled "New Oral Health Knowledge for the 21st Century."

Subjects to be presented at the symposium include biomineralization, how bone cells control their environment, new ways to rebuild salivary glands and oral tissues, the challenges of poverty and dental health, how the mind can alter pain, new insights into trigeminal neuralgia and other neuropathies, some new observations about visceral pain and the experiences of local dentists in a dental research network.

Following the symposium, McGill will present the Ernie Ambrose Homecoming lecture on October 15. The well-loved former dean will be the special guest at the lecture, which takes place the night before the Centennial Gala Dinner and Dance.

The McGill celebrations almost didn't happen.

On July 17, 1991, McGill suddenly announced that it would be closing down the faculty of dentistry. Principal David Johnston told all teaching staff that dentistry did not fit with McGill's long-term plans of becoming a major research institution with a high proportion of graduate students. He said McGill had decided the faculty should stop accepting new students as it would close its doors in

1996 to help cut the university's \$79.5 million debt.

Despite the fact that McGill had been producing some of the best clinically trained dentists in the country, Mr. Johnston said dentistry was just too expensive. In his opinion, dentistry professors were not doing enough research, the faculty was not offering enough graduate programs and the facilities of the school were inadequate. He also noted that it cost the university more to teach dental students than any other students on campus.

McGill dentists took the principal's words as a challenge.

To save the school, an ambitious Renewal Campaign was created. Staff, students, alumni and their patients, as well as a number of friends of the faculty (both from within and outside the university), rallied to prevent the closure of the school. By September of that year, McGill came back with a proposal: the faculty could remain open if it met several conditions within one year.

Among other criteria, the proportion of research-oriented teaching staff had to expand and external research funding had to be raised. The dental clinic at the Montreal General Hospital would have to become self-financing and find the \$1.6 million necessary to upgrade equipment. By the one-year deadline, all conditions had been met and the Renewal Campaign had raised \$1.9 million in private funds!

This campaign didn't just save the faculty. It changed it.

Dentistry research now generates as much research funding per professor for McGill as medicine. In every case, the faculty's research is linked to other faculties and departments in the greater McGill community.

"We're small, with some specific areas that our research is focused on," dean James Lund said in an interview. "But we're among the best in the world at what we do." He added that the faculty's challenge now is to find space to grow and ways of "increasing our resources so that can happen."

Students now graduate as Doctors of Dental Medicine (DMD), a degree that emphasizes the link between medicine and dentistry, not only in 2 years of common training but also in practice.



Faculty of dentistry class of 1931 on a tour of Dawe's Brewery.

Through its expanded outreach program, the faculty also gives back much more to the surrounding community.

While some things have changed, others remain the same. McGill still produces some of the best clinically trained

professionals on the continent. McGill graduates realize just how skilled they are while doing their post-graduate training in other locations.

Alumni are still deeply attached to their alma mater. Thanks in part to the Renewal Campaign, they also seem to have acquired a greater sense of ownership in their school. A great example of this loyalty is the alumni-generated program to endow the faculty with McGill's first clinical professorship in honour of Dr. Ambrose.

A quote from McGill's 1906 student yearbook explains how it all began.

"In the autumn of 1903, the Dental Association of the Province of Quebec approached the University with a request for the formation of a Dental Department in connection with the Faculty of Medicine, and as a result of the negotiations which took place during that autumn and winter, the Dental Department of McGill was opened in the autumn of 1904 as a section of the Medical Faculty. The first two years' work is the same as that of students who intend to study Medicine proper, while the third and fourth years are devoted to the study of Dental work and the degree obtained is a MDS (Master in Dental Surgery). At present, there are about 12 students in the Department."

In 1908, the MDS degree was changed to a Doctor in Dental Science. In 1917, McGill decided to award the degree of Doctor of Dental Surgery — the degree offered at the time by Dalhousie University, Laval University and the

University of Toronto.

Like all dental schools at the time, McGill was dependent on practising professionals to act as teachers and mentors. Dr. Peter Brown, the former dean of dentistry at Bishop's, had only a part-time appointment as McGill's dental department chairman. In fact, all McGill instructors worked on a part-time basis only. Despite this fact, McGill dentists were asked to assume other responsibilities. An article of the 1904 agreement stipulated that the dental teaching staff were to be collectively and individually responsible for the financial affairs of the department, including any debts contracted in its name! It was all part of the job.

"As with so much else at McGill," notes Stanley Frost in *McGill University – For the Advancement of Learning*, "it was a question of money. In the absence of either a wealthy donor or public funding, the dental department had to be operated as economically as possible."

The faculty of medicine offered some administrative support.

In 1908, one of McGill's major teaching hospitals — the Montreal General Hospital, then located just north of Old Montreal — opened a new dental teaching clinic, a first in a Canadian general hospital.

The official opening announcement was glowing.

"The space devoted to the clinic contains, in addition to an office and a waiting room, a large, well-lighted operating room furnished with Columbia chairs having fountain cuspidors and operating brackets," the statement said. "Communicating with the operating room is the anaesthetic room equipped with all modern conveniences for the extraction of teeth, including a nitrous-oxide apparatus for gas anaesthesia. There is also a laboratory with complete equipment including electric lathes and a plaster and vulcanizing room."

In 1920, Dr. A.W. Thornton, chairman of the dental executive of the faculty of medicine, became the first dean of the new faculty of dentistry of McGill University. The faculty was housed in the east wing of the classic gray-stone Strathcona Building, where it remains to this day. Florence Johnston, described by Dr. Mervyn A. Rogers in *A History of the McGill Dental School* as "a beautiful if somewhat large person," became the first woman to register in dentistry at McGill in 1922. The faculty of medicine refused to allow women until 1918 and dentistry was bound by its rules.

In 1924, the tall, personable Irishman Dr. Gordon Leahy became clinical director. He remained the only full-time teacher in the faculty until 1947. "He hated lecturing and



Class of 2005.

did not do it well,” writes Dr. Rogers about colleague Dr. Leahy. “His greatest contribution was through clinical and laboratory demonstration. He was a good clinician and he could demonstrate procedures well. He did not require many instruments — just a few chisels and burrs — but he certainly knew how to use them. He continued to operate a foot engine, which he pedaled himself, long after students had changed to electric motors.... His students loved him.”

There was one other key permanent position.

Miss Anne Ferguson became executive secretary to the faculty in 1928 and held the position until she retired in 1956. “She was a strong person who assumed tremendous responsibilities,” Dr. Rogers wrote. “She lived for her work and loved every minute of it.” He described her as “a religious person who abhorred smoking and drinking.” She was also described as someone with a keen interest in the students, which continued long after they graduated.

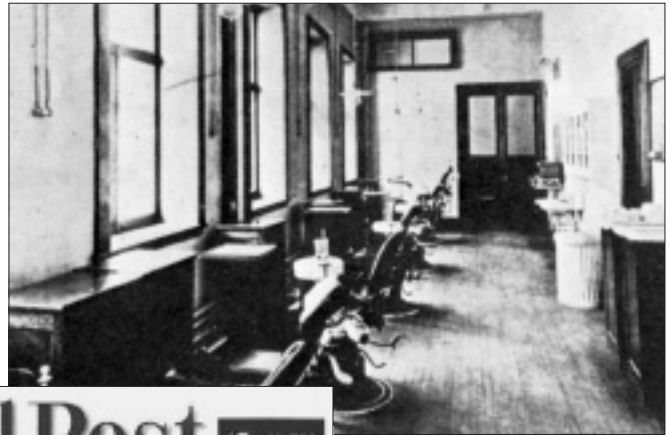
For decades, the faculty’s strength was its ability to turn out class after class of excellent practising professionals. This was due in part to the efforts of Dr. Leahy and hundreds of dedicated Montreal dentists.

Enrollment dipped during the Depression, but classes grew throughout the Second World War.

In time for the faculty’s 50th birthday celebrations, a state-of-the-art teaching clinic opened in 1955 at the new Montreal General Hospital building, now located on the slopes of Mount Royal. Not long after, in 1958, Dr. Lyman Francis became the faculty’s first full-time researcher. The colourful Dr. Francis had a successful career as a vaudeville acrobat before graduating from McGill as a dentist and obtaining his MSc in Pharmacology.

Attracting full-time staff was a slow process. Dr. Ambrose said that when he became dean in 1970, McGill was the school with the fewest full-time people in the whole country. “There was no question about the clinical skills of our graduates,” Dr. Ambrose explained in a recent interview. “The dentists who taught them were the best in Canada. But we had only 6 full-time staff. All the rest of the work — the lecturing, the research, the administration and everything else — was done by part-time people. If you want things done like research, you have to pay people full-time to do it.”

Dr. Ambrose, along with the deans who succeeded him, made it a priority to lobby McGill administrators for more funding to expand full-time staff and improve programs.



McGill dental clinic in the 1930s.



Dr. Catherine Bushnell, who holds a joint appointment in the faculty of dentistry and the department of anesthesia, has been making headlines.

Under his leadership, the faculty was able to offer its first graduate programs.

In the 1970s, Dr. Ambrose persuaded McGill to expand and re-equip the clinical facilities at the Montreal General Hospital. By the early 1990s, dental technology had changed dramatically. The clinic had to be re-equipped once more, to

prepare students for the actual conditions they would encounter in their professional lives. Once again, funding was secured for these improvements, this time from a donation by McGill philosopher Storrs McCall in memory of his parents.

McGill’s faculty of dentistry has learned many important lessons over its first 100 years of existence. It gained an understanding that it had to depend on itself for survival. It acquired strength from the vision and noble qualities of those chosen to lead the school. Finally, it has support from the professionals it produces, who continue to help the faculty grow and play its destined role in the academic and professional community.

These were not easy lessons to learn. In fact, it took a huge effort by a great many people over the past century to make the faculty the success it is today. But after all, as the McGill motto says, *Grandescunt aucta labore — By work all things increase and grow.* ♦

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The views expressed are those of the author and do not necessarily reflect the opinions or official policies of the Canadian Dental Association.

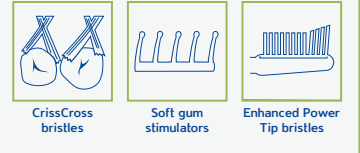
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Is Dentistry a Profession?

Part 1. Professionalism Defined

• Jos V.M. Welie, MMedS, JD, PhD •

A b s t r a c t

Individual dentists and organized dentistry alike invariably claim to be (members of) a profession. This label is cherished because it suggests special social, moral and political status. However, almost every self-respecting occupation nowadays claims to be a profession. Hence, the question arises as to what exactly is meant when dentists claim to be professionals and, more important, whether they can justifiably lay claim to this label. Rather than reviewing the manifold and divergent discussions in the literature about professionalism, the author proposes — in this first of 3 consecutive articles — a definition of the term “profession” that is based on the literal origins of the word. Next, it is argued that a profession arises out of a social contract between the public and a service occupation that professes to give priority to the existential needs of the people served. In the second article, the author deduces several professional responsibilities. The third and final article examines whether and to what extent dentistry fulfills these responsibilities and outlines some future challenges.

MeSH Key Words: dental care/standards; dentist-patient relations; ethics, dental; professional practice/trends

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This article has been peer reviewed.

Individual dentists and organized dentistry alike invariably claim to be (members of) a profession. This label is cherished because it suggests special social, moral and political status. It has a nice ring to it and is likely to instill trust among the public at large and a dentist’s clientele in particular. However, almost all self-respecting occupations nowadays claim to be professions, issuing “statements of core values” or even “codes of ethics.” Codes have been drafted by such diverse occupations as advertising, chiropractic, computing, direct marketing, fund-raising, law enforcement, lobbying, mining, the ministry, newspaper editing, organ playing, pharmacy, realty, social work, trial law and, of course, dentistry.^{1,2} Is the label “professional” simply synonymous with other, less eloquent adjectives such as “competent,” “reliable” or “decent”? Is any person who does what he or she has agreed to do, and does it well, a professional? Is any occupation that issues a list of do’s and don’ts a profession? In this series of 3 consecutive articles, we will attempt to answer these questions. Doing so first requires a conceptual analysis of the term “profession,” which is the main objective of this first article.

Professionalism Defined

Consultation of contemporary dictionaries such as the *American Heritage Dictionary*, the *Concise Oxford*

Dictionary and the *Oxford American Dictionary of Current English* will yield 1 of the following 3 rather diverse definitions of a professional:

- (1) A person who, unlike a volunteer, gets paid for work performed.
- (2) A person who, unlike an amateur, has the training or expertise to do the job competently.
- (3) A person who, unlike a lay person, has been initiated or ordained into the fellowship or guild that holds an exclusive monopoly on the particular line of work.

Given the large number of paid occupations that demand several years of advanced education and some kind of certification or licensing, today’s liberal use of the labels “profession” and “professional” is understandable. But as these labels are claimed by ever more people to cover ever more occupations, their discriminative force will begin to decrease. At some point in the future, they may lose their cachet altogether, and people will begin to look for new, more distinctive attributes.

At present, however, these labels still carry special significance. They are popular precisely because they are loaded terms. They suggest unusually high levels of expertise and skillfulness, virtuousness and trustworthiness, as well as social status, class and market value. The question thus arises whether the claim to be a profession(al) is always warranted.

The answer to this question lies in responses to a few more specific queries. First, by what criterion or criteria can we judge whether a particular occupation (such as dentistry) qualifies as a profession? Typically, half a dozen hallmarks are listed, and occupations meeting all or at least most of them are considered professions. Frequently identified hallmarks include a skill based on theoretical knowledge obtained through extended and standardized education, demonstrated competence, high level of organization, codification of behaviour and altruism.^{3,4} But why these particular traits? What is the common denominator among these characteristics that sets them apart from, say, indoor location, creativity, wearing of a uniform, use of high levels of communication, and restriction to women? The particular choice of hallmarks is often defended by reference to some occupation that is assumed to be a profession, typically medicine. But this defence invokes a circular argument, for why is medicine considered a profession? To characterize medicine as a profession, a definition of a profession and the criteria of professionalism must already be in place.

Instead of relying on the common and arbitrary use of the term “professional,” this article proposes a definition of the term “profession” that goes back to the literal origins of the term. In conjunction with this more restrictive definition, a much more stringent set of criteria will be developed in the next article that significantly limits the number of occupations that can claim to be professions proper. In fact, it will be argued that occupations that have traditionally been considered professions could lose that label. As will become clear in the third article, dentistry is among those at risk.

However, this “risk” is not moral in nature. Precisely because the term “profession” is being defined very narrowly, *not* being a profession or a professional does not equate with being incompetent or immoral. For example, it will be argued that the ethos of business is incompatible with that of a profession. Hence, being a businessperson precludes a person from being a professional. But the ethos of business leads to ethical principles and rules that a businessperson must abide by in order to act morally in the business context. It does not matter whether the businessperson violates professional ethical rules, because those rules do not bind him or her. Conversely, a person cannot enter a profession and retain the expanded moral freedom of a businessperson.

The Profession’s Profession

The term “profession” literally means a “public avowal.” The term does not specify what it is that those professing profess to, what it is they promise and commit (not) to be or do. However, it is generally assumed that professionals profess to protect and foster “the benefit of the public.” Granted, there is ample historical evidence that occupations

claiming to be professions did so first and foremost to protect their *own* interests, specifically financial ones.⁴ In a recent article, Bertolami⁵ bluntly admits that “physicians and dentists do not place the patient’s welfare before their own.” Indeed, when their interests conflict, patients and dentists alike “can be reliably counted on to place themselves first.” In short, the ethical principle that “the patient’s needs must come before the needs of the practitioner . . . is a noble sentiment; it is also untrue.”⁵ These words, coming from the dean of a U.S. dental school, underscore Kultgen’s⁶ warning that the alleged service to humanity is the “Urmythos” from which all of the myths about professions spring. However, the present series of articles does not strive to provide a historically correct overview of the development of professions; rather, it aims to outline an ideal worth striving toward.

The profession’s profession is an unusual commitment. Human beings are by their very nature tempted to act for their own good, giving preference to their own interests over those of others. This egoistic trait is rooted so deeply that most legal systems excuse people who harm or kill others in self-defence. Capitalist free market economies are built on this human trait, and some philosophers have

argued that selfishness is actually a virtue.⁷ It therefore behooves any occupation that defines itself as essentially altruistic, rather than egoistic, to demand from its members that they publicly commit to this ideal. For, unlike charity, professional altruism is not an option but an obligation that binds each and every member, individually and collectively.

The public, having been promised altruism rather than egoism, enters into a kind of mutual agreement, also called a “social contract,” with the profession, granting it such perks as a monopoly, above-average income and social status. But why is such a “deal” of interest to the public? Of course, it is always nice to be treated altruistically, but if the price is too high it may not be worth it. For example, granting a monopoly means there is no competition, which could lead to reduced quality of service and higher fees. Most Western societies abhor monopolies and have created governmental watchdogs (such as the U.S. Federal Trade Commission) that protect the public against their dangers. How then does a particular collective of service providers, professing to act for the good of the public, convince the public to enter into such an exclusive social contract?

Human Frailty and Vulnerability

An occupation cannot simply claim professional status. That status must be granted by the public, and the public will enter into the necessary social contract only if the service offered is of vital importance. For example, if the product or service offered is much desired but not really needed, if it can always be postponed or even forgone, there is no reason to

An occupation cannot simply claim professional status. That status must be granted by the public.

enter into a social contract with those professing to provide the service. The same is true if the good or service can easily be obtained without relying on the service providers. However, a good reason for the public to enter into a social contract — maybe the only good reason — is existential vulnerability. Existential vulnerability arises out of the combination of a significant human need that must be relieved and complete dependency on experts for that relief.

We like to think that we have control over our own lives, determine its course, fashion a style, plan a career, shape our bodies, advance our minds, choose a faith. But in reality we have very little freedom. We do not choose to be born, nor do we choose when or where our births take place. We have no say in our parents, our naming or our raising, and little say in our subsequent education. Although as adults we are free to convert, it is always conversion from the faith of our parents and the religious convictions prevalent in the culture with which we grew up. Even in a democracy we have little impact on our government, yet are fully dependent on it for protection against violence from within and abroad. We are surrounded by dangers to our health that can strike at any moment. And we must all die at some point.

Not all of the needs listed above render us vulnerable and dependent on others. For example, as adults, we can take charge of our own learning, but during childhood, we depend on the educational expertise of teachers. We can generally overcome the sorrow and emptiness that follow the death of a beloved partner, but the loss of all of one's family in a single terrorist attack may be too much to bear and may necessitate psychological and spiritual help from experts. We can ourselves arrange for clothing to protect against the elements, but if a toothache strikes or we break a limb, we have to rely on expert dental and medical care, trusting that our health care providers will not abuse their power in their own interests. This trust is warranted by the profession, i.e., the public promise by the service provider always to give priority to the interests of those served over self-interest.⁸

We can thus define a profession as a collective of expert service providers who have jointly and publicly committed to always give priority to the existential needs and interests of the public they serve above their own and who in turn are trusted by the public to do so.

The Social Contract

As mentioned earlier, an agreement between the professing profession and the entrusting public can be characterized as a social contract. This is a somewhat confounding term because there is no piece of paper or any other tangible evidence of the existence of this contract. There is certainly no document specifying the terms of the agreement. "Social contract" is merely philosophical jargon, an attempt to explain certain structures in society by analogy to legal contracts between individuals. Codes of ethics and public pledges do not automatically result in the kind of

social contract that establishes a profession proper. Conversely, the absence of a written declaration or oath specifying the responsibilities of the profession and the rights of the public does not nullify the social contract. Such documents can support the social contract, but they do not constitute it. Thus, the fact that physicians, but not dentists, typically swear an oath at graduation does not prove that physicians are professionals and dentists are not.

Not only is there no piece of paper clearly specifying the terms of the social contract, but there are no clearly identifiable parties to the contract. "The public" is not an entity that can, as such, make agreements. At most, the public can enter into contracts via its representative government, specifically the legislative branch of government. Conversely, there is no specific entity that can claim to be a profession. The collective of all dentists does not act as such. Even within a single country, there may be many associations claiming to represent dentists. For example, the United States is home to the American Dental Association, the National Dental Association and the American College of Dentists, to mention only 3 national associations. None of these organizations has real representative power. At most, they can speak on behalf of the dentists who voluntarily joined or were selectively admitted. Furthermore, if a particular dentist violates the terms of the social contract, these organizations have virtually no power to rectify the situation. That power lies with the dental board in each state. However, these boards do little other than license dentists. They do not organize dental education, develop treatment protocols or optimize access to oral health care, to mention only 3 responsibilities that the profession of dentistry is charged to fulfill by virtue of its status as a profession. (This topic will be discussed in more detail in the next article in this series.)

The absence of clearly identifiable parties to the social contract and the absence of a written agreement specifying the terms mean that the social contract between profession and society is dynamic. It continuously changes, grows, matures and adjusts to the circumstances of time and location. It is always open for discussion and new interpretations by the members of the profession itself, as well as by members of the public. Hence, a professional code of ethics that has not changed for 50 years has little merit, and a pledge made at graduation but never again reflected upon has little relevance. The profession as a whole and each individual professional must continually revisit their own "profession" and reinterpret the terms of the resulting social contract with the public lest the contract slowly petrify.

Conclusions

Recognizing the ever more liberal use of the label "profession" and hence the ever less discriminative force of the term, this article began by proposing a definition of "profession" that goes back to the literal origins of the term: a profession is a collective of expert service providers who have jointly and publicly committed to always give priority

to the existential needs and interests of the public they serve above their own interests, and in turn are trusted by the public to do so. This agreement between service providers and the public can be characterized as a social contract, the terms of which will be outlined in a subsequent article. However, it is important to remember that, in final analysis, the ethical foundation of a profession is the profession, the voluntary promise to care for those fellow humans who are vulnerable and in need. No dentist was forced to embark on a dental education. No dental graduate was forced to profess his or her commitment to the public. Each chose to do so voluntarily. ♦

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The views expressed are those of the author and do not necessarily reflect the opinions or official policies of the Canadian Dental Association.

References

1. Gorlin RA. Codes of professional responsibility: ethics standards in business, health, and law. 4th ed. Washington: Bureau of National Affairs; 1999.
2. For an extensive listing of codes online, organized by 24 occupational categories, see Center for the Study of Ethics in the Professions. Illinois Institute of Technology. Codes of ethics online. Available from: URL: <http://www.iit.edu/departments/csep/PublicWWW/codes/codes.html>.
3. Millerson G. The qualifying associations: a study in professionalization. London: Routledge and Kegan Paul; 1964.
4. Freidson E. Profession of medicine: a study of the sociology of applied knowledge. Chicago: University of Chicago Press; 1988.
5. Bertolami CN. Why our ethics curricula don't work. *J Dent Educ* 2003; 68(4):414–25.
6. Kultgen J. Ethics and professionalism. Philadelphia: University of Pennsylvania Press, 1988.
7. Rand A. The virtue of selfishness: a new concept of egoism. New York: Signet; 1964.
8. Swick HM. Toward a normative definition of medical professionalism. *Acad Med* 2000; 75(6):612–6.

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Attitudes to Independent Dental Hygiene Practice: Dentists and Dental Hygienists in Ontario

• Tracey L. Adams, PhD •

A b s t r a c t

This study examined Ontario dentists' and dental hygienists' attitudes to independent dental hygiene practice and changing the scope of practice. Data were collected from a mail survey of a systematic, stratified sample of Ontario dentists (483 respondents) and dental hygienists (437 respondents) conducted in the winter and spring of 2002 to assess what practising dentists and dental hygienists think about independent practice and other professional issues. Contrary to previous research, this study found that male and female dentists did not differ in their attitudes to independent dental hygiene practice and university education for dental hygienists: both strongly opposed the former and tended to support the latter. Similarly, few differences in attitude amongst dentists by specialty were found. Dental hygienists were generally supportive of independent practice and of expanding their scope of practice. On some measures, however, sex and age differences in attitudes were evident: at times dental hygienists who were older or male seemed to be stronger advocates for professional change than others.

MeSH Key Words: dentistry/manpower; dissent and disputes; interprofessional relations; professional autonomy

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In the past 2 decades, dental hygiene organizations have been striving for greater independence and autonomy for dental hygienists. In Ontario, this effort intensified under the provincial government's Health Professions Legislative Review in the 1980s. During the review, the Ontario Dental Hygienists Association (ODHA) lobbied for an independent regulatory college. With the passing of the Regulated Health Professions Act (RHPA) 1991, the College of Dental Hygienists of Ontario (CDHO) was established. Since the early 1990s, the CDHO and ODHA have lobbied for change to the RHPA to enable dental hygienists to practise more autonomously from dentists by eliminating the need for a dentist's "order" to provide treatment and to expand Ontario dental hygienists' scope of practice. At the same time on a national level, dental hygiene leaders have asserted that the assessment dental hygienists carry out in their practice should be labelled "diagnosis."^{1,2} Diagnosis is currently not one of their licensed acts in Ontario under the RHPA. These leaders have also encouraged the expansion of dental hygiene education at the university bachelor's degree level.³ Thus, dental hygiene organizations are very actively involved in what soci-

ologists call a "professional project": a deliberate campaign aimed at expanding professional authority and social status.

In response to this project, dentists have argued that dental hygienists do not have the training or knowledge to practise independently (without an order) in every instance.^{4,5} Their arguments have been effective enough to prevent change to the legislation so far. While the stances of dental and dental hygiene organizations (like the Ontario Dental Association [ODA] and ODHA) have been clearly articulated many times, there is some ambiguity in the attitudes of the majority of dental and dental hygiene practitioners. Notably, both dental hygienist leaders and dentists alike have questioned the extent to which rank and file dental hygienists support the professional and political activities of their organizational leadership.^{2,4,6} For instance, in a study of dental hygiene's status and culture,² Brownstone's respondents believed that "a sense of professional identity was not ... held by all dental hygienists" (p. 182), and that some were quite happy to work in a subordinate role.

Some question has also been raised about the attitudes of dentists to independent dental hygiene practice. A 1994 ODA study reported that although the vast majority of

dentists were opposed to independent practice for dental hygienists, non-ODA members were somewhat less opposed.^{7,8} Moreover, Kaldenberg and Smith⁹ surveyed a random sample of Oregon dentists in the late 1980s and found that female dentists were more supportive of independent practice for dental hygienists than were their male colleagues. However, it was unclear to the authors whether this finding reflected a true sex difference or differences in practice type; that is, solo practitioners, who were more likely to be male, were more likely than others to be opposed to independent practice. The low number of women in their study prevented their exploring this finding further. Perhaps female dentists, those in certain practice arrangements or those in specific specialties are more supportive of independent dental hygiene practice.

The current study explores whether variations in attitudes to independent dental hygiene practice and other aspects of dental hygiene's professional project exist among Ontario dentists and dental hygienists through an analysis of survey data.

Methods

In the winter of 2002, 2 parallel surveys were conducted. The first was a survey of 800 dentists registered to practise in Ontario. The second was a survey of 650 practising dental hygienists in Ontario. Both of the surveys used stratified systematic samples. The survey of dentists was stratified by sex and practice area (general practitioner versus specialist) to ensure an adequate sample of women and specialists. In effect, 4 samples of dentists were drawn from the 2001 directory of the Royal College of Dental Surgeons of Ontario. Surveys were sent to 350 male general practitioner dentists, 300 female general practitioner dentists, 100 male dental specialists, and 50 female dental specialists. Following the Dillman method, a follow-up reminder postcard and 2 additional copies of the survey were sent, at intervals, to nonrespondents.¹⁰

The dental hygiene sample was also stratified by sex. Because only 3% of dental hygienists in the province were men, it was deemed necessary to oversample them to explore the possibility of gender differences in attitudes. Using the 2001 directory of the College of Dental Hygienists of Ontario, a total of 85 male hygienists were identified and each of them was sent a survey. The remaining 565 surveys were sent to a systematic sample of female dental hygienists, including specialists.

The 2 surveys were similar in focus and in structure. The surveys themselves represented the third phase of a broader research project exploring relations between dentistry and dental hygiene over time. The first phase involved an analysis of documents, including articles published in professional journals over the past 50 years. The second phase involved interviews with 24 professional leaders in both dentistry and dental hygiene. These 2 research phases illuminated several key professional issues, and the surveys were designed to explore the attitudes of rank-and-file

dentists and dental hygienists on these issues.^{4,11} Attitudinal questions in both surveys used a Likert scale and required respondents to indicate the extent to which they agreed or disagreed with a given statement, or to assess its importance on a 4-point scale (i.e., very important, important, somewhat important, not important). Surveys also asked questions about practice characteristics and job satisfaction. Dental hygienists were asked a series of questions about their scope of practice that were not asked in the dentists' survey. Both dentists and dental hygienists were asked whether they agreed that dental hygienists should be able to practise independently of dentists and about the value of university education for dental hygienists. Dentists alone were asked how important it was that their professional organizations actively fight independent dental hygiene practice. Before their distribution, surveys were sent out for comment to professional leaders active in each profession and were approved by a university ethics review board.

To assess dentists' and dental hygienists' attitudes about these issues, cross-tabular analyses were conducted with SPSS (SPSS Inc., Chicago, Ill.). Analyses explored attitudinal differences between and amongst dentists and dental hygienists in Ontario, and focused, in particular, on the presence of differences within groups by sex and age, and, in dentistry, by practice type and specialty. Analyses of sex differences within the 2 professions were conducted with unweighted data. Analyses of attitudes across the professions in general, and by age and practice type were conducted with data that were weighted to reflect the distribution of men and women in dentistry (23% women) and dental hygiene (97% women). Weighting produced sample sizes of 392 dentists and 383 dental hygienists. Chi-square tests were done to determine statistical significance. A *p* value of ≤ 0.05 was considered significant.

Results

A total of 483 dentists responded to the survey, a response rate of 60%. The adjusted response rate (eliminating those who could not be reached through the mail), was 62%. The response rate did vary somewhat among strata: male general practitioner dentists were more likely to respond than other groups (65% responding), and male dental specialists were least likely to respond (54% responding). A few dental specialists formally declined to answer the survey because they did not regularly work with dental hygienists.

The dental hygienist response rate for this survey was 72%. Adjusted for those who could not be reached, the response rate was 78%. Here too, the response rate varied by sex, with women being more likely to respond than men. Total sample size was 440, including 53 male respondents.

Dentist and dental hygienist respondents differed in their attitudes towards independent practice for dental hygienists (see **Table 1** at <http://www.cda-adc.ca/jcda/vol-70/issue-8/535.html>). Fully 71% (271/383) of all dental hygienists agreed or strongly agreed that dental hygienists should be allowed to practise independently of dentists,

compared with only 4% (15/392) of dentists. In contrast, respondents in each occupation did not differ greatly on issues relating to university training for dental hygienists. Nevertheless, dentists were more likely to agree or strongly agree that a baccalaureate degree would have direct employment value than dental hygienists. Conversely, dental hygienists were slightly more in favour of university training for dental hygienists than dentists, although most did not support the need for a baccalaureate degree for entry to practice (see **Table 2** at <http://www.cda-adc.ca/jcda/vol-70/issue-8/535.html>).

The more central question, however, was not whether dentists and dental hygienists had similar attitudes, but whether a great deal of internal variation existed amongst dental hygienists and dentists. **Table 1** demonstrates little internal variation. The dentist survey revealed that dentists were overwhelmingly opposed to independent dental hygiene practice, regardless of sex or practice focus. Moreover, roughly half of the dentist respondents agreed that dental hygiene training should be offered in universities and less than one third believed baccalaureate education would make hygienists better workers. Although minor differences between men and women, and general practitioners and specialists were evident (**Table 1**), they were small and not statistically significant. The only question about attitudes for which differences approached statistical significance ($p = 0.79$), was about whether dental organizations should spend their resources fighting independent practice for dental hygienists (see **Table 3** at <http://www.cda-adc.ca/jcda/vol-70/issue-8/535.html>). Here, male specialist respondents were slightly less likely than the rest of their colleagues to see this as important, and women specialists were less likely to see it as very important than important. Nonetheless, the differences were small, and overall 66% (260/391) of dentists believed it important or very important that dental organizations fight independent dental hygiene practice.

Although our results show some internal variation amongst dental specialists about their attitudes toward independent dental hygiene practice, the number of specialist respondents was too low to identify statistically significant differences. Analyses (data not shown) were also done to determine whether differences existed amongst dentists by practice type and sex. While there were no attitude differences amongst women in solo, partner, and associate practice, males outside of solo and partner practice were slightly more likely to be neutral in their attitudes than their male colleagues ($\chi^2 = 68.2$, $p \leq 0.01$).

Age cohort differences were also rare amongst dentists. The only statistically significant difference by age cohort was found in response to a question about whether dental hygiene training should be offered in universities (see **Table 4** at <http://www.cda-adc.ca/jcda/vol-70/issue-8/535.html>). Here, older dentists were more likely to agree and strongly disagree that dental hygiene training should be offered in universities ($\chi^2 = 53.5$, $p \leq 0.001$).

Data from the survey of dental hygienists indicated a great deal of support for many professional changes. For instance, a total of 83% (317/382) of respondents deemed it important or very important that dental hygienists no longer require an order to do their work (**Table 2**). Moreover, 79% (301/381) believed it important or very important that dental hygienists be able to prescribe radiographs, and 76% (289/381) believed it important or very important that more alternative practice opportunities arise. Fewer respondents (64%, or 244/382) believed it important or very important that more opportunities for independent practice arise. There was much less support for baccalaureate education for dental hygienists; only 34% (129/380) believed it important or very important that a bachelor's degree be required for entry to practice. Further, 52% (198/382) of hygienists believed it important or very important that they be allowed to administer anesthesia.

Analyses were also run contrasting dental hygienists across sex and age categories, and education cohorts. The latter analyses aimed to determine whether there were differences between dental hygienists who obtained a diploma from the University of Toronto before the program's closure in the mid-1970s, those who obtained their diploma from community colleges in the late 1970s and 1980s, and those who entered dental hygiene in the 1990s when dental hygiene became a self-regulating profession. Cohort differences (data not shown) were evident in a number of areas, notably, in attitudes to university education and administering anesthesia. Specifically, 80% (30/38) of the cohort of university-educated dental hygienists either agreed or strongly agreed that dental hygiene training should be offered in universities, compared with 45% (72/161) of those trained between 1977 and 1990, and 44% (80/183) of those trained after 1990. Further, 60% (110/183) of hygienists trained after 1990 believed it important or very important that dental hygienists be able to administer anesthesia, compared with 44% (71/161) of the earlier college cohort, and 45% (17/38) of those in the earliest (university) cohort.

Additional analyses revealed some differences by age. As **Table 5** illustrates (see <http://www.cda-adc.ca/jcda/vol-70/issue-8/535.html>), dental hygienists from earlier age cohorts were more likely than others to deem it very important that hygienists be allowed to prescribe radiographs and that they no longer require an order to do their work. These same hygienists were also more supportive of university education for dental hygienists.

When attitudes were compared across sex, differences became evident on some issues (see **Table 6** at <http://www.cda-adc.ca/jcda/vol-70/issue-8/535.html>). Male dental hygienist respondents were more likely than their female counterparts to see it as very important that a university degree be required for entry to practice (25%, or 13/53 males, versus 11%, or 44/390 females), and that dental hygienists be legally able to administer anesthesia (51%, or 27/53 males, versus 25%, or 98/392 females).

Moreover, male dental hygienist respondents were more likely to strongly agree that dental hygiene's scope of practice should be expanded (45%, or 24/53 males, versus 29%, or 114/391 females). On some issues, then, men seemed to be stronger supporters of dental hygiene's professional project, than were the majority of female hygienists.

Discussion

Overall, the findings of this survey suggest a great deal of unity in attitudes about independent dental hygiene practice amongst dentists and a fair amount within the dental hygiene profession. The latter finding contrasts with the findings of previous publications^{2,6} that suggested that rank and file hygienists may be somewhat ambivalent about professional issues. Nonetheless, on many variables, a great deal of internal variation was evident. While most dental hygienists supported the removal of dental orders from the RHPA — an issue that dental hygiene organizations have been lobbying about for some time — there was more division over newer concerns such as baccalaureate education, administration of anesthesia and independent practice. In some areas it was the oldest group of dental hygienists and men (who actually tended to be in younger age groups) who most strongly supported the occupation's professional project. There were fewer major differences of opinion across age group, sex or practice area amongst dentists.

In their written comments on the survey, dentists from all backgrounds and practice areas tended to say that they had the utmost respect for their dental hygiene colleagues, but that they did not approve of the lobbying activity pursued by dental hygiene organizations. The fact that many dental hygienists clearly do approve of their organizations' efforts, whereas dentists are unified in their opposition, portends ongoing tension on a professional level for years to come. ♦

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References

1. Landry D. Who's giving the orders? *Probe* 1994; 28(3):83.
2. Brownstone E. A qualitative study of the occupational status and culture of dental hygiene in Canada [PhD thesis]. Winnipeg (MB): University of Manitoba; 1999. p. 151.
3. CDHA. CDHA presents a brief to the commission on the future of health care. *Probe* 2002; 36(1):8.
4. Adams TL. Inter-professional conflict and professionalization: dentistry and dental hygiene in Ontario. *Soc Sci Med* 2004; 58(11): 2243–52.
5. Health Professions Regulatory Advisory Council. Advice to the Minister of Health: Dental Hygiene Referral, May, 1996.
6. Manga, P. The independent practice of dental hygiene: political economy, professionalism and policy. *Probe* 1997; 31(1):16–8, 20–1.
7. ODA membership survey results revealed. *ODA News* 1994; (Sept):24.
8. ODA membership survey results: Part II. *ODA News* 1994; (Oct):56.
9. Kaldenberg DO, Smith JC. The independent practice of dental hygiene: a study of dentists' attitudes. *Gen Dent* 1990; 38(4):268–71.
10. Dillman DA. Mail and Internet surveys: the tailored design method. 2nd ed. New York (NY): John Wiley and sons; 2000.
11. Adams, T. Professionalization, gender and female-dominated professions: dental hygiene in Ontario. *Cdn Rev of Soc and Anthro* 2003; 40(3):267–89.

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A Closer Look at Diagnosis in Clinical Dental Practice: Part 5. Emerging Technologies for Caries Detection and Diagnosis

• Iain A. Pretty, BDS(Hons), MSc, PhD •
• Gerardo Maupomé, PhD •

A b r i d g e d V e r s i o n

The complete article can be viewed on the eJCDA Web site at: <http://www.cda-adc.ca/jcda/vol-70/issue-8/540.html>

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Parts 5 and 6 of this series examine some of the most recent innovations in diagnostic and management procedures, describing their strengths and weaknesses in terms of the statistical basis developed in parts 1 through 4. Part 5 focuses on caries detection and diagnosis.

Despite a significant reduction in the prevalence of caries in the Western world, this problem remains significant for the practising clinician. Occlusal and root surface caries present new diagnostic dilemmas, and high-fluoride remineralization therapies have been developed with claims of restoring early demineralized lesions to sound enamel. However, applying such therapies requires that early lesions be identified, their activity determined and the success of any intervention monitored.

In this article we examine caries detection and diagnosis, in particular the use of 3 novel devices and methods: the DIAGNODent laser device, fibreoptic transillumination and quantitative light-induced fluorescence (QLF). Each method is described and illustrated in detail. The proponents of each system claim the ability to detect lesions at an early stage (i.e., those amenable to remineralization or minimal restorative therapies).

Although these methods cannot replace sound clinician judgement, they provide information that can be combined with the results of other tests and the experience of the operator to form the basis for a clinical decision.

The DIAGNODent device (KaVo, Lake Zurich, Ill.) uses a laser to generate excitation of bacterial metabolites, which in turn generate a signal that is detected by the device and converted into a numeric scale. Several indices

are available to help the clinician to interpret the result. Research suggests that this device may be superior to radiography in detection of caries; opportunity for longitudinal monitoring is one strength of the device.

Digital Imaging Fibre-Optic Transillumination is an enhancement of a more established technique. This optical system uses the light scattering caused by early enamel and dentine demineralization. As with QLF, the images can be captured and retained. The system cannot quantify mineral loss, but the images can be assessed by the clinician, much in the same way as radiographs. One advantage over the other 2 systems discussed here is that this method can be employed to detect interproximal lesions.

QLF takes advantage of the light scattering caused by demineralized enamel. A real-time fluorescent image of the tooth is generated, and the clinician can enhance the contrast of any white spots by about 20 times. The loss of natural fluorescence in the presence of early caries can be calculated and the severity of the lesion determined. The correlation between loss of fluorescence and mineral loss may be as high as 92%. QLF images can be archived with the patient's records, which allows detailed review of mineral changes and response to therapy over time.

Each of these systems is now being used in general dental practice and is being marketed as an effective adjunct to preventive regimes. Each system may help to improve decision-making by providing more detailed information on the demineralization–remineralization dynamic, by allowing longitudinal monitoring of lesions and by helping the dentist to educate the patient about the disease process. ♦

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Diagnostic Challenges of Neuropathic Tooth Pain

• Michael J. Matwychuk, DMD •

A b s t r a c t

This article presents the clinical characteristics, epidemiology, pathophysiology and treatment of 2 neuropathic conditions: trigeminal neuralgia and atypical odontalgia. A case report highlights the complexities involved in diagnosing neuropathic pain. Neuropathic pain is chronic, diverse in quality, difficult to localize and it occurs in the absence of obvious pathology. To avoid multiple, ineffective dental treatments, general practitioners must be familiar with the signs of nonodontogenic sources of tooth pain.

MeSH Key Words: diagnosis, differential; facial pain/diagnosis; facial pain/physiopathology; toothache/diagnosis

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One of the most challenging and rewarding aspects of general practice is the diagnosis and treatment of pain. An estimated 22% of the general population experiences orofacial pain in any given 6-month period.¹ Furthermore, persistent and chronic pain is more prevalent in the head and neck region than in any other part of the body.²

Misdiagnosis of orofacial pain is common. The convergence of sensory neurons to higher centres makes localization and interpretation of pain symptoms difficult.³ Myofacial, neurovascular, sinus and cardiac structures can all be the source of referred dental pain, frustrating the diagnostic efforts of the general practitioner.⁴

Although, for the most part, tooth pain is resolved with endodontic treatment, in rare instances clinical response is not predictable and pain persists despite intervention. These cases may undermine both the patient's and dentist's confidence in clinical diagnosis and treatment. More important, the patient may undergo many other irreversible dental treatments, with no resolution of the pain symptoms.

The purpose of this article is to review the etiology, diagnosis and treatment of 2 conditions that may mimic dental pain: trigeminal neuralgia and atypical odontalgia. A case report is presented to illustrate the complexities of diagnosing and treating orofacial pain.

Case Report

A 64-year-old woman was referred for assessment of enigmatic pain in her lower left teeth. She complained of shooting pain that started after a routine hygiene visit 4 weeks earlier. To resolve her discomfort, she recently had amalgam fillings replaced with bonded composite restora-

tions in teeth 34 and 36 (**Fig. 1**). The patient was subsequently referred to me when the pain did not abate.

Clinical examination revealed that teeth 34 and 36 were heavily restored. The fillings were well sealed and the occlusal and interproximal contacts were adequate. No signs of gingival inflammation or pathology were present. The patient reported that tooth 35 was treated by root canal therapy 20 years earlier and the tooth had been crowned only 3 years ago. Percussion, palpation and bite testing of quadrant 2 and 3 were negative. As well, all teeth responded within normal limits for vitality when tested with cold. No noticeable pathologies were observed on the radiographs.

The patient had not experienced any spontaneous pain to that point. She directed us to observe that mechanical stimulation of the buccal root surface of tooth 36 resulted in a sharp "electric" shooting pain in the area. At that appointment, the root surfaces of tooth 36 were desensitized with a self-etch bonding system (Clearfil SE, Kuraray Co., Osaka, Japan). The patient was also given Sensodyne dentifrice (GlaxoSmithKline Inc., Pittsburgh, Penn.) with instructions for use.

The patient returned 2 weeks later reporting that she still had intermittent pain on the lower left and that tooth 36 was now sensitive to biting and chewing. Percussion and cold testing elicited a strong reaction in this heavily restored tooth. Root canal treatment was completed, on the assumption that irreversible pulpitis in tooth 36 was the source of her pain (**Fig. 2**).

On follow-up 1 week later, the patient was still experiencing what she described as "jolts of pain" from her lower left teeth. At this time she pointed to tooth 35, and insisted that sharp pain resulted when chewing or touching the buccal gingiva of tooth 35 with her toothbrush. Tooth 36

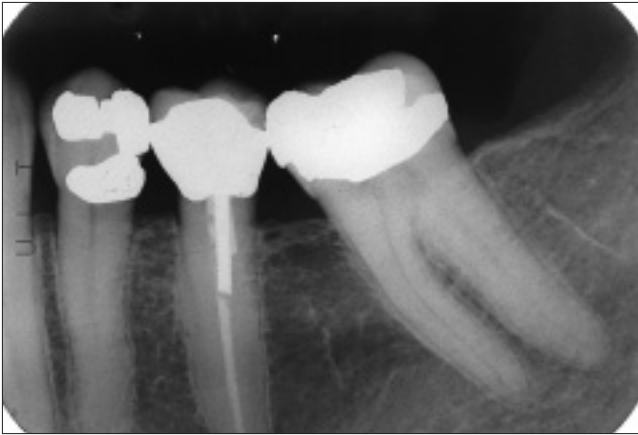


Figure 1: Preoperative radiograph of quadrant 3 before restorative or endodontic treatment.

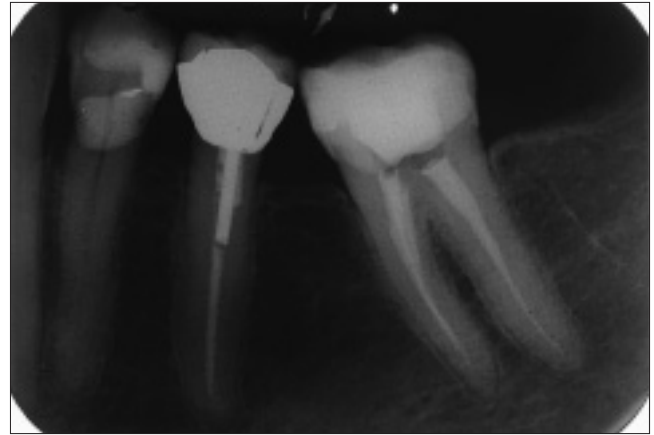


Figure 2: Postoperative radiograph of tooth 36 root canal treatment.

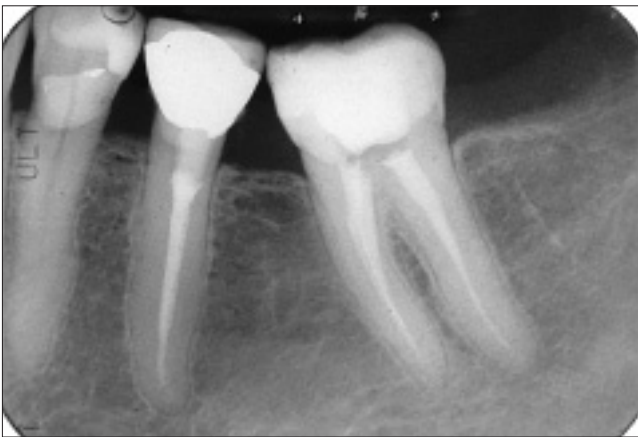


Figure 3: Postoperative radiograph of tooth 35 root canal re-treatment.

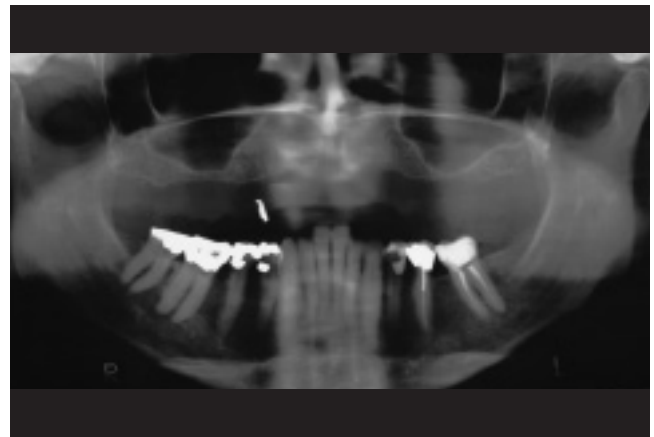


Figure 4: Panoramic radiograph with no observable pathology.

was still slightly sensitive to percussion; however, the result was not the stabbing pain the patient had been experiencing. The root surface of tooth 36 was no longer sensitive. She now insisted that the pain was from tooth 35 and, at this time, revealed that the tooth had “never felt right” since the root canal treatment 20 years earlier. The patient was about to leave on a month’s vacation and pleaded with me to do something to relieve her discomfort.

To satisfy the patient, I reluctantly re-treated tooth 35 by root canal. It was noted at the time of the treatment that block injection resulted in cessation of the gingival pain. Standard root canal procedures were followed and, after filling the canal with gutta-percha, the porcelain-fused-to-metal crown was recemented (**Fig. 3**).

The patient returned to our office after her vacation and informed us that the stabbing pain had not resolved. We observed that palpating the buccal gingiva at tooth 35 would elicit pain. Palpating certain areas of the lower left vestibule and lip had the same result. Unsure that the pain was the result of a tooth problem, we referred the patient to an oral surgeon for consultation. He was able to see her within 2 weeks and concluded that, in the absence of any

notable pathology (**Fig. 4**), the pain must be neuropathic in nature. We discussed 2 possible diagnoses: trigeminal neuralgia and atypical odontalgia.

The oral surgeon prescribed carbamazepine, 200 mg 3 times daily. The patient’s symptoms resolved within 2 weeks. Against the surgeon’s advice, the patient discontinued the medication after 5 weeks believing that the problem was solved. Fortunately, the pain did not recur.

This case illustrates the difficulties often encountered in diagnosing and treating orofacial pain. First, the patient’s interpretation of symptoms and reaction to clinical testing can reflect both emotional and physical components of pain.⁵ To further complicate the issue, a patient’s interpretation of the discomfort may not truly reflect the area in which the pathology is present.^{2,3} In this case, initial diagnosis was compromised by conflicting reports of the nature and source of the patient’s pain, a common occurrence in neuropathic conditions. Second, response to treatment (i.e., medication) may be the only way to confirm diagnosis of neuropathic pain.⁶ In this case, a positive response to anticonvulsant therapy supported a neuropathic basis for the symptoms. Last, despite careful examination of the symptoms and response to

treatment, differential diagnosis of neuropathic pain conditions can be challenging. A conclusive diagnosis of trigeminal neuralgia or atypical odontalgia was never reached. The diagnostic challenges encountered with this patient prompted further investigation into these 2 neuropathic conditions that often have dental components.

Trigeminal Neuralgia

The most common cause of facial neuralgia is trigeminal neuralgia, affecting 4–5 people per 100,000 population,^{6,7} and more often affecting women over 40 years of age.^{6–8} A genetic predisposition to the condition has not been found.⁸ However, trigeminal neuralgia does occur in about 1% of patients with multiple sclerosis and 2% to 8% of patients with trigeminal neuralgia have multiple sclerosis.⁷

Trigeminal neuralgia is characterized by sudden, sharp, severe unilateral pain. It is often described as a stabbing, shooting, burning or paresthesia sensation.^{9–11} The pain follows one or more branches of the trigeminal nerve.^{6,9–12} It can last seconds to minutes, then disappear leaving pain-free intervals between attacks.¹² The paroxysms of pain may occur in rapid succession while the patient is awake, but they rarely occur during sleep.^{6,9,10}

Trigger areas around the nose and mouth are a characteristic feature of trigeminal neuralgia. Attacks can be provoked by such innocuous stimuli as talking, chewing, tooth brushing or light touch.^{9–11} The pain is often much greater than the stimulus. Local anesthetic placed in the trigger area reduces the pain, whereas a block may not.⁴

There are several theories regarding the mechanism of pain production in trigeminal neuralgia. All remain uncertain and controversial.⁷ One theory suggests partial and focal nerve demyelination as a result of tumour or vascular compression. This can lead to abnormal transmission and processing of impulses along the trigeminal nerve.^{6,7,13} Extensive use of magnetic resonance imaging (MRI) to document the presence of benign or malignant lesions, plaques of multiple sclerosis and proximity of vessels to the trigeminal nerve has supported this postulate.¹⁰ Similarly, intraoral compression of the mental nerve by an ill-fitting denture can lead to trigeminal neuralgia-like symptoms.¹⁰

An alternative theory suggests that chronic irritation or trauma to the trigeminal nerve can cause ectopic action potentials and failure of segmental inhibition, leading to symptoms of trigeminal neuralgia.¹⁴ In reality, for most patients with trigeminal neuralgia, there is no identifiable cause.¹⁰

Treatment goals have focused on prevention of pain. Commonly used drugs include anti-seizure/anti-epileptic medications such as carbamazepine, baclofen and phenytoin.^{7,15,16} These drugs reduce neuronal excitability and discharge¹⁶ and generally lead to relief from symptoms in 75% to 80% of patients within 24–72 hours.^{6,8,15,16} Indeed, response to anticonvulsant treatment has been used as a diagnostic tool for trigeminal neuralgia.⁶

More recently, the use of topical capsaicin to block nociceptive fibres in the trigger area has shown some promise.^{17–19}

Unfortunately, data from large-scale testing of this therapy are not yet available.¹⁷

Finally, for cases in which nerve compression is the source of trigeminal neuralgia symptoms, microvascular decompression surgery can be effective. The procedure involves surgically removing vessel or tumour compression of the trigeminal nerve directly or indirectly via gamma knife radiosurgery.^{6,7,13} In the future, MRIs will provide more accurate and well-validated diagnoses, in turn improving surgical treatment of certain forms of trigeminal neuralgia.¹⁰

Atypical Odontalgia

Atypical odontalgia, also known as idiopathic or phantom tooth pain,²⁰ was first reported by McElin and Horton in 1947.²¹ This clinical condition has been validated extensively,^{22–26} yet it is rarely reported.²⁷ It is usually characterized by persistent toothache following pulp extirpations, apicoectomy, or tooth extraction.²⁷ Facial trauma and inferior alveolar nerve block have also been found to cause atypical odontalgia.²³ Epidemiologic information indicates that 3% to 6% of patients develop atypical odontalgia after endodontic treatment.^{28,29}

Characteristically, atypical odontalgia presents as prolonged periods of constant throbbing or burning pain in teeth or the alveolar process.^{20,22–27} This is in the absence of any identifiable odontogenic etiology observed clinically or radiographically.⁵ The pain is chronic; however, the patient's sleep is undisturbed, and there may be a brief symptom-free period on waking.²⁷ Patients often have difficulty localizing the pain.^{22,23,27} It is usually worst at the site of the original trauma, but can spread to adjacent areas, unilaterally or bilaterally.^{5,27} All ages can be affected, except for children; there is a preponderance among women in their mid-40s.^{20,24–33} Molars and premolars in the maxilla are most often affected.^{33,34} Local anesthetic block gives ambiguous results, and patients rarely find relief with analgesics, including narcotics.^{23,27,35,36} Unfortunately, atypical odontalgia is often mistaken for a normal post-treatment or post-trauma complication.²⁷

Although it is tempting to consider, psychological comorbidity has not been demonstrated in atypical odontalgia.²⁷ As in several chronic pain conditions, a high level of demoralization is evident. However, it is uncertain whether this is the cause or the effect of the condition.^{27,35–38}

Many classification and diagnostic criteria for atypical odontalgia have been proposed.³⁹ However, it remains a diagnosis of exclusion after ruling out all other pathologies of the head and neck.^{9,35,37} Patients often seek multiple endodontic or surgical treatments, realizing no relief or even exacerbation of their symptoms.^{5,40} Accurate diagnosis depends on recognizing neurologic signs involving other teeth and nearby structures served by the same nerve.⁹

The pathophysiology of atypical odontalgia remains unclear. In 1978, Marbach²⁰ hypothesized that atypical odontalgia was of similar etiology to phantom limb pain.

Table 1 Differential diagnosis of odontogenic and neuropathic pain^a

Odontogenic pain	Neuropathic pain
Pain is dull ache or occasionally sharp.	Pain may be dull, sharp, shooting or burning.
Response to stimuli, such as hot, cold or percussion, is predictable and proportionate.	Response to hot, cold or percussion does not reliably relate to the pain and may be disproportionate.
Pain is usually inconsistent and tends to get better or worse over time.	Pain is persistent and remains unchanged for weeks or months.
Pain often disrupts sleep.	Pain rarely disrupts sleep.
There is often an identifiable source (i.e., caries, deep restoration, periodontal disease, fracture line).	There is no obvious source of local pathology.
Local anesthesia of the suspect tooth eliminates the pain.	Response to local anesthetic is ambiguous.
	Pain may be felt in multiple areas or teeth.
	Repeated dental therapies fail to resolve the pain.

^aAdapted from Okeson.⁹**Table 2 Differential diagnosis of trigeminal neuralgia and atypical odontalgia^a**

Trigeminal neuralgia	Atypical odontalgia
Pain is characterized as unilateral, paroxysmal and stabbing.	Pain is dull and continuous.
Trigger areas characterize pain.	Trigger areas occur less often.
More common after 40 years of age, peaking in the 50s and 60s.	More frequent in women in their mid-40s.
May occur in the absence of obvious trauma.	Usually precipitated by a traumatic event (root canal, extraction, etc.).

^aAdapted from Marbach and Raphael³⁵ and Okeson.⁹

Deafferentation research has demonstrated that, after injury, organization and activity of central and peripheral nerves can change.^{41–44} This can result in chronic pain and other related symptoms (paresthesia, dysesthesia).^{41,43} For example, neuroma secondary to nerve trauma is thought to result in such pain.^{9,20,24,25,27,32,34} Other mechanisms involved in the pathogenesis of pain include sensitization of pain fibres, sprouting of adjacent afferent fibres, sympathetic activation of afferents, cross-activation of afferents, loss of inhibitory mechanisms and phenotypic switching of afferent neurons.^{41,43} These processes may underlie the clinical manifestation of atypical odontalgia.

Treatment of atypical odontalgia is similar to that of other neuropathic conditions. Tricyclic antidepressants (TCAs), alone or in association with phenothiazines, have been prescribed with good results.^{5,20,22,30,31,35,36} Although these are mood-altering medications, their effectiveness is attributed to their ability to produce a low-grade analgesia in low doses.^{9,36} Undesirable side effects require that TCAs be titrated to the lowest clinically effective dose and discontinued if pain symptoms abate.⁴⁵

Topical application of capsaicin to painful tissue has also been investigated as a treatment for atypical odontalgia.^{18,46,47} Pain reduction is achieved because C fibres depleted of substance P have a reduced ability to stimulate second-order neurons that relay pain signals to the central nervous system.⁹

Differential Diagnosis

Differential diagnosis of neuropathic pain conditions is the most challenging aspect of managing referred pain

cases. Pain in the head and neck can be diverse. However, there are characteristics of odontogenic and neuropathic conditions that aid diagnosis (**Table 1**). Furthermore, although there is some overlap in clinical presentation, careful examination of symptoms can differentiate trigeminal neuralgia from atypical odontalgia (**Table 2**).

The fact that neuropathic tooth pain can present exclusively intraorally in the absence of obvious infection or trauma can be confusing to both patients and clinicians.¹⁰ Patients in dental environments are more likely to be considered to have dental pain as opposed to patients referred to a neurologist. This is where patients' perception of their problem can influence treatment and referral considerations.¹⁰ Careful history and clinical and radiologic examination are important. As well, thorough evaluations of the nature of pain, including aggravating and relieving factors and associated symptoms, aid correct diagnosis. Referral to a pain specialist or neurologist should be considered when conflicting reports occur and dental etiology is unlikely.

Conclusion

Neuropathic pain in the head and neck region is common and can result in multiple unnecessary dental treatments. Trigeminal neuralgia and atypical odontalgia are 2 neuropathic conditions that may compromise accurate diagnosis of orofacial pain. It is imperative that general practitioners recognize clinical characteristics of neuropathic pain to deliver appropriate therapy and avoid aggravating the condition. ♦



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References

- Lipton JA, Ship JA, Larach-Robinson D. Estimated prevalence and distribution of reported orofacial pain in the United States. *J Am Dent Assoc* 1993; 124(10):115–21.
- Shankland WE 2nd. Differentiated diagnosis of two disorders that produce common orofacial pain symptoms. *Gen Dent* 2001; 49(2):150–5.
- Gremillion HA. Multidisciplinary diagnosis and management of orofacial pain. *Gen Dent* 2002; 50(2):178–86.
- Dupont JS Jr. Neuritic toothache. *Gen Dent* 2001; 49(2):178–81.
- Lilly JP, Law AS. Atypical odontalgia misdiagnosed as odontogenic pain: a case report and discussion of treatment. *J Endod* 1997; 23(5):337–9.
- Jackson EM, Bussard GM, Hoard MA, Edlich RF. Trigeminal neuralgia: a diagnostic challenge. *Am J Emerg Med* 1999; 17(6):597–600.
- Tenser RB. Trigeminal neuralgia: mechanisms of treatment. *Neurology* 1998; 51(1):17–9.
- Marbach JJ. Medically unexplained chronic orofacial pain. Temporomandibular pain and dysfunction syndrome, orofacial phantom pain, burning mouth syndrome, and trigeminal neuralgia. *Med Clin North Am* 1999; 83(3):691–710.
- Okeson JP. Non-odontogenic toothache. *Northwest Dent* 2000; 79(5):37–44.
- Zakrzewska JM. Diagnosis and differential diagnosis of trigeminal neuralgia. *Clin J Pain* 2002; 18(1):14–21.
- Gass A, Kitchen N, MacManus DG, Moseley IF, Hennerici MC, Miller DH. Trigeminal neuralgia in patients with multiple sclerosis: lesion localization with magnetic resonance imaging. *Neurology* 1997; 49(4):1142–4.
- Burchiel KJ, Slavin KV. On the natural history of trigeminal neuralgia. *Neurosurgery* 2000; 46(1):152–4.
- Barker FG 2nd, Janetta PH, Bissonette DJ, Larkins MV, Jho HD. The long-term outcome of microvascular decompression for trigeminal neuralgia. *N Engl J Med* 1996; 334(7):1077–83.
- Fromm GH. Etiology and pathogenesis of trigeminal neuralgia. In: Fromm GH. Medical and surgical management of trigeminal neuralgia. Mount Kisco (NY): Futura; 1987. p. 31–41.
- Montgomery MT. Extraoral facial pain. *Emerg Med Clin North Am* 2000; 18(3):577–600.
- Backonja M. Anticonvulsants for the treatment of neuropathic pain syndromes. *Curr Pain Headache Rep* 2003; 7(1):39–42.
- Pappagallo M. Aggressive pharmacologic treatment of pain. *Rheum Dis Clin North Am* 1999; 25(1):193–213.
- Epstein JB, Marcoe JH. Topical application of capsaicin for treatment of oral neuropathic pain and trigeminal neuralgia. *Oral Surg Oral Med Oral Pathol* 1994; 77(2):135–40.
- Fusco BM, Alessandri M. Analgesic effect of capsaicin in idiopathic trigeminal neuralgia. *Anesth Analg* 1992; 74(3):375–7.
- Marbach JJ. Phantom tooth pain. *J Endod* 1978; 4(12):362–72.
- McElin TW, Horton DT. Atypical facial pain: a statistical consideration of 65 cases. *Ann Intern Med* 1947; 27:749–53.
- Marbach JJ. Is phantom tooth pain a deafferentation (neuropathic) syndrome? Part I: Evidence derived from pathophysiology and treatment. *Oral Surg Oral Med Oral Pathol* 1993; 75(1):95–105.
- Marbach JJ. Is phantom tooth pain a deafferentation (neuropathic) syndrome? Part II: Psychosocial considerations. *Oral Surg Oral Med Oral Pathol* 1993; 75(2):225–32.
- Rees RT, Harris M. Atypical odontalgia. *Br J Oral and Max Surg* 1979; 16(3):212–8.
- Reik L Jr. Atypical odontalgia: a localized form of atypical facial pain. *Headache* 1984; 24(2):222–4.
- Schnurr RF, Brooke RI. Atypical odontalgia: update and comment on long-term follow-up. *Oral Surg Oral Med Oral Pathol* 1992; 73(4):445–8.
- Marbach JJ. Orofacial phantom pain: theory and phenomenology. *J Am Dent Assoc* 1996; 127(2):221–29.
- Campbell RL, Parks KW, Dodds RN. Chronic facial pain associated with endodontic therapy. *Oral Surg Oral Med Oral Pathol* 1990; 69(3):287–90.
- Marbach JJ, Hulbrock J, Hohn C, Segal AG. Incidence of phantom tooth pain: an atypical facial neuralgia. *Oral Surg Oral Med Oral Pathol* 1982; 53(2):190–3.
- Bates RE Jr, Stewart CM. Atypical odontalgia: phantom tooth pain. *Oral Surg Oral Med Oral Pathol* 1991; 72(4):479–83.
- Battrum DE, Gutmann JL. Phantom tooth pain: a diagnosis of exclusion. *Int Endod J* 1996; 29(3):190–4.
- Kreisberg MK. Atypical odontalgia: differential diagnosis and treatment. *J Am Dent Assoc* 1982; 104(6):852–4.
- Klausner JJ. Epidemiology of chronic facial pain: diagnostic usefulness in patient care. *J Am Dent Assoc* 1994; 125(12):1604–11.
- Graff-Radford SB, Solberg WK. Atypical odontalgia. *J Craniomandib Disord* 1992; 6(4):260–5.
- Marbach JJ, Raphael KG. Phantom tooth pain: a new look at an old dilemma. *Pain Med* 2000; 1(1):68–77.
- Okeson JP. Neuropathic pains. In: Okeson JP, editor. Bell's orofacial pains. 5th ed. Chicago (IL): Quintessence; 1995. p. 403–55.
- Woda A, Pionchon P. Orofacial idiopathic pain: clinical signs, causes and mechanisms. *Rev Neurol Paris* 2001; 157(3):265–83.
- Brooke RI, Merskey H. Is atypical odontalgia a psychological problem? *Oral Surg Oral Med Oral Pathol* 1994; 77(1):2–3.
- Classification and diagnostic criteria for headache disorders, cranial neuralgias and facial pain. Headache Classification Committee of the International Headache Society. *Cephalalgia* 2004; 24(Suppl 1):9–160.
- Hargreaves KM. Case 5. Refractory toothache. *J Endod* 1998; 24(11):699–702.
- Melis M, Lobo SL, Ceneviz C, Zawawi K, Al-Badawi E, Maloney G, and other. Atypical odontalgia: a review of the literature. *Headache* 2003; 43(10):1060–74.
- Hu JW, Woda A, Sessle BJ. Effects of pre-emptive local anesthesia on tooth pulp deafferentation-induced neuroplastic changes in cat trigeminal brainstem neurons. *Arch Oral Biol* 1999; 44(3):287–93.
- Chen R, Cohen LG, Hallett M. Nervous system reorganization following injury. *Neuroscience* 2002; 111(4):761–73.
- Hu JW, Sharav Y, Sessle BJ. Effects of one- or two-stage deafferentation of mandibular and maxillary tooth pulps on the functional properties of trigeminal brainstem neurons. *Brain Res* 1990; 516(2):271–9.
- Lacy CF, Armstrong LL, Goldman MP, Lance LL, editors. Drug information handbook. 7th ed. Hudson (OH): Lexi-Comp; 1999. p. 62–4, 333, 334, 852, 853, 1301.
- Rumsfield JA, West DP. Topical capsaicin in dermatologic and peripheral pain disorders. *DICP* 1991; 25(4):381–7.
- Bernstein JE, Bickers DR, Dahl MV, Roshal JY. Treatment of chronic postherpetic neuralgia with topical capsaicin. A preliminary study. *J Am Acad Derm* 1987; 17(1):93–6.

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2. Harris M, Hardie-Muncy D, *et al.*, Effectiveness of Johnson & Johnson REACH® Clean Burst™ vs. Oral-B® SATIN FLOSS™ in Reducing Plaque, Data on file, Johnson & Johnson Inc., 2003.

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Clinical and Radiographic Features of Chronic Monostotic Fibrous Dysplasia of the Mandible

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A b s t r a c t

Chronic untreated fibrous dysplasia of the mandible in a 40-year-old man is described, with emphasis on the radiographic findings. To the authors' knowledge, this is the first such case to be reported in the literature. Within this mature mandibular lesion, a large radiolucency was noticed, with the appearance of a simple bone cyst. The patient did not have any symptoms directly related to the mandibular lesion. Various aspects of the diagnosis, radiographic appearance and differential diagnosis are discussed. The information presented here will be useful for all dentists, oral and maxillofacial surgeons, physicians and other health care providers in identifying the appearance of chronic fibro-osseous lesions.

MeSH Key Words: diagnosis, differential; fibrous dysplasia of bone; mandibular diseases/diagnosis

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Fibrous dysplasia is a disturbance of bone metabolism that is classified as a benign fibro-osseous lesion. Fibrous connective tissue containing abnormal bone replaces normal bone. The etiology of fibrous dysplasia is unknown. The radiographic appearance of the irregularly shaped trabeculae aids in the differential diagnosis. Occurring most commonly in the second decade of life, the lesions of fibrous dysplasia can be surgically recontoured for esthetic or functional purposes once they become dormant.¹

Case Report

A 40-year-old man was referred for panoramic radiography to the oral and maxillofacial radiology clinic at the New Jersey Dental School in Newark by the emergency clinic in the medical centre at the same institution. The patient, a cab driver, initially complained of pain in his back, neck and shoulder radiating to the jaws. The patient reported that clinically evident expansion of his left mandible (**Fig. 1**) had been present for at least 20 years. The clinical examination revealed that the expansion of the left mandible was diffuse and bony hard. There were no apparent changes in the skin or the intraoral mucosa adjacent to the swelling. When the patient presented to the medical centre earlier, extraoral plain film radiographs had been obtained, including a posteroanterior (PA) view, a lateral oblique view of the left mandible and reverse Towne

views (**Fig. 2**), and these radiographs were available to the radiology clinic through the hospital's Web-based Picture Archiving and Communication System.

However, the existence of the skull films was not known at the time of the patient's presentation to the radiology clinic, and the requested panoramic radiograph was obtained (**Fig. 3**). A high panoramic view (**Fig. 4**) was subsequently obtained to visualize the most superior extent of the lesion, which was not visible on the primary panoramic film (**Fig. 3**). The panoramic projections revealed diffuse enlargement of the left mandible, extending from the left canine area to the condyle and encompassing the inferior border, the alveolar crest, the ramus and the coronoid process. The anterior border of the lesion appeared reasonably well demarcated because of superimposition of the lesion over adjacent normal bone. Radial expansion of the lesion was evident on the panoramic, PA, cephalometric and reverse Towne views, and the lesion obliterated the cortical bone along the inferior border of the mandible. In fact, the inferior border of the mandible was entirely replaced by the lesion. The posterior mandibular teeth on the affected side were displaced superiorly, and the lesion had evidently altered occlusion. Although the head of the condyle appeared to have relatively normal morphology, the neck of the condyle and the coronoid process were entirely involved by the lesion.

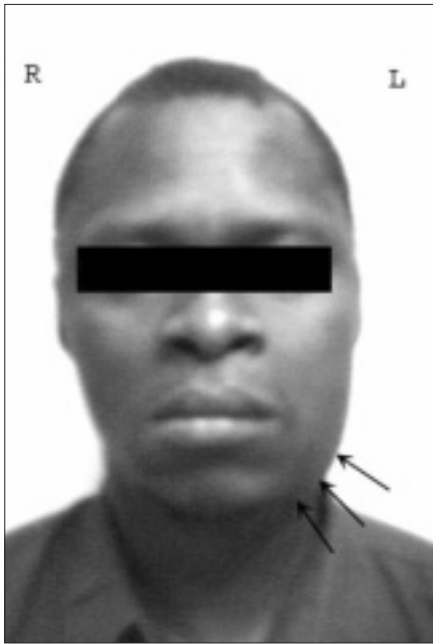


Figure 1: Photograph of the patient at the time of presentation. Arrows indicate the swelling of the left mandible.



Figure 2: Reverse Towne view demonstrating the extent of the lesion in the buccolingual and inferio-superior dimensions.



Figure 3: Panoramic view showing the anteroposterior and inferior extent of the lesion. The superiormost extent of the lesion is not visible.

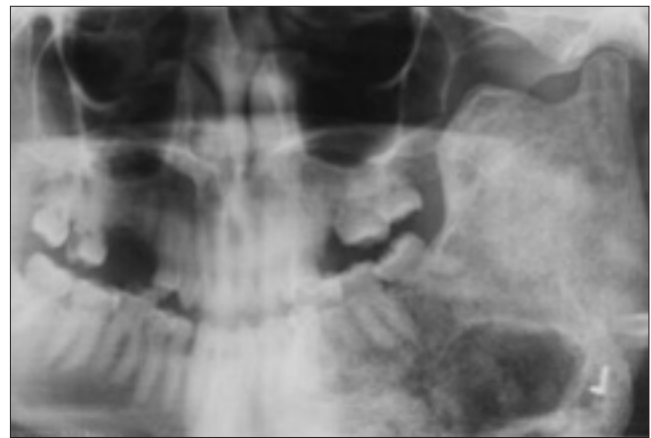


Figure 4: High panoramic view capturing the remodeled neck of the condyle and the coronoid processes of the mandible.

Internally, the bulk of the lesion had a mixed radiopaque–radiolucent texture with an altered trabecular pattern. In the centre of the lesion, there was a diffuse radiolucent area about 3 cm x 3 cm surrounded by a hyperostotic rim. This area appeared less ossified than the surrounding areas of the lesion.

The patient was eventually referred to the oral and maxillofacial surgery department at the university hospital for management, where the attending surgeon prescribed a computed tomography (CT) examination. The axial CT images confirmed the unilocular radiolucency within the bony lesion located posteroinferiorly within the body of the mandible. With the bone window setting, the lesion

appeared roughly round with regular borders and no ossified contents. The majority of the central core had a density consistent with soft tissue (**Fig. 5**). Coronal CT confirmed expansion of the ramus in the mediolateral plane (**Fig. 6**). The bone morphology of the functional portion of the head of the condyle appeared relatively unaltered. Although biopsy was contemplated, the patient refused any further investigative procedures or treatment for the mandibular lesion. He requested treatment for his presenting complaint only, which was unrelated to the mandibular lesion.

Because the patient's initial complaint was the radiating pains from his back and shoulder to the jaws, he was treated symptomatically for his musculoskeletal condition of

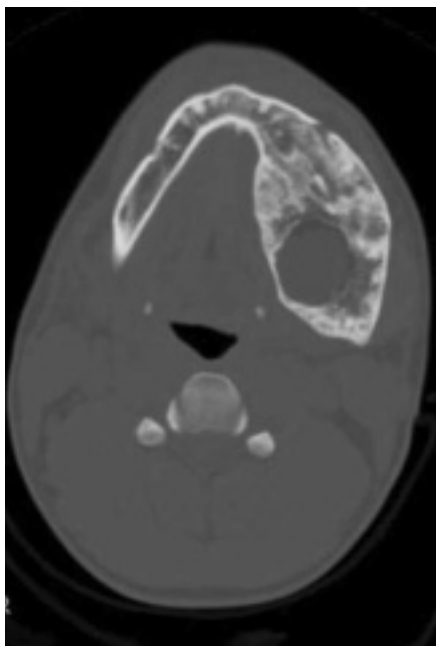


Figure 5: Axial computed tomography view of the mandible (bone window setting). The centre of the lesion is radiolucent.



Figure 6: Coronal computed tomography view of the mandible (bone window setting) demonstrating the unaffected right mandible as well as the affected left mandible.

postural origin, possibly related to his occupation as a taxi driver. He was discharged with an appointment for follow-up regarding his musculoskeletal problem.

Discussion

Fibrous dysplasia is a developmental anomaly in which normal bone is replaced with fibrous connective tissue. As the lesion matures, the fibrous connective tissue is replaced with irregularly patterned trabecular bone.¹ Fibrous dysplasia is a localized abnormality, which can involve one (monostotic) or multiple (polyostotic) bones. A recent study described various forms of fibrous dysplasia occurring within a Hong Kong population.² The forms were distributed as follows: 74% monostotic, 13% polyostotic and 13% craniofacial.² The monostotic form generally occurs during the second decade of life and becomes dormant by the third decade. Hormonal changes, such as those seen in pregnancy, can reactivate a dormant lesion.² The craniofacial form of fibrous dysplasia can be diffuse and may involve multiple bones. When the anatomic spaces and foramina are constricted because of encroachment of the lesions, the patient may experience a variety of symptoms, including headaches, loss of vision, proptosis, diplopia, loss of hearing, anosmia, nasal obstruction, epistaxis, epiphora and symptoms mimicking sinusitis.³

With initial development of fibrous dysplasia the patient usually reports facial swellings and asymmetries. Although the lesion is usually asymptomatic, encroachment on canals and foramina, as well as limitations of movement, may engender complaints of pain and discomfort. In general, males and females are thought to be affected evenly,

although recent research has shown a slight female preponderance.² However, McCune-Albright syndrome, a form of polyostotic fibrous dysplasia associated with café-au-lait pigmentation and multiple endocrinopathies such as precocious puberty, pituitary adenoma or hyperthyroidism, almost always affects females.¹

The lesions of fibrous dysplasia are twice as common in the maxilla as the mandible, and the posterior aspects of the jaw are more frequently affected than the anterior. Treatment usually involves bony recontouring at the affected site to improve esthetics and function. Recurrence is rare in adults, but the lesions can show surprising growth potential if they are surgically altered during their active growth phase.¹ Other lesions to be considered in the differential diagnosis include inflammatory lesions, fibro-osseous lesions, and benign and malignant neoplasms.⁴

In a systematic review of previous studies of fibrous dysplasia, McDonald-Jankowski² determined that a greater proportion of females than males were affected and that the maxilla is the most common facial bone affected.² The most common presenting complaints were swelling in 94% of reported cases and pain in 15%.²

The case described here is unusual because the patient reported that the lesion had been present, without surgical intervention, for more than 20 years. In addition, the radiographic appearance of the internal architecture of the lesion was not consistent with the common descriptions of fibrous dysplasia, which typically refer to a salt-and-pepper, orange peel, ground glass or thumb print appearance.¹ The trabecular pattern appeared irregular and thickened, with no discernible orientation. Radiolucent lesions resembling

cysts occasionally occur in mature lesions of fibrous dysplasia.⁵ These bone cavities are analogous to simple bone cysts.¹ Such a bone cavity was present in this case.

In McDonald-Jankowski's study, the most common radiographic presentation of fibrous dysplasia was a poorly defined, ovoid (fusiform) area of dysplastic bone exhibiting a ground glass appearance.² In fibrous dysplasia of the mandible, the mandibular canal may be displaced either inferiorly or superiorly. Petrikowski and others⁶ suggested that upward displacement of the mandibular canal may be unique to fibrous dysplasia and could be pathognomonic. In the case presented here, the mandibular canal appeared to have been repositioned inferiorly. Although the borders of fibrous dysplasia are known to be ill-defined,¹ they can appear well defined in panoramic and plain skull films (as in this case) if the border of the expansile portion of the lesion is superimposed over the mandible (**Fig. 5**). Loss of lamina dura due to replacement of normal bone may be one of the diagnostic signs of fibrous dysplasia.⁶ In chronic cases, the lesion tends to become increasingly more radiopaque.

The literature suggests that fibrous dysplasia in women can be reactivated during pregnancy.⁷⁻¹⁰ This association is more commonly seen with the polyostotic form. Cystic lesions resembling aneurysmal bone cysts have been noted in association with the monostotic form.¹¹

Panoramic, reverse Towne, PA and lateral skull views are often adequate to visualize lesions in the mandible. It is desirable to have at least 2 images, exposed at right angles, to assess the extent of the lesion in all dimensions. Because of the complexity of the anatomy, CT is helpful for assessing lesions in the maxilla.^{2,3,12}

Differential diagnosis of the initial radiolucent stage must include the following: central ossifying fibroma (COF), central giant cell granuloma (CGCG), aneurysmal bone cyst, osteomyelitis and early fibro-osseous lesions.¹³ Because these lesions represent a variety of disease processes with different behaviours, including infection and endocrine dysfunction, prompt diagnosis incorporating clinical, radiographic and, occasionally, histologic findings, is essential.

COF is a benign neoplasm that commonly has a radiographic and histological appearance similar to that of fibrous dysplasia.¹⁴ Tissue sections of COF show a cellular or sclerotic fibrous connective tissue stroma containing numerous osseous trabeculae of various sizes associated with prominent osteoblasts.¹⁵ A mixture of lamellar and woven bone is typically seen. Often, there are also scattered ovoid calcifications that resemble cementum. In contrast to fibrous dysplasia, a well-defined capsule occasionally surrounds the lesion. Radiographically, a well-defined margin is consistent with COF, whereas the margins of fibrous dysplasia tend to merge with the surrounding normal bone. On occasion, a sclerotic border, absent from fibrous dysplasia, is also seen in COF. COF occurs mostly in the third and fourth decades of life, whereas fibrous dysplasia is most often discovered in the second decade. COF is more common in the mandible, tends to occur in anterior regions and is smaller in size,

whereas fibrous dysplasia is more common in the posterior maxilla, and the lesions tend to be larger. Both lesions tend to expand the bone cortex.⁹

Differentiation of these 2 lesions is critical because the treatment protocols are quite different. COF, although benign, must be enucleated due to its potential to recur. Fibrous dysplasia is generally self-limiting and does not require treatment except for cosmetic reasons, pain, discomfort or impaired function.² If undertaken, the treatment, consisting of recontouring or resection, should be postponed until after cessation of skeletal growth, since early treatment may accelerate growth of the lesion.

Early-stage fibrous dysplasia should also be differentiated from CGCG, which more commonly appears in the anterior mandible, results in generally painless expansion of bone and appears radiographically as unilocular or multilocular radiolucent defects with well-delineated, noncorticated margins.⁹

Fibrous dysplasia may also mimic Paget's disease of bone on clinical examination, particularly if a patient with fibrous dysplasia does not present until later in life. In addition to the predilection of Paget's disease for an older population, certain radiographic and clinical features help to distinguish this lesion from other radiographically similar lesions. These features include thickening of the cortices, cotton wool appearance of the involved bone and increased blood levels of alkaline phosphatase.¹ The most useful clinical feature for distinguishing Paget's disease from fibrous dysplasia is that the former tends to occur bilaterally in the jaws, whereas the latter affects only one side. Histologically, Paget's disease exhibits many osseous trabeculae with prominent reversal lines showing simultaneous osteoblastic and osteoclastic activity.¹⁰ The affected bone resides within a well-vascularized fibrous connective tissue stroma.

Although osteomyelitis demonstrates sequestra in the later stages, it may resemble fibrous dysplasia in the early stages, especially if there is associated swelling. Usually, inflammatory signs and the presence of draining sinus tracts are indicative of osteomyelitis. Periosteal new bone, manifesting as one or more laminations occurring parallel to the outline of the jaw, often occurs in osteomyelitis affecting young patients and is a useful indicator of the condition. Osteomyelitis may occur secondary to odontogenic infections of pulpal origin, although hematogenous spread from distant sites has also been reported. Once the offending tooth has been treated, the lesion often resolves spontaneously.⁹ Chronic osteomyelitis superimposed on fibrous dysplasia can mimic a malignant lesion even when advanced imaging studies like magnetic resonance imaging (MRI) are utilized. Chang and others⁴ described a 6-year-old girl who presented with local pain over the right chin after severe trauma. The lesion was originally diagnosed as chronic osteomyelitis, but after failure of antibiotic treatment, a malignant bone tumour was suspected on the basis of imaging studies including MRI. Fibrous dysplasia of the mandible in association with chronic osteomyelitis was confirmed in this case by repeat biopsy one year after initial onset. Reasons for the delay in diagnosis in

this case might have included the similar clinical and radiographic characteristics of fibrous dysplasia of the mandible and chronic osteomyelitis; also, the initial biopsy was not performed at the appropriate site.⁴

Diffuse sclerosing osteomyelitis (DSO) is a sequela of chronic jaw infection and inflammation. It presents radiographically as an ill-defined radiopacity, often encompassing large areas of bone, which may exhibit small radiolucent zones.¹⁶ The affected bone does not show expansion unless the infection involves the cortical plate, which may induce a periosteal reaction. Histologically, DSO demonstrates sclerotic bone showing alternating areas of apposition and resorption. Between the bone trabeculae lies fibrous connective tissue infiltrated by chronic inflammatory cells. Fibrous dysplasia can often be differentiated from osteosarcoma on the basis of radiographic appearance.⁶ The radiographic features of osteosarcoma are orthoradial striations, destruction of cortices with an outgrowth of the soft-tissue component, generalized widening of the periodontal ligament spaces and destruction of the lamina dura. Histopathologic examination of the bone is indicated in all cases where DSO or osteosarcoma is suspected.

Although there was no compelling indication to seek a biopsy in the case described here, any sudden change in the clinical presentation or behaviour of the lesion might warrant further investigation. ♦



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References

1. White SC, Pharoah MJ. Oral radiology. Principles and interpretation. 5th ed. St. Louis (MO): Mosby Inc; 2004. p. 485–515.
2. McDonald-Jankowski D. Fibrous dysplasia in the jaws of a Hong-Kong population: radiographic presentation and systematic review. *Dentomaxillofac Radiol* 1999; 28(4):195–202.
3. Barat M, Rybak LP, Mann JL. Fibrous dysplasia masquerading as chronic maxillary sinusitis. *Ear Nose Throat J* 1989; 68(1):44–6.
4. Chang CY, Wu KG, Tiu CM, Hwang B. Fibrous dysplasia of mandible with chronic osteomyelitis in a child: report of one case. *Acta Paediatr Taiwan* 2002; 43(6): 354–7.
5. Langlais RP, Langland OE, Nortje CJ. Diagnostic imaging of the jaws. Baltimore (MD): Williams & Wilkins; 1995. p. 583–8.
6. Petrikowski CG, Pharoah MJ, Lee L, Grace M. Radiographic differentiation of osteogenic sarcoma, osteomyelitis and fibrous dysplasia of the jaws. *Oral Surg Oral Med Oral Pathol Oral Radio Endod* 1995; 80(6):744–50.
7. Henry A. Monostotic fibrous dysplasia. *J Bone Joint Surg* 1969; 51(2):300–6.
8. Gallagher PJ. Osteo articular connective tissue disease. In: Underwood JC, editor. General and systemic pathology. 2nd ed. Edinburgh: Churchill Livingstone; 1996. p. 797.
9. Neville B, Damm D, Allen C, Bouquot J. Oral and maxillofacial pathology. 2nd ed. Philadelphia (PA): Saunders; 2002. p. 553–6.
10. Ankrom MA, Shapiro JR. Paget's disease of bone (osteitis deformans). *J Am Geriatr Soc* 1998; 46(8):1025–33.
11. Mintz MC, Dalinka MK, Schmidt R. Aneurysmal bone cyst arising in fibrous dysplasia during pregnancy. *Radiology* 1987; 165(2):549–50.
12. Mendelsohn DB, Hertzanu Y, Cohen M, Lello G. Computed tomography of craniofacial fibrous dysplasia. *J Comput Assist Tomogr* 1984; 8(6):1062–5.
13. Revel MP, Vanel D, Sigal R, Luboini B, Michel G, Legrand I, Masselot J. Aneurysmal bone cysts of the jaws: CT and MR findings. *J Comput Assist Tomogr* 1992; 16(1):84–6.
14. Lerda W, Magnano M, Ferraris R, Gerri F, Motta M, Bongioannini G. Differential diagnosis in fibro-osseous lesions of facial bones: report of a case of ossifying fibroma and review of literature. *Acta Otorhinolaryngol Ital* 2002; 22(5):295–300.
15. Slootweg PJ. Maxillofacial fibro-osseous lesions: classification and differential diagnosis. *Semin Diagn Pathol* 1996; 13(2):104–12.
16. Groot RH, van Merkesteyn JP, Bras J. Diffuse sclerosing osteomyelitis and florid osseous dysplasia. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 1996; 81(3):333–42.



*Has been shown to cause patients to brush longer.^{†‡}

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[†] In a 2-week, blinded, paired comparison, US consumer use study of adults interested in new flavors and brushing experiences beyond regular mint toothpaste, patients brushed almost 9 seconds (about 8%) longer with Crest Whitening Expressions than with their current mint toothpaste, according to a weighted average of all Whitening Expressions variants.

[‡] Crest Whitening Expressions fights cavities.

Reference: 1. Data on file, Procter & Gamble.

Clinical Abstracts

The Clinical Abstracts section of JCDCA features abstracts and summaries from peer-reviewed dental publications. It attempts to make readers aware of recent literature that may be of interest to oral health care workers. It is not intended to provide a systematic review of the topic. This month's selection provides an update on management of furcation defects. The articles were chosen by Dr. Ignacio Christian Marquez, assistant professor in the division of periodontics, faculty of dentistry, Dalhousie University, Halifax, Nova Scotia.

Commentary

Periodontal Regeneration in Furcation Defects — Overview of Randomized Control Trials

Ignacio Christian Marquez, DDS, MSc

All health care disciplines rely on research to advance the understanding of disease processes and validate new approaches to treatment. New therapies can be reported in the literature in different ways, including case reports and case series. While cases often provide preliminary evidence for a new approach to treatment, the most highly regarded clinical research is a randomized control trial (RCT). An RCT requires the random assignment of patients to a treatment group and a control group, and allows blinding of both the patients and the examiners to prevent identification of the 2 groups.

The studies selected for review this month are all RCTs. The articles relate to the management of furcation lesions, a frequent finding in clinical practice. The furcation is the area of a multirooted tooth where the roots diverge. When teeth have normal periodontal support, furcations are generally closed and have an intact periodontal attachment, such that a periodontal instrument cannot be inserted into the furcations. In patients with periodontal disease, the furcations may become exposed as the disease progresses. Furcation involvement can jeopardize tooth retention because these areas are difficult for the patient to clean. In the past, treatment of furcation-involved teeth relied primarily on odontoplasty or, if the furcation involvement was severe, root resection or amputation.

In 1976 researchers theorized that the type of tissue which predominates in the healing wound after periodontal surgery determines whether the response is repair or regeneration.¹ One of the first scientifically based approaches to periodontal regeneration involved positioning a membrane apical to the repositioned mucoperiosteal flap.^{2,3} Membrane placement is intended to prevent down-growth of epithelium and promote repopulation of the

defect with cells from the connective tissue. Under ideal conditions, the entire periodontal complex (alveolar bone, periodontal ligament and cementum) would be regenerated. This is known as guided tissue regeneration (GTR). A variety of different nonresorbable^{4,5} and resorbable membranes^{6,7} have been studied for their ability to promote regeneration. Today regenerative techniques are part of the treatment options for intrabony defects and furcation involvements; successful outcomes are predicated on the proper evaluation of each individual site.

Predictable, complete closure of furcation defects is still not routinely achievable. A number of regenerative procedures have yielded favourable clinical outcomes, and some evidence suggests that the results obtained with GTR techniques are improved when the technique is combined with bone grafts and other materials placed in the defects. ♦

References

1. Melcher AH. On the repair potential of periodontal tissues. *J Periodontol* 1976; 47(5):256–60.
2. Gottlow J, Nyman S, Lindhe J, Karring T, Wennstrom J. New attachment formation in the human periodontium by guided tissue regeneration. Case reports. *J Clin Periodontol* 1986; 13(6):604–16.
3. Nyman S, Gottlow J, Karring T, Lindhe J. The regenerative potential of the periodontal ligament. An experimental study in the monkey. *J Clin Periodontol* 1982; 9(3):257–65.
4. Cortellini P, Pini Prato G, Tonetti MS. Periodontal regeneration of human infrabony defects. I. Clinical measures. *J Periodontol* 1993; 64(4):254–60.
5. Cortellini P, Pini Prato G, Tonetti MS. Periodontal regeneration of human infrabony defects. II. Re-entry procedures and bone measures. *J Periodontol* 1993; 64(4):261–8.
6. Minabe M. A critical review of the biologic rationale for guided tissue regeneration. *J Periodontol* 1991; 62(3):171–9.
7. Garrett S. Periodontal regeneration around natural teeth. *Ann Periodontol* 1996; 1(1):621–66.

1 What is the long-term impact of resorbable membranes?

Cury PR, Sallum EA, Nociti FH, Sallum AW, Jeffcoat MK. Long-term results of guided tissue regeneration in the treatment of Class II furcation defects: a randomized clinical trial. *J Periodontol* 2003; 74(1):3–9.

Background

Predictable long-term closure of furcation defects is still not routinely achievable. This study evaluated the stability of Class II furcations treated by GTR with a resorbable membrane over a 24-month period.

Methods

Nine patients with 2 comparable bilateral Class II furcation defects were randomly assigned to either a test group (treatment by GTR) or a control group (treatment by open flap debridement [OFD]). All of the patients received systemic antibiotics for 2 weeks and chlorhexidine rinses for 8 weeks. Clinical measurements and bitewing radiographs were taken at baseline and at 6, 12, 18 and 24 months after surgery. Subtraction radiography was used to measure the change of bone height.

Results

Significant improvements were observed for both GTR and OFD groups compared with pretreatment conditions. Inter-group comparisons showed no differences in probing depth reductions or vertical attachment level gain. The GTR group demonstrated greater improvement in horizontal attachment level gain than the OFD group ($p < 0.03$). Radiographic analysis showed a significant improvement in horizontal bone height in the GTR group over the 24-month period (bone height for the OFD group was stable over the 24 months).

Clinical Significance

Evidence from this study suggests that GTR may improve clinical attachment level and stability of the outcomes over time, as well as increase the possibility of complete closure of some defects. ♦

2 What is the long-term stability after GTR surgery using either nonresorbable or resorbable membranes?

Eickholz P, Kim TS, Holle R, Hausmann E. Long-term results of guided tissue regeneration therapy with non-resorbable and bioabsorbable barriers. I. Class II furcations. *J Periodontol* 2001; 72(1):35–42.

Background

GTR using membrane barriers is a reconstructive alternative for a variety of periodontal defects. This 5-year follow-up study compared the use of nonresorbable and resorbable barriers with Class II furcation defects.

Methods

Nine patients with pairs of contralateral Class II furcation defects were treated. Treatment was randomly assigned, with one defect receiving a nonresorbable barrier (control: expanded polytetrafluoroethylene [ePTFE]) and the other receiving a resorbable barrier (test: polyglactin 910). Clinical parameters and standardized radiographs were obtained at baseline, 6, and 60 ± 3 months after surgery. Subtraction radiography was used to assess gain of bone density within furcation areas.

Results

Statistically significant ($p < 0.05$) horizontal attachment gain was seen 6 and 60 months after GTR therapy for both

the control group (6 months: 1.7 ± 0.8 mm; 60 months: 1.6 ± 1.2 mm) and the test group (6 months: 2.0 ± 0.7 mm; 60 months: 2.2 ± 0.9 mm). However, 5 years after surgery, 1 furcation treated by GTR therapy with a resorbable barrier and assessed as Class I at 6 months had progressed to Class III, and another furcation treated with an ePTFE barrier had lost all the horizontal attachment level gain observed at 6 months. Both groups showed similar area gain at 6 and 60 months after surgery.

Clinical Significance

After 5 years, horizontal attachment gain was stable in 16 of 18 defects. Patient characteristics like smoking, compliance with oral hygiene regimens, genetics and diabetes, as well as site-specific factors, seem to influence stability of attachment gains. ♦

3

What is the effect of intensive antimicrobial therapy in smokers undergoing regenerative periodontal surgery?

Machtei EE, Oettinger-Barak O, Peled M. Guided tissue regeneration in smokers: effect of aggressive anti-infective therapy in Class II furcation defects. *J Periodontol* 2003; 74(5):579–84.

Background

Smokers present a reduced regenerative response to GTR. This study evaluated a new protocol with an emphasis on anti-infective therapy for cigarette smokers who require GTR procedures.

Methods

Thirty-eight adult smokers with chronic periodontitis were randomly assigned to either an experimental group (EG) or a control group (CG). Baseline clinical periodontal parameters were recorded. Furcations were treated by GTR. A membrane was placed and a 25% metronidazole gel was applied over the outer surface of the membrane (EG only) and the flaps repositioned. After surgery, patients were instructed to rinse twice daily with chlorhexidine gluconate 0.2% for 1 week (CG) or as long as the membrane was in place (EG), and to take doxycycline 100 mg × 1/day for 1 week (CG) or 6 to 8 weeks (EG), and ibuprofen 3 × 400 mg/day for 7 days. Initially, prophylaxis visits were scheduled weekly (EG) or biweekly (CG). At the EG visits, metronidazole was applied to the free gingival margins and/or over the exposed membrane. Once the

membrane was removed (6 to 8 weeks after surgery), the amount of new tissue growth (NTG) was recorded. Patients were seen for prophylaxis and oral hygiene reinforcement every month (EG) or quarterly (CG). Surgical re-entry measurements were recorded at 12 months.

Results

One year after surgery, there was no statistically significant difference in probing depth reduction or in horizontal probing attachment level between the 2 groups, but vertical probing attachment level gain was significantly greater in the EG. When comparing NTG at retrieval and eventual bone formation 1 year after surgery, there was a smaller change in the EG as compared to the CG, which was statistically significant for the distal and mid-tooth area, as well as for the tooth mean.

Clinical Significance

The anti-infective protocol and GTR resulted in a more favourable outcome than GTR alone. The authors recommend incorporating anti-infective therapy to GTR in smokers. ♦

4

What is the impact of a composite graft in combination with a resorbable membrane?

Setya AB, Bissada NF. Clinical evaluation of the use of calcium sulfate in regenerative periodontal surgery for the treatment of Class III furcation involvement. *Periodontal Clin Investig* 1999; 21(2):5–14.

Background

Factors influencing the outcome of regenerative therapy in furcation defects are not completely understood. This study evaluated the clinical effectiveness of a composite graft as a treatment alternative of such defects.

Methods

Twenty-four Class III furcation lesions in 7 patients were randomly assigned either to an experimental group treated with a composite graft (demineralized freeze-dried bone and doxycycline hyclate in combination with a resorbable calcium sulfate membrane) in the furcation area covered by the barrier buccally and lingually, or to a control group treated by surgical debridement only. Clinical periodontal parameters were recorded at baseline. Linear and volumetric

measurements of the defects were taken during surgery. Surgical re-entry measurements were recorded at 12 months.

Results

There was significant gain in clinical attachment ($p < 0.05$) for the experimental group, but not for the control group. The control group showed greater ($p < 0.05$) gingival recession. Vertical defect fill and volumetric fill were significantly greater ($p < 0.05$) in the experimental group.

Clinical Significance

The combined composite graft and resorbable membrane may have a more favourable effect than debridement alone on the treatment of furcation lesions. ♦

5 Does combining different regenerative periodontal modalities provide better clinical results?

Lekovic V, Camargo PM, Weinlaender M, Vasilic N, Aleksic Z, Kenney EB. Effectiveness of a combination of platelet-rich plasma, bovine porous bone mineral and guided tissue regeneration in the treatment of mandibular grade II molar furcations in humans. *J Clin Periodontol* 2003; 30(8):746–51.

Background

Some evidence suggests that combining different periodontal regenerative procedures may yield better results in the treatment of intrabony defects. This study evaluated the use of platelet-rich plasma (PRP), bovine porous bone mineral (BPBM) and guided tissue regeneration (GTR) as a combination therapy for furcation defects.

Methods

This study used a split-mouth design. Fifty-two grade II furcation defects in mandibular molars were treated either with PRP/BPBM/GTR (experimental group, $n = 26$) or with an open flap debridement (control group, $n = 26$). Outcomes were recorded for probing depth, clinical attachment level, and horizontal and vertical bone levels at baseline and 6 months re-entry surgery.

Results

The group treated with the combination therapy showed significantly greater probing depth reduction (4.07 ± 0.33 mm) than the control group (2.49 ± 0.38 mm); similar observations were made for gain in clinical attachment (3.29 ± 0.42 mm versus 1.68 ± 0.31 mm) and defect fill (vertical: 2.56 ± 0.36 mm versus -0.19 ± 0.2 mm; horizontal: 2.28 ± 0.33 mm versus 0.08 ± 0.02 mm).

Clinical Significance

The results of this study indicate that the PRP/BPBM/GTR combined therapy represents an effective modality in the regenerative treatment of furcations. ♦

6 Are the clinical outcomes better when human platelet growth factor is combined with allogenic bone?

Nevins M, Camelo M, Nevins ML, Schenk RK, Lynch SE. Periodontal regeneration in humans using recombinant human platelet-derived growth factor-BB (rhPDGF-BB) and allogenic bone. *J Periodontol* 2003; 74(9):1282–92.

Background

The use of tissue growth factors with other regenerative alternatives may constitute a valid treatment approach. This study tested the regenerative potential of recombinant human platelet-derived growth factor-BB (rhPDGF-BB) incorporated in bone allograft in Class II furcation lesions.

Methods

A total of 15 Class II defects in 9 patients with advanced chronic periodontitis were treated. Eleven furcation defects were randomly selected to receive rhPDGF-BB. After surgical flap placement and root conditioning, these furcation defects were filled with demineralized freeze-dried bone allograft saturated with rhPDGF-BB. The remaining 4 interproximal defects were treated with a commercially available graft (anorganic bovine bone in collagen) and a bilayer collagen membrane. Clinical and radiographic para-

meters were recorded at baseline and 9 months after surgery. The histological specimens were evaluated for periodontal regeneration.

Results

For the defects treated with rhPDGF-BB/allograft, there was a mean horizontal probing depth reduction of 3.40 ± 0.55 mm ($p < 0.001$) and a vertical probing depth reduction of 4.00 ± 1.58 mm ($p < 0.005$). Clinical attachment gain was 3.2 ± 2.17 mm ($p < 0.030$). All furcation defects treated with rhPDGF-BB exhibited periodontal regeneration.

Clinical Significance

The authors suggest that use of purified rhPDGF-BB mixed with bone allograft may result in periodontal regeneration in both Class II furcations and interproximal intrabony defects. ♦

Point of Care

The Point of Care section of JCDA 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. Readers are encouraged to do more reading on the topics covered. This month's responses were provided by David R. Farkouh, BSc(Hons), DMD, MSc(Paedo). If you would like to submit or answer a question, contact editor-in-chief Dr. John O'Keefe at jokeefe@cda-adc.ca.

Question 1 How should I safely position young children in the dental chair during oral examinations and treatment?

Proper positioning of the pediatric patient in the dental operatory is fundamental to providing safe, controlled and efficient examination and treatment, while preventing injury to the child, dentist, dental assistant and parent.

The parent can assist with the clinical examination of an infant or toddler. In a "pillow exam" the parent and the dentist sit facing each other in a knee-to-knee position. The child is positioned in the parent's lap with his or her head resting on a pillow placed on the dentist's lap.¹ This position affords optimal visualization of the child's oral cavity for both the dentist and the parent, while allowing the parent to gently restrain the child if required (Fig. 1).

The pillow exam is impractical for school-aged children, but positioning children of this age in an adult-sized dental chair can also present challenges. In both the upright and unadjusted supine positions the child's head is positioned well below the level of the chair's headrest, leaving the dentist with a less than ideal position to examine or treat the patient (Figs. 2a and 2b). By simply repositioning the supine child such that the head is on the headrest, the dentist has an ideal vantage point for optimal visualization of the oral cavity and for proper head stabilization (Fig. 3).

Given the sometimes unpredictable nature of a child's behaviour in the dental setting, head stabilization is also essential to safe dental examination and treatment. The child's head can be stabilized by positioning it between the dentist's forearm and lateral chest and applying light pressure, while stabilizing the mandible with the nondominant hand (Fig. 4). Proper head stabilization must be maintained throughout the dental appointment but is especially important during the administration of local anesthetic and use of a high-speed handpiece.

Although head stabilization alone is all that is needed for most children, stabilization of the legs and hands is also required in some cases. This can be accomplished by having the parent sit sideways in the dental chair with the child's legs resting over the parent's lap (Fig. 5). The parent can then stabilize the child's legs while the dentist stabilizes the head. The patient's hands can be stabilized by either the dental assistant or the parent if required. ♦

Reference

1. Goeperd S. Examination of the infant and toddler. In: Pinkham JR, editor. Pediatric dentistry: infancy through adolescence. 2nd ed. Philadelphia: W.B. Saunders Co.; 1994. p. 181-90.



Figure 1: The proper positioning of infant, parent and dentist for an oral examination of the infant. The parent holds the child, and a pillow is used to support the child's head.



Figure 2a: Child sitting in the upright position in an adult-sized dental chair. The child's head is resting well below the level of the headrest.



Figure 2b: Child sitting in the supine position in an adult-sized dental chair.



Figure 3: Child positioned appropriately in an adult-sized dental chair. This position allows this dentist to adequately stabilize the head while improving his visualization of the oral cavity.

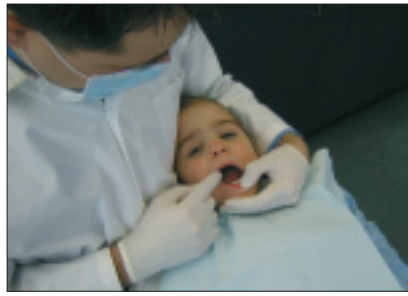


Figure 4: Proper head stabilization for provision of dental care for children.



Figure 5: Child in the supine position. Appropriate head stabilization is provided by the dentist, while leg stabilization is provided by the parent sitting laterally in the dental chair with the child.

Question 2

How should I treat a traumatized, discoloured maxillary primary incisor?

The maxillary incisors sustain 90% of all traumatic dental injuries.¹ Borum and Andreasen² investigated 545 traumatized primary maxillary incisors from the time of the trauma to the age of 10 years. Fifty-two percent of the traumatized teeth exhibited colour changes. These authors described 3 types of tooth discolouration: transient grey discolouration, permanent grey discolouration and yellow discolouration.

In most of the maxillary incisors with transient grey discolouration the pulp canal was obliterated; less than 4% developed pulpal necrosis. In contrast, 66% of the permanently grey primary incisors developed pulpal necrosis. These findings support the belief that grey discolouration is due to pulpal bleeding produced by the trauma (**Fig. 1**). If the pulp remains vital, deposited blood pigments can be resorbed, whereas if pulpal necrosis occurs the pigment cannot be resorbed. Borum and Andreasen² reported that 34% of the permanently grey discoloured primary maxillary incisors never progressed to pulpal necrosis.

Yellow discolouration of a traumatized maxillary incisor is closely related to obliteration of the pulp canal (in 81% of cases) through progressive deposition of dentin along the root canal walls. Less than 2% of affected incisors developed pulpal necrosis.²

Borum and Andreasen² concluded that colour change of the traumatized incisor alone is not a reliable predictor of pulpal status.

A maxillary occlusal or periapical radiograph is essential to determine the pulpal status of a discoloured traumatized incisor. If colour change is the only abnormality detected in a complete oral and radiographic examination, then regular clinical and radiographic follow-up of the traumatized incisor is recommended to ensure that the pulp of the incisor has not become necrotic. Maxillary occlusal radiog-

raphy is recommended at 1-, 2- and 6-month reassessment visits after dental trauma.³ Annual radiographic examination of the traumatized tooth is advisable until the tooth exfoliates. If esthetic appearance is a concern, then a shade-matched composite resin restoration can be placed to cover the buccal surface of the discoloured incisor.

Treatment of the discoloured traumatized incisor is indicated if any of the following additional signs and symptoms of pulpal necrosis are present³:

- excessive mobility
- radiolucency
- pain
- draining fistula
- swelling.

Controversy exists over the most appropriate treatment of primary anterior teeth with pulpal necrosis. Some clinicians may treat these teeth with a primary incisor root canal using a resorbable paste filling such as nonfortified zinc oxide eugenol and a composite resin strip crown. Others may extract these teeth because of the potential for damage to the developing permanent incisor and spread of infection



Figure 1: Photograph of 2 grey discoloured maxillary primary central incisors following traumatic injury to the teeth.

to surrounding tissues. Root canal treatment is contraindicated in primary teeth with extensive loss of root structure, advanced internal or external resorption, or periapical infection involving the crypt of the adjacent permanent incisor.⁴ In situations in which root canal therapy is contraindicated, the treatment of choice is extraction of the incisor.³ ♦

References

1. Kenny DJ, Barrett EJ. Recent developments in dental traumatology.

Pediatr Dent 2001; 23(6):464–8.

2. Borum MK, Andreasen JO. Sequelae of trauma to primary maxillary. 1. Complications in the primary dentition. *Endod Dent Traumatol* 1998; 14(1):31–44.

3. McTigue DJ. Introduction to dental trauma: managing traumatic injuries in the primary dentition. In: Pinkham JR, editor. *Pediatric dentistry: infancy through adolescence*. 2nd ed. Philadelphia: W.B. Saunders Co.; 1994. p. 209–22.

4. Reference manual 2002-03. American Academy of Pediatric Dentistry. *Pediatr Dent* 2002; 24(7 Suppl):87.

Question 3 How should I treat hypoplastic permanent first molars?

Hypoplastic and hypomineralized first permanent molars are frequently observed in children. Researchers have found that 18–19% of 7- to 13-year-olds have at least one hypoplastic first permanent molar.^{1,2} The causes of such enamel defects are often not evident from a thorough clinical examination or the medical and dental history. A number of factors have been associated with enamel hypoplasia of the first permanent molars (**Table 1**).³

Calcification of the first permanent molar begins at birth, and the crown is completely formed between 2.5 and 3 years of age.³ Any local, system or genetic disruption (**Table 1**) occurring during this developmental period has the potential to cause enamel hypoplasia of the first permanent molars.

Because the size, shape and location of enamel defects can vary greatly, in many cases it is impossible to restore the tooth with conventional cavity preparations (**Fig. 1a**).³ In addition, these molars are more susceptible to dental caries, which further complicates their treatment.⁴ Many clinicians find themselves frustrated when conventional direct restorations such as composite resins and amalgam fail on

hypoplastic permanent molars. The ideal restorative treatment for these molars should aim to reliably restore lost or weakened tooth structure, alleviate pain or sensitivity, and maintain occlusion.

Full-coverage restorations are the treatment of choice for moderate to severely hypoplastic permanent molars, a stainless steel crown being the recommended treatment for children (**Fig. 1b**).³ Stainless steel crowns are simple to place, and, if properly adapted and cemented to the prepared tooth, they can be reliable and durable for many years.⁵ Many permanent molars restored with stainless steel crowns do not require further restoration; however, some authors have suggested that they be replaced by a cast metal restoration when the child is an adolescent.³

If single or multiple molars are extensively involved, the timely extraction of hypoplastic first molars may be considered. Root canal treatment of first permanent molars in children between the ages of 8 and 16 years has only a 36% success rate.⁶ If extraction is to be considered, the optimal age for doing so is between 8.5 and 10.5 years, as appropriately timed extractions may allow the second molar to

Table 1 Local, systemic and genetic factors associated with enamel hypoplasia of permanent first molars (adapted from Mahoney³)

Local	Systemic	Genetic
Trauma or infection of a primary predecessor	Ingestion of excess fluoride	Amelogenesis imperfecta
Repaired cleft lip and palate	Antenatal or neonatal infection	
Trauma due to extraction of primary predecessor	Vitamin D dependent rickets	
	Premature birth or very low birth weight	
	Nutritional deficiencies	
	Radiation therapy	
	Neurological deficiencies	



Figure 1a: A moderately hypoplastic, hypomineralized maxillary right permanent first molar in a 6-year-old child. Caries has formed in the occlusal pit. The defect on tooth 16 extends to the gingival margin on both the buccal and palatal aspects of the tooth.



Figure 1b: The tooth was appropriately restored with a stainless steel crown.

erupt into the arch as a replacement for the extracted first molar.³ Consultation with an orthodontist or pediatric dentist may be indicated before extraction of hypoplastic first permanent molars. ♦

References

1. Jalevik B. Enamel hypomineralizations in permanent first molars. Clinical histomorphological and biochemical study. *Swed Dent J (Suppl)* 2001; 149:1–86.
2. Leppaniemi A, Lukinmaa PL, Alaluusua S. Nonfluoride hypomineral-

izations in the permanent first molars and their impact on the treatment need. *Caries Res* 2001; 35(1):36–40.

3. Mahoney EK. The treatment of localized hypoplastic and hypomineralized defects in first permanent molars. *N Z Dent J* 2001; 97(429): 101–5.
4. Pascoe L, Seow WK. Enamel hypoplasia and dental caries in Australian Aboriginal children; prevalence and correlation between the two diseases. *Pediatr Dent* 1994; 16(3):193–9.
5. Croll TP. Permanent molar stainless steel crown restoration. *Quintessence Int* 1987; 18(5):313–21.
6. Peretz B, Yakir O, Fuks AB. Follow up after root canal treatment of young permanent molars. *J Clin Pediatr Dent* 1997; 21(3):237–40.

Question 4 What is early childhood caries, and what should I be telling the parents of my young patients?

Early childhood caries (ECC) is the occurrence of any sign of dental caries on any tooth surface during the first 3 years of life.¹ The American Academy of Pediatric Dentistry has described one particular form of ECC, severe early childhood caries (S-ECC), defined as any smooth-surface carious lesion in a child younger than 3 years of age.²

Most clinicians are familiar with a form of S-ECC called baby bottle tooth decay, which is associated with frequent and prolonged consumption of liquids containing fermentable carbohydrates.² In the initial stages of the disease process, S-ECC typically presents as chalky white enamel on the lingual surfaces of the maxillary incisors. As the condition progresses, brown cratering lesions appear on the maxillary incisors (**Fig. 1**), and the decay extends to the labial surfaces and onto the molars. The lower anterior teeth, which are protected by the tongue, are involved only in extremely severe cases of ECC.³

The use of a bottle containing milk, juice or any other sweetened liquid with fermentable carbohydrates as a pacifier, especially nocturnally, puts a child at risk of ECC. Frequent consumption of such liquids without appropriate preventive measures contributes to the risk. Children who

are breast-fed on demand without the benefit of proper oral hygiene practices are also at risk for ECC.²

The following recommendations to prevent ECC should be made to the parents of young patients²:

1. Do not give infants a bottle containing a liquid with fermentable carbohydrates (such as sucrose and fructose) while they are falling asleep.
2. Avoid on-demand nocturnal breastfeeding after the eruption of the first deciduous tooth.



Figure 1: Severe early childhood caries in a 20-month-old child involving all surfaces of the maxillary incisors and the occlusal surfaces of the first primary molars.

3. Encourage infants to drink from a cup as they approach their first birthday. Weaning should be completed between 12–14 months of age.
4. Implement oral hygiene measures before the eruption of the first primary tooth.

Parents should bring their children for the initial dental visit when the first tooth erupts into the mouth or by 1 year of age. This first visit will give the dentist an opportunity to educate the parents about the prevention of dental diseases such as ECC. ➔

References

1. Proceedings. Conference on early childhood caries, Bethesda, MD, October 1997. *Com Dent Oral Epidemiol* 1998; 26(Suppl):5–119.
2. Reference manual 2002–03. American Academy of Pediatric Dentistry. *Pediatr Dent (Suppl)* 2002; 24(7):23–5.
3. Milnes AR. Description and epidemiology of nursing caries. *J Public Health Dent* 1996; 56(1):38–50.

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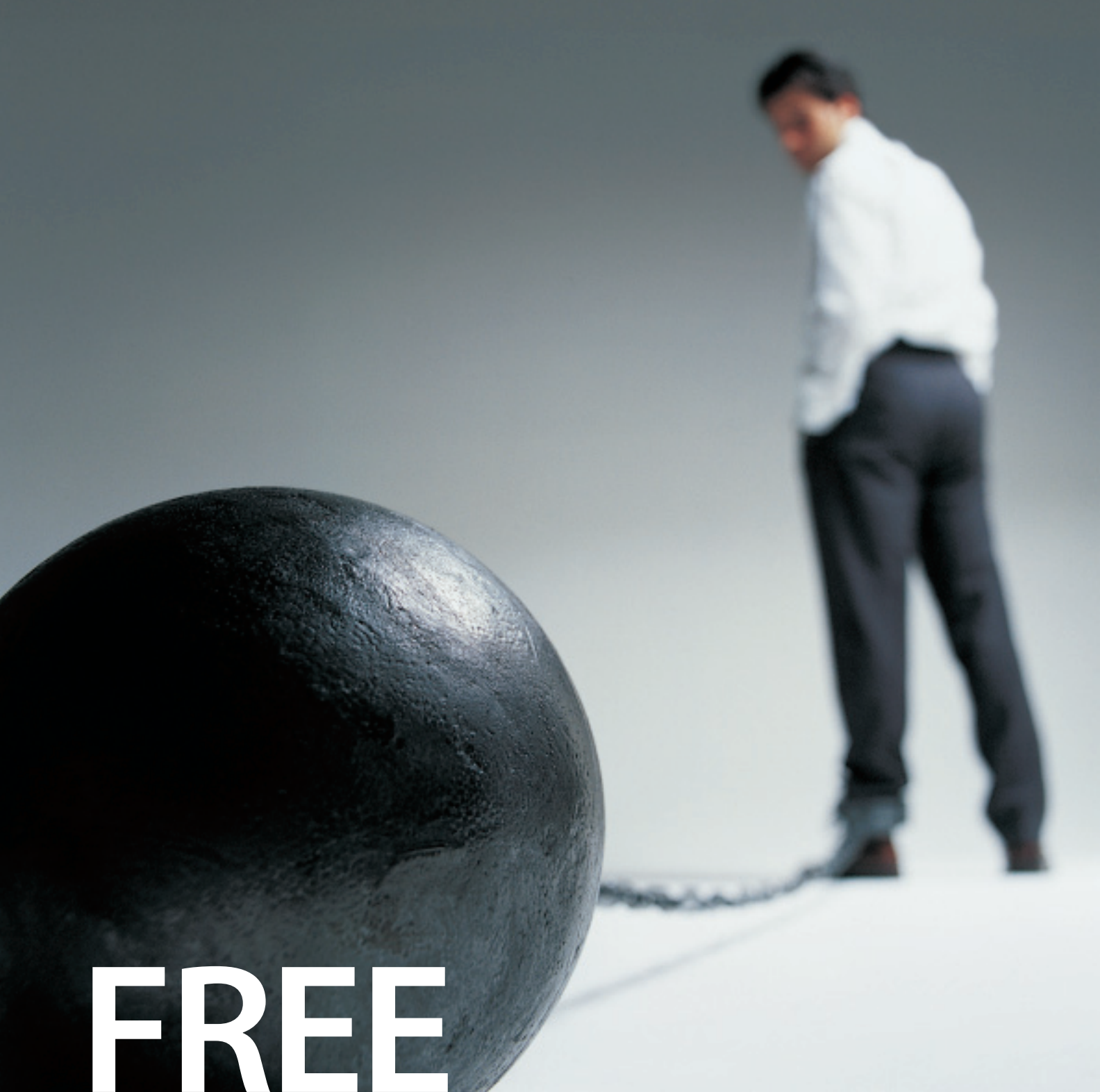
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Clinical Showcase

Clinical Showcase is a series of pictorial essays that focus on the technical art of clinical dentistry. The section features step-by-step case demonstrations of clinical problems encountered in dental practice. This month's article is by Dr. Patrick H. Pettman. If you would like to propose a case or recommend a clinician who could contribute to Clinical Showcase, contact editor-in-chief Dr. John O'Keefe at jokeefe@cda-adc.ca.

Immediate Tooth Replacement with Ovate Pontic on Fixed Bridge

Patrick H. Pettman, BSc, MSc, DMD

When a tooth must be extracted and replaced, the patient's insurance company may balk at having to pay for a transitional partial bridge as well as the fixed bridge. In addition, the patient is usually dissatisfied if an unesthetic pontic must be placed on a fixed bridge where the bone has atrophied, unless periodontal augmentation is done. An immediate tooth replacement technique not only saves patients time and money, but it also results in a much more esthetically pleasing replacement tooth that is both hygienic and natural in appearance.

Technique

A 57-year-old man needs to have tooth 21 extracted (Figs. 1 and 2). In addition, radiographs show that the root canal on tooth 11 needs re-treatment (Fig. 3).

Once the tooth 11 root canal has been re-treated and the post rebonded (Fig. 4), teeth 11 and 22 are prepared for bridge abutments. Most of the clinical crown of the tooth to be extracted is removed (Fig. 5), but enough crown should remain to be secured with Mead forceps. An impression is taken and a temporary bridge fabricated. If the tooth to be removed has been filled endodontically, the root should be rebonded or the post recemented before extraction. It is critical that the cortical plates of bone are conserved to minimize postoperative tissue shrinkage. Root exolevers are used without application of pressure against the proximal bone of the abutment teeth. Removal of the root in one piece results in more conservative surgery and hence a more esthetic final result. If it is molars that are being removed, the roots are sectioned before individual removal.

Final shaping of the ovate pontic on the temporary bridge is done after the tooth has been extracted (Figs. 6 and 7). Temporary resin is added to the underside of the pontic, and the bridge is reseated so that resin flows into the socket. The bridge is then removed and the pontic shaped so that it is narrower and shorter than the permanent ovate

pontic. The pontic is shaped to fill the socket at the gingival level. It should be approximately the same length as clinical crown length of the adjacent abutments (Fig. 8). The temporary bridge is then cemented into place (Fig. 9).

At the next appointment 2 to 3 weeks later, the temporary bridge is removed (Figs. 10 and 11). Because the subgingival pontic was undercontoured, the final soft-tissue contour is slightly expanded by the permanent pontic when the final bridge is cemented (Figs. 12 to 14).

The laboratory technicians shape an ideal contour and extend the ovate pontic approximately 3 mm subgingivally. The interproximal pontic contact is placed within 5 mm of the crestal bone so that the tissue fills the proximal space completely.

Antibiotics may be indicated if excessive infection is present around the tooth to be extracted or if the surgery becomes complicated.

Patients are advised not to chew solid food with the temporary bridge. Flossing is recommended around the abutments but not under the pontic until the permanent bridge has been placed. Patients should be seen 3 weeks after the permanent bridge has been cemented to review bridge-cleaning procedures with floss threaders. If the tissue has not become completely contoured around the pontic, patients are advised not to floss under the pontic for another 3 weeks.

Biteguards are routinely recommended if substantial attrition of tooth structure is evident.

Conclusions

In this busy world, most patients do not have time for long, drawn-out dental treatment. If possible, they often prefer an immediate, less complicated solution. Immediate tooth replacement with an ovate pontic on a fixed bridge is a good alternative when a tooth must be removed. A commitment from the patient to accept an immediate bridge with tooth extraction is a more cost-effective, efficient procedure with a much more esthetic, natural-looking result. ♦



Figure 1: Preoperative photograph of a 57-year-old man. The clinical crown of tooth 21 has been fractured.



Figure 2: Mirror view. The cast post of tooth 21 is bent.

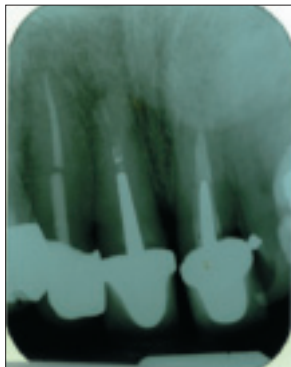


Figure 3: Preoperative radiograph. The cast post of tooth 11 is leaking, and the root canal of this tooth is deficient.

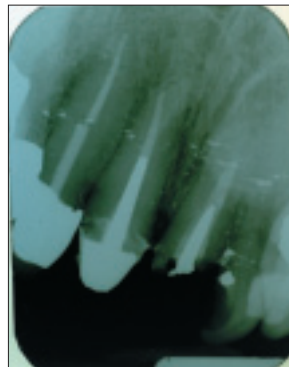


Figure 4: Radiograph shows that the tooth 11 root canal has been redone and its post rebonded.



Figure 5: Tooth 11 and tooth 22 are prepared for bridge abutments. Most of the clinical crown has been removed from tooth 21. The mesial porcelain of the porcelain-fused-to-metal crown on tooth 12 has been reduced. Tooth 23 has been prepared for a single crown.



Figure 6: Tooth 21 is extracted after an impression has been taken.



Figure 7: Postoperative radiograph shows that tooth 21 has been extracted.



Figure 8: Temporary resin is added to the socket area of the pontic at the gingival level of the adjacent abutment teeth.

Clinical Showcase



Figure 9: The temporary bridge is cemented.



Figure 10: The temporary bridge. The tissue has adapted to the temporary ovate pontic.



Figure 11: The temporary bridge is removed.



Figure 12: The permanent crown and bridge are cemented with Ketac glass ionomer (3M Company, Minneapolis, Minn.).



Figure 13: Palatal view of the permanent crown and bridge.



Figure 14: A happy patient with a restored smile.

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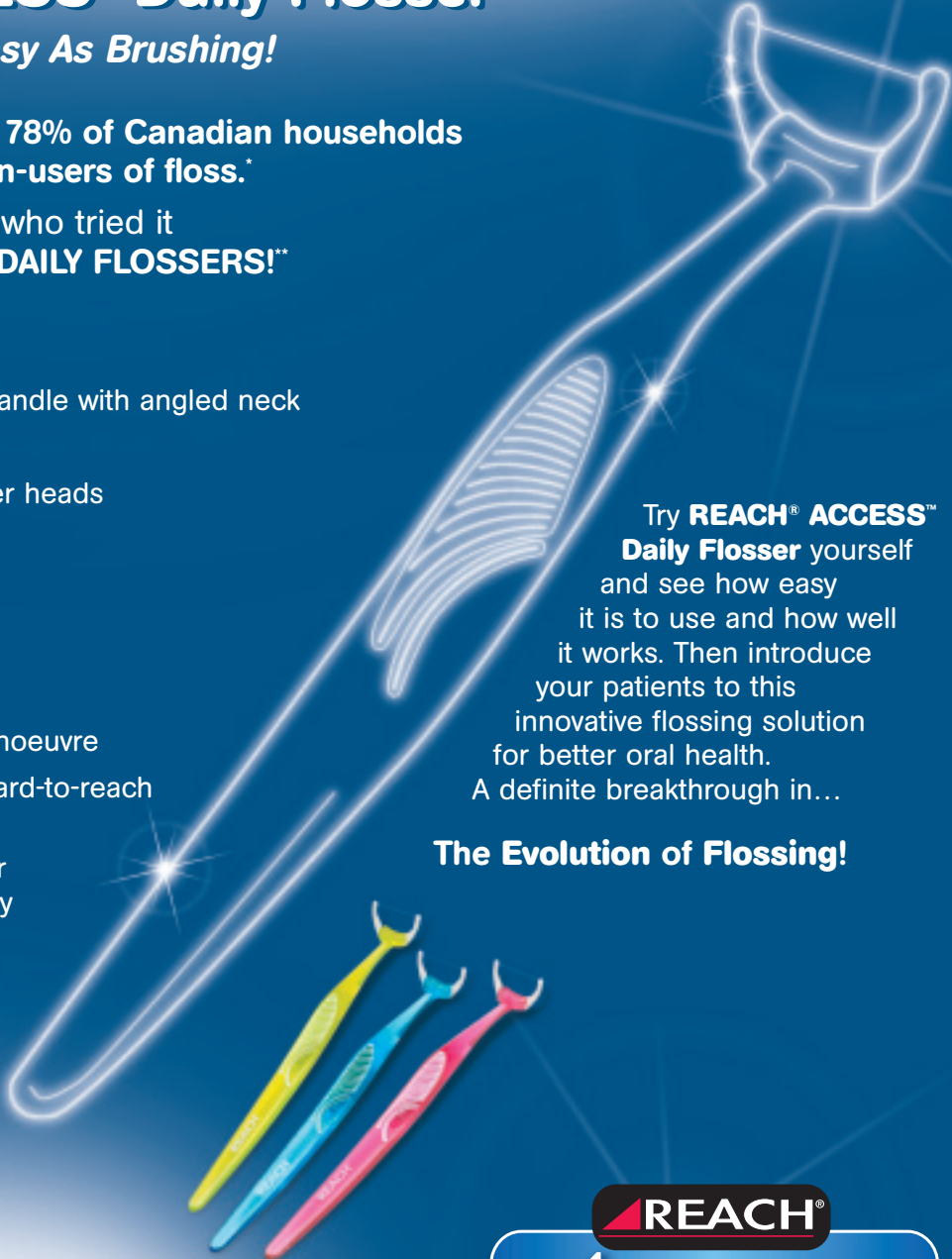
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REQUEST FOR APPLICATIONS DIRECTOR, SCHOOL OF DENTISTRY

The Faculty of Medicine & Dentistry at The University of Western Ontario is inviting applications for the position of Director of the School of Dentistry.

The School of Dentistry is responsible for a 4-year DDS program (56 students per year), a 2-year qualifying program for foreign-trained dentists (12 students per year), and a 3-year graduate program in orthodontics (3 students per year). With the teaching hospitals of the University of Western Ontario, the school also offers a dental fellowship program (4 students per year). Major expansion of the Dental Sciences Building was completed in 2002, and comprehensive renovation of the main clinic has begun. The School of Dentistry has a strong tradition of excellence in undergraduate dental education and has research strengths in mineralized tissue biology (<http://www.fmd.uwo.ca/research/Skeletal-web/>) and dental biomaterials.

The Director will be responsible for all academic and clinical programs of the school. S/he will maintain strong relationships with alumni, community partners and other units in the Faculty of Medicine & Dentistry. The Director is expected to provide visionary leadership in renewal of the academic programs, enhancement of scholarly activities and recruitment of additional faculty. For further information, please visit <http://www.fmd.uwo.ca/dentistry>.

With a full-time enrollment of 29,000, The University of Western Ontario is a research-intensive university that graduates students from a full range of academic and professional programs. The campus is in London, a city of 340,000 located midway between Toronto and Detroit. With parks, tree-lined streets and bicycle trails, London is known as the AForest City@ (<http://www.city.london.on.ca>). London boasts an international airport, art galleries, theatres, and a variety of music and sporting events.

Interested candidates should submit 1) a CV outlining their research, teaching, leadership and administrative experience and interests, 2) a brief description of proposed future directions and visions for the school, and 3) the names and addresses of three referees to:

**Dr. Carol Herbert, Dean
Faculty of Medicine & Dentistry
Health Sciences Addition
The University of Western Ontario
London, Ontario N6A 5C1
Fax (519) 850-2357**

The competition will remain open until the position is filled.

This position is subject to budget approval. Applicants should have fluent written and oral communication skills in English. All qualified candidates are encouraged to apply; however, Canadians and permanent residents will be given priority. The University of Western Ontario is committed to employment equity and welcomes applications from all qualified women and men, including visible minorities, aboriginal people and persons with disabilities.

D1550

“OUTDOORS SOPHISTICATE” FOR SALE OF PRACTICE

Whistler, British Columbia

An “outdoors sophisticate” is required for a 3-chair, state-of-the-art practice in the heart of Whistler Village. Practice is fully equipped with digital x-ray and intraoral cameras, lasers and more. We are the only retail-level dental office in Whistler - ideal for dentist who wants a high-grossing, high-net office with lots of cosmetic dentistry and routine endo and surgery.

Associate to purchase option as well. Initial accommodation provided.

Please contact:

**Denise
Fax (604) 629-0759
E-mail aarm@axion.net**

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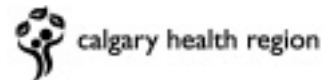
D1580

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REGIONAL CLINICAL DIVISION CHIEF DENTISTRY AND ORAL HEALTH

The Department of Surgery and the Calgary Health Region invite applications for a Regional Clinical Division Chief, Dentistry and Oral Health.

Qualifications include a degree in dentistry from an accredited institution, eligibility for licensure in Alberta, and additional training in special needs or public health dentistry and/or administration. Special consideration will be given to candidates with experience in leadership, team building, conflict resolution and strategic planning.

Dentistry and Oral Health is a unique new consolidation within the Calgary Health Region, and represents dental clinics targeting medically compromised children (Alberta Children's Hospital), medically compromised adults (Foothills Medical Centre), financially disadvantaged people (Dental Public Health), and dental care delivered by private practitioners in the non-hospital surgical facilities. The Regional Clinical Division Chief position approximates 2 days per week (0.4 FTE) during the first year, 1 day per week thereafter (0.2 FTE) and may be complemented by a clinical practice position with medically compromised clients.

Please submit a letter of interest, curriculum vitae and the names and addresses of three referees by October 15, 2004 to:

**Dr. Rene Lafreniere
Clinical Department Head
Department of Surgery
Foothills Medical Centre
1403 - 29 St NW
Calgary, AB T2N 2T9**

In accordance with Canadian immigration requirements, priority will be given to Canadian citizens and permanent residents of Canada.

D1574

ALBERTA - Edmonton: Associate needed, full time, for very busy office; excellent opportunity. E-mail drh@drherchen.com or fax (780) 989-0640; confidential. D1511

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

ALBERTA - Lloydminster: Associate wanted to join an expanding 2-dentist practice. We average and retain 80 - 100 new patients/month and cannot keep up. No extended hours. Booked 3 months in advance, practice all disciplines of dentistry if desired. Come be part of an excellent team with fantastic patients. Call Craig, (780) 875-4222 (bus.), (780) 875-1711 (res.). D1458

BRITISH COLUMBIA - Campbell River: Full-time associate required for a very progressive general practice with a high esthetic component. We are building a new facility with a planned opening of January 2005. We will be expanding hours and looking for a highly motivated dentist to join our exceptional team. The office is located in southern Campbell River in the beautiful Willow point area and offers unbeatable ocean view and recreational opportunities and unmatched lifestyle. Leading to future partnership. Buy-in for the right individual. Fax (250) 287-7392. D1551

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 - Kelowna: Associate dentist wanted 2-3 Mondays per month. Spacious, modern office in sunny Okanagan. Please call Darcy, (250) 764-8033 (evgs.) D1558

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

BRITISH COLUMBIA - Gibsons: Associate wanted. Would you like to practise dentistry full time or part time as an associate in a small quaint seaside town on one of the most beautiful coasts in the world? Then Gibsons, B.C. (Sunshine Coast), is the place for you. We are newest office on the peninsula with Adec/Sirona equipment including intraoral camera and digital x-rays. The town itself offers a good community life with all the best in water and mountain vistas along with all the modern amenities for comfortable living. We are a short majestic ferry ride to Vancouver. Please call us at (604) 886-5395 or e-mail advantagedental@dccnet.com. D1576

BRITISH COLUMBIA - Vancouver: Specialist periodontal practice in prime Vancouver location seeks a periodontist to associate with our progressive growing group. We emphasize ideal periodontal, dental implant, prosthetic and esthetic treatment. Close to ocean, mountains and Whistler. Long-term association for the right person. Fax resume to (604) 913-1610. D1577

BRITISH COLUMBIA - Terrace: Third dentist needed for a busy practice with 2 experienced dentists and 4 hygienists. Periodontist and oral surgeon plus anesthetist schedule regular clinics in the office. In an area of exceptional natural beauty with outdoor recreation and wilderness adventure opportunities moments away, yet multiple daily flights to Vancouver provide easy access to city getaways. Our flexible practice may be

the perfect fit for you if you are just starting out and seeking opportunities to learn new skills, or if you would like to slow down and enjoy a lower-stress lifestyle. Preference given to applicants willing to make a longer commitment, but shorter-term or part-time arrangements could be considered. For more information, please contact: Bonnie Olson, tel. (250) 638-0841. D1547

NEWFOUNDLAND AND LABRADOR - Mount Pearl: Full-time associate required for busy general dentistry practice. This new 8-operatory office offers a full range of treatments near busy commercial/residential zone. Option to buy in. Please call Mount Pearl Dental, tel. (709) 364-3663 or fax resume to (709) 364-3663. E-mail drwalsh@mountpearldental.nf.net D1578

NORTHWEST TERRITORIES - Fort Smith: Associate dentist for Fort Smith Dental Clinic. Utilize the full range of your skills working in our modern, well-equipped clinic with skilled and experienced staff. The centre for Wood Buffalo National Park and located beside world-class whitewater of the Slave River rapids, Fort Smith is an ideal location if you love the outdoors. This is a full-time position offering an established patient base and an excellent compensation package. Opportunity for future partnership and/or succession. Tel. (867) 872-2044, fax (867) 872-5813, e-mail whill@auroranet.nt.ca or send resume to: Dr. Hill, Fort Smith Dental Clinic, PO Box 1047, Fort Smith, NT X0E 0P0. D1191

NOVA SCOTIA - Yarmouth: Experienced, full-time associate required with potential buy-in opportunity in 2-dentist/3-hygienist, newly renovated, 8-operatory clinic in downtown heritage house. Excellent work environment and support staff. For more information, contact: Dr. Michel A. Comeau, tel. (902) 742-0191, fax (902) 742-0179 or e-mail macdent@klis.com D1557

NOVA SCOTIA - Halifax: Associate required for a busy family practice, 2-3 days a week, for the Fall of 2004. Please fax resume to (902) 443-5614 or e-mail halifaxdental@hotmail.com. D1542

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

NUNAVUT - Iqaluit: Dentists wanted! Busy Nunavut dental clinic requires full-time associate in Iqaluit. Community of 7,000 +, only serviced by one other clinic. Part-time locum positions also available in other communities. Excellent remuneration. All travel and accommodations paid for. Fax CV to (867) 979-6744 or e-mail coreygrossman@yahoo.ca. D1373

ONTARIO - Brooklin: Associate required for busy family practice. Part time to start with future partnership options. Fast-growing community. Reply to the Brooklin Dental Center, tel. (905) 655-3385 or fax resume to (905) 655-4845. D1559

ONTARIO - West of Toronto: Excellent associate dentist opportunity you don't want to pass up! Working in a well-established practice with a positive environment and a foundation based on respect, equality and valuing others. From being busy and fully booked on day 1, to ongoing professional development, you will have the chance to practise dentistry at its finest! This modern and progressive practice will keep you exposed to many different aspects of dentistry, like cosmetics, implants and the ability to refer within, as we have many specialists working alongside of us. If you are a team player and are looking for the perfect practice, fax resume to (905) 846-8854. D1568

ONTARIO: Full-time associate required to work in family-oriented practice in a beautiful town on Lake Huron. Office has 6 fully equipped operatories with intraoral cameras. Large patient base. Excellent knowledgeable staff with years of experience. Immediate opportunity for partnership. Please contact office: tel. (519) 396-2641, fax (519) 396-3999. D1571



The University of Sydney
AUSTRALIA

Director of the Bachelor of Oral Health Program

Faculty of Dentistry

Reference No. D31/005140

The Faculty of Dentistry is seeking to appoint the inaugural Director of the Bachelor of Oral Health program.

This innovative new degree, which is to take its first students in 2005, will provide training in oral health promotion, dental hygiene and dental therapy.

The Director is responsible for the overall academic and organisational aspects of the program, including staff coordination and supervision, curriculum design and review, and academic quality control, and thus will have a unique opportunity to guide the development of an exciting new course in an emerging field in Oral Health.

The Director will draw on a proven track record in innovative curriculum development and teaching methods to enable the delivery of a first class program, effectively integrating the various health science, academic and clinical resources into a leading edge undergraduate program.

The appointment will be at Associate Professor level, and the Director will be a key member of the Faculty executive team, providing leadership to academic staff and other oral health professionals in teaching, research and multidisciplinary models of dental care and oral health disease prevention.

Students enrolled in the program will attend classes on the University's Lidcombe campus, and at the Westmead Centre for Oral Health and Sydney Dental Hospital. Both the Westmead Centre and Sydney Dental Hospital are dental teaching hospitals of the University of Sydney, and both have outstanding records in teaching dentistry and allied oral health professionals. They are two of the largest dental teaching facilities in the world. The Director will be based at the Westmead Centre, but will be required to visit the other campuses as necessary.

To be successful, an applicant must have a qualification in oral health and be registered (or be able to be registered) in NSW; a postgraduate degree in an appropriate field; extensive experience in tertiary teaching and the development and administration of discrete programs; proven research achievement; demonstrated capacity to work cooperatively with others and to supervise staff. The position is full-time continuing, subject to the completion of a satisfactory probation and/or confirmation period for new appointees. Membership of a University approved superannuation scheme is a condition of employment for new appointees. For further information contact Professor Iven Klineberg, Dean, Faculty of Dentistry, on (+61 2) 9351 8334 or e-mail: ivenk@dental.wsahs.nsw.gov.au

Remuneration package: AUD \$105,219 – AUD \$115,821 p.a. (which includes a base salary Associate Professor Level D AUD \$89,135 – AUD \$98,197 p.a., leave loading and up to 17% employer's contribution to superannuation). A Dental Clinical loading will also be payable.

Closing: 28 October 2004

Five copies of the application, which should quote the reference no., address the selection criteria, and include a CV, a list of publications, the names, addresses, e-mail, fax and phone numbers of three confidential referees should be forwarded to: The Personnel Officer, College of Health Sciences, Cumberland Campus (C42), The University of Sydney, PO Box 170, Lidcombe NSW 1825, Australia.

The University is a non-smoking workplace and is committed to the policies and principles of equal employment opportunity and cultural diversity. The University reserves the right not to proceed with any appointment for financial or other reasons. See <http://www.usyd.edu.au/>

D1562



DALHOUSIE
University

FACULTY POSITION DEPARTMENT OF ORAL AND MAXILLOFACIAL SCIENCES

The Faculty of Dentistry, Dalhousie University, Halifax, Nova Scotia, is seeking applications for a full-time, limited-term appointment possibly leading to a tenure track faculty position at the rank of Assistant, Associate or Full Professor, in the Division of Oral and Maxillofacial Surgery in the Department of Oral and Maxillofacial Sciences.

Responsibilities will include graduate and undergraduate teaching, collaborative research, continuing education and associated administrative duties. The division collaborates with the School of Biomedical Engineering in graduate teaching and research, and also with other divisions, departments, faculties and universities.

Academic rank will be based on the successful candidate's qualifications, experience, and achievements. It is expected that the successful applicant will have graduated from an accredited specialty program, and must be a Fellow of the Royal College of Dentists of Canada in the specialty of oral and maxillofacial surgery. The successful candidate should have experience in treating patients with cancer and it is preferred that he/she has subspecialty training in head and neck cancer as well as facial reconstruction. The successful applicant will also have demonstrated experience in research, undergraduate and graduate teaching, and administration. Salary and rank will be commensurate with qualifications and experience.

The successful applicant must be eligible for licensure in Nova Scotia. Private practice privilege is integrated with the appointment.

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 a disability, racially visible persons, and women.

Dalhousie University is one of Canada's leading teaching and research universities, with four professional faculties, a Faculty of Graduate Studies and a diverse complement of graduate programs. Collaborative and interactive research is encouraged, as is cooperation in teaching among the faculties. We inspire students, faculty, staff, and graduates to make significant contributions to our region, Canada, and the world. Dalhousie is located in Halifax, Nova Scotia, a vibrant capital city, and the business, academic, and medical centre for Canada's east coast.

Review of applications will begin in October 2004. 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. H. A. Ryding, Chair, Search Committees, Faculty of Dentistry, Dalhousie University, Halifax, Nova Scotia B3H 3J5.**

D1560

ONTARIO - Ottawa East: Associate required. Well-established family dental practice is looking for a bilingual dentist to join its team. Forty minutes to Ottawa, 40 minutes to Montreal, 40 minutes to the Laurentians. For more information, contact: Francine, tel. (613) 632-4159. D1565

ONTARIO - North Toronto: Pediatric dentists wanted immediately for full-time/part-time positions in busy, modern North Toronto pediatric dental practice with in-office general anesthesia. Future buy in possible. Reply to: CDA Classified Box # 2842. D1543

ONTARIO - Fort Frances: Full-time associate needed for extremely busy family dental practice. Strong hygiene program. Newly renovated building with state-of-the-art computerized operatories, intra-oral cameras, digital x-ray, electronic handpieces etc. Excellent staff and working conditions. Practice on American border in northwestern Ontario. Ideal for person with an outdoor, active lifestyle. Emphasis on caring attitude and good-quality dentistry. An outstanding opportunity for the right candidate to become a future partner, if mutually agreeable. Present associate leaving to further education. Please call (807) 274-5365 or (807) 274-5370 (days), (807) 274-5549 (evgs. and wknds.) or fax (807) 274-1738. Write to: 1201 Colonization Rd. W, Fort Frances, ON P9A 2T6. D1516

ONTARIO - Ottawa East: Associate opportunity. Busy, progressive family practice requires a motivated, enthusiastic bilingual (English/French) dentist to work with 2 other dentists in providing total patient care. Newly renovated, well-equipped, 5-operator office. Located 20 minutes east of Canada's capital, Ottawa. Optional future buy-in potential. For further information, please contact: Julie, 2911 Laurier St., PO Box 999, Rockland, ON K4K 1L6; tel. (613) 446-3368, fax (613) 446-5006. D1483

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: Associate required for (short-term) partnership in multidisciplinary clinic. The candidate has to be available and highly dynamic. For more information, call Sylvie Bissonnette at (418) 648-8958. D1564

QUEBEC - Montreal: Part-time associate required to work on a percentage basis. Present associate leaving province. Clinic located in growing suburban area on the outskirts of the West Island. Bilingualism a must. For more information, tel. (514) 453-0830. Send your CV by fax, (514) 453-7675 or e-mail alvaro@bellnet.ca. D1545

QUEBEC - Montreal: Associate required. West-Island, full- or part-time position. Bilingual, multidisciplinary practice. Very high quality dentistry. Partnership opportunity. Replacing dentist moving out of the province. Please contact: Suzanne, tel. (514) 624-0390 and fax your resume to (514) 624-1140. D1493

QUEBEC - Eastern Townships: Windsor, near Sherbrooke. We are giving an associate the opportunity to become part of a mature and fully competent team. Pleasant and motivating work atmosphere. Please fax resume to (819) 845-7854. Tel. Dr. Jacques Vaillancourt, (819) 845-3080. D1371

SASKATCHEWAN - Regina: Full-time associate required for busy and established dental practice. Friendly, fun and experienced support staff with strong hygiene program. We are located in a new building with new equipment in an area of the city experiencing growth. With two dentists our practice has large patient base and steady flow of new patients. Second dentist is moving out of province. Need caring individual with emphasis on quality dentistry to assume the existing position. For more information please call Rick, (306) 522-4978, (306) 585-2828 (evgs.) or fax (306) 757-2069. D1549

YUKON TERRITORY - Whitehorse: Come for the beauty - mountains, lakes and rivers. Or come for the opportunity

to practise dentistry where you are appreciated and well compensated. Have a look at our Web site www.klondike-dental.com. Tel. (867) 668-4618, fax (867) 667-4944. D1422

TEXAS - Dallas: Growing dental company in and around Dallas is seeking full-time associates. Must be licensed or qualified to be licensed in Texas. Highest compensation package in the state; earn \$200,000 - \$400,000. Company to handle all immigration matters. Please call (630) 788-7167. D1513

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

GERMANY - Duesseldorf: Private dental institute has a vacant position for a Japanese-speaking dentist. We offer modern dentistry, clinical experience, Japanese patients, a harmonic team and an income of EURO 5.000 to 6.000, p.m. Please mail your application to: Hubert Limmer, Armin Sts. 21, 40227, Duesseldorf, Germany. D1579

P O S I T I O N S S O U G H T

CANADA: Toronto, Ottawa, Vancouver, Calgary, Edmonton, Halifax. Canadian dentist with vast experience in family practice available November 2004. Locum, associateship. Full time or part time. E-mail bickertonalex@hotmail.com, tel. 011-971-2-634-8507, mobile 011-971-50-532-3439. D1544

C O N F E R E N C E S

NORTHWEST DENTAL EXPOSITION 2004: Presented by the Edmonton and District Society, Friday, Sept. 17, 2004. Featuring speakers Ed Lowe and James Braun. Enquiries, tel. (780) 459-1275. D1526



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Listerine helps reduce and prevent the progression of gingivitis when used in a properly applied program of oral hygiene and dental care. CANADIAN DENTAL ASSOCIATION

Fluoride Listerine helps reduce and prevent the progression of gingivitis and prevents tooth decay when used in a properly applied program of oral hygiene and dental care. CANADIAN DENTAL ASSOCIATION

Indications: Listerine Antigingivitis-Antiplaque-Antiseptic-Antitartar-Anticaries oral rinses kill the germs that cause gingivitis, plaque and bad breath. Tartar Control fights tartar build-up better than brushing alone (when compared to regular toothpaste). Fluoride Listerine prevents caries.

Cautions: Keep out of reach of children. Do not swallow. In case of accidental ingestion, contact a Poison Control Centre or doctor immediately.

Dosage: Adults and Children 12 years and older: Listerine Antiseptic Mouthwash: Rinse full strength with 20 mL for 30 seconds twice a day; gargle to relieve sore throats due to colds. Tartar Control: Twice daily, brush with your regular toothpaste for 1 minute, rinse with water then rinse full strength with 20 mL Tartar Control Listerine for 30 seconds; Fluoride Listerine: Rinse full strength with 20 mL for 30 seconds twice a day. Do not eat or drink for 30 minutes after use. **Medicinal Ingredients:** All Listerine products contain eucalyptol 0.091% w/v, thymol 0.063% w/v, menthol 0.042% w/v. Tartar Control Listerine also contains zinc chloride 0.09% w/v. Fluoride Listerine also contains sodium fluoride 0.022% w/v. **Non-medicinal Ingredients:** All Listerine products contain alcohol, benzoic acid, methyl salicylate, poloxamer, sodium benzoate, water. Original Listerine also contains caramel. All others also contain flavour, propanol, saccharin sodium, sorbitol. Cool Mint Listerine contains FD&C green No. 3. Fresh Burst Listerine and Fluoride Listerine contain D&C yellow No. 10, FD&C green No. 3. Tartar Control contains FD&C blue No. 1. **NOTE:** Cold temperatures may cloud this product; its efficacy will not be affected. **SUPPLIED:** Bottles of 250, 500, 1000 and 1500 mL (no 500 mL for Fluoride).

Listerine was shown to reduce interproximal gingivitis comparable to flossing†

† Gingivitis scores at interproximal sites were reduced 7.9% by brushing and rinsing with Listerine, vs. 8.3% by brushing and flossing ($p < 0.001$ vs. control group) in a 6-month Canadian study meeting CDA guidelines. Patients ($n=297$) with mild-to-moderate gingivitis were randomized in three treatment groups. Plaque and gingivitis were scored at baseline, 3 months & 6 months. Diaries used to track oral hygiene and compliance assessments done monthly.¹

1. Sharma, N.C. et al. Comparative effectiveness of an essential oil mouthrinse and dental floss in controlling interproximal gingivitis and plaque. American Journal of Dentistry 2002.

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Life is our life's work

