Vol. 7, No. 9 • December 2014

SPECTRUM Dental TEAMWORK

Canadian Journal of Restorative Dentistry & Prosthodontics / Journal canadien de dentisterie restauratrice et de prosthodontie
The official publication of the Canadian Academy of Restorative Dentistry and Prosthodontics
Publication officielle de l'Académie canadienne de dentisterie restauratrice et de prosthodontie

CJRDP JCDRP

www.cardp.ca

Vol. 7, No. 4 – Winter/hiver 2014

Evidence Based Dentistry / Dentisterie fondée sur les faits

Digital Implant Dentistry / Dentisterie implantaire numérique

Digital Fixed Prosthodontics / Prosthodontie fixe numérique

Sleep Dentistry / Dentisterie du sommeil

Maximize the Value of Your Scrap with Argen Refining

Fast and Secure

Leading Technology & Processes

Higher Returns

Personal Service

Honest & Accurate Refining Services

Refine with the experts at Argen and make more money.

Watch a video of our unique refining process and request your **FREE** refining kit at www.argenrefining.com

ARGEN GUARANTEE

If you're not 100% satisfied with your assay, we'll return all materials to you at no cost.

JELENKO AURIUM RESEARCH U.S.A.

ARGEN®

CANADA REFINING

#200 1353 Ellis St,
Kelowna BC V1Y 1Z9

(866) 722-7436

SPECTRUM Dental TEAMWORK

Advisory Board

Publisher
Ettore Palmeri, MBA, AGD B.Ed., BA

Editor
Dr. Saj Jivraj, DDS, MS.Ed

Technical Editor
Lee Culp, CDT

Dr. Katya Archambault

Dr. Allen Aptekar

Dr. Edy Braun

Dr. Paul L. Child

Dr. Carla Cohn

Dr. Rony Dagher

Dr. Mauricio Diaz

Dr. Joseph Fava

Dr. Hubert Gaucher

Dr. Larry Gaum

Dr. David Gratton

Luke Kahng, CDT

Dr. Les Kalman

Dr. John Kois

Dr. Greg Kurtzman

Dr. Sonia Leziy

Dr. Ziv Mazor

Dr. Dennis Nimchuk

Dr. Mamaly Reshad

Dr. Paresh Shah

Dr. Lee Silverstein

Dr. John Sorensen

Dr. Douglas Terry

Dr. John Zarb

Palmeri Media Group

Publisher: Ettore Palmeri, MBA, AGDM, B.Ed., BA

Editor: Dr. Saj Jivraj, DDS, MS.Ed

Editor (Technical): Lee Culp, CDT

Office Administrators:
Tina Ellis – accounting@palmeripublishing.com
Lobat Lali – lobat@palmeripublishing.com
Bahar Palmeri, B.SC – manager@palmeripublishing.com

Sales and Marketing:
Gino Palmeri – gino@palmeripublishing.com
Sheela Hamdard – sales@palmeripublishing.com

Digital Art & Production Manager:
Samira Sedigh – samira@palmeripublishing.com

Graphic Art:
Tim Faller/Sophie Faller – tim@palmeripublishing.com
Yvonne Lo – yvonne@palmeripublishing.com

Internet Marketing Director:
Rashid Qadri

Event Coordinators:
Janis Williams – events@palmeripublishing.com
Queenie Yee – queenie@palmeripublishing.com

Canadian Office:
35-145 Royal Crest Court, Markham, ON L3R 9Z4
Tel: 905.489.1970, Fax: 905.489.1971
Email: info@palmeripublishing.com
Website: www.palmerimediagroup.com

Spectrum Dental Teamwork is published nine times a year by Palmeri Publishing Media. Spectrum Dental Teamwork is a clinically focused publication that recognizes the contribution and importance of various specialties that comprise the dental team in providing high standard dental treatment for dental patients. Articles published in Spectrum Dental Teamwork express the viewpoints of the author(s) and do not necessarily reflect the view and opinions of the Editor and Advisory Board.

Publication Dates:
January, February, March, April, May, June/July, August/September, October, November/December

Printing: Point-one Graphics Inc.

Printed in Canada. Canadian Publications Mail Product Sale Agreement 40020046. Spectrum Dental Teamwork ISSN #2293-2992 is published nine times a year by Palmeri Publishing Inc., 35-145 Royal Crest Court, Markham, ON. Canada, L3R 9Z4. Periodicals Postage Rates paid at Niagara Falls, NY 14304. U.S. Office of publication 2424 Niagara Falls Blvd, Niagara Falls, N.Y. 14304. U.S.

Vol. 7, No. 9 – December 2014

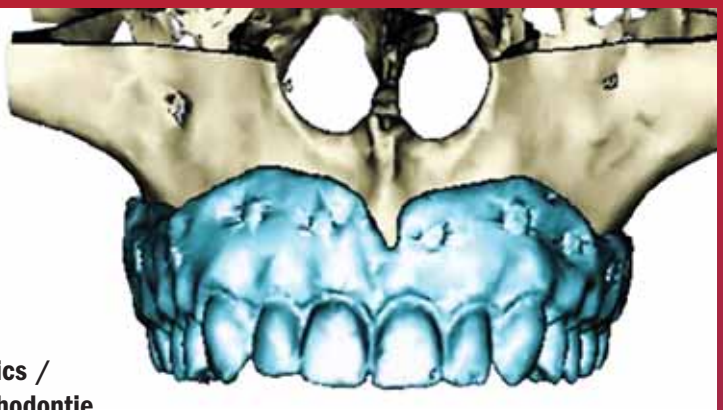
SPECTRUM Dental TEAMWORK

CJRDP/JCDRP

Canadian Journal of Restorative Dentistry & Prosthodontics /
Journal canadien de dentisterie restauratrice et de prosthodontie

The official publication of the Canadian Academy of Restorative Dentistry and Prosthodontics /
Publication officielle de l'Académie canadienne de dentisterie restauratrice et de prosthodontie

Vol. 7, No. 4 – Winter/hiver 2014



IN THIS ISSUE / DANS CETTE ÉDITION

INDICATES PEER REVIEWED/
INDIQUE REVUE DES PAIRS

Guest Editor

Canadian Journal of Restorative Dentistry and Prosthodontics (CJRDP)

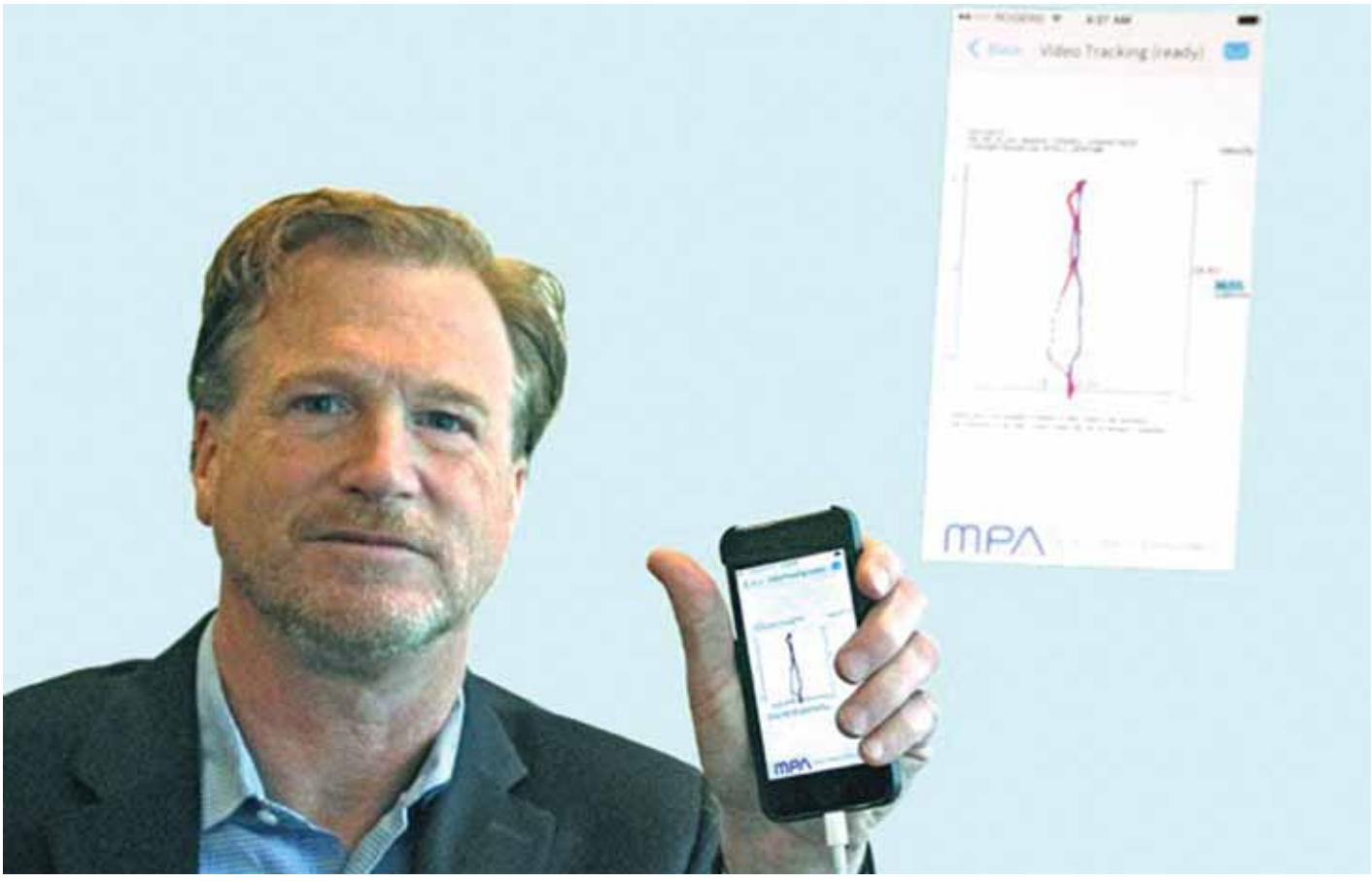
A New Generation of Mobile Practice *and Mobile Learning Tools*

Bruce Adams

Looking back over the last 25 years of my medical systems career, the electronics, optics and design improvements are incredible. From a systems engineering point of view, it is getting easier to predict opportunities and then develop things on a smaller budget, including engaging clinicians, 'payors' and patients in a development cycle. Many components that required millions of dollars to develop in 1990, can now be purchased as modules, often for less than hundreds of dollars. In that context, I thought I'd discuss the background to some coming technologies.

Consider some present technology focus areas: business intelligence; financial modeling; communications; data analytics; and data mining. You might ask what these have in common with the near future of clinical practice. Given how many of us are using smart phones, and the tech industry focus on that platform, then progress in other professions will help define the key issues related to health platforms. The medical space is a tough place to be because its innovation is slow to evolve, but there are similarities in all businesses.

Analytics got its big start in the financial world looking at big data. At the beginning of the last century, Bachelier applied mathematical principles to financial models using concepts including Gauss' laws and Brownian motion[1]. As a new concept it was subject to controversy. Fast forward to the 1970s and those old concepts were the foundation for economists who went on to win the Nobel prize. When a development platform capability catches up to concepts, things can happen quickly. Some of the mathematical techniques used in performance and risk analysis are also relevant to health care. Similar concepts to patterns in big data will be applied to the single



patient. I would argue that without those steps taken to analyse big data for the big players, we would not be discussing how to implement complex analysis on a per patient basis. We will be seeing more technology in clinical practice using analytics that are outside of a routine workflow, or computational ability. These include pattern analysis routines for marketing, imaging, patient analytics and so on.

2D–3D–4D imaging are upon us. Through these we will get better data and make more relevant interpretations in real time. That critical aspect, interpretation, has not become part of the landscape; many doctors are still putting processed films on lightboxes. That is analogous to why products that use fluorescence detection are not really making the impact they could. It can be hard to interpret tissue changes if you are not an expert, even if you are using great tools. But all that is going to change.

Back in the late '90s I worked in a pathology lab where I built a spectrophotometer assessing various types of human tissue. While trying to characterize results, I realized that patterns in data were more important on a per patient basis than the actual spectral data at any given point; in this case, the ratio of water, hemoglobin, oxygen and fluorescence and other optical characteristics. The levels are all slightly different for every type of tissue, and for every person, yet there are patterns. If pattern analysis is implemented properly, then the sensitivity to characterize dysplastic vs. inflamed tissue will be increased far beyond systems used for visual analysis of skin lesions. There will be an argument against a computer analysis as not being proven or reliable, but one could equally argue that a clinician using optical visualization is also very subjective, and probably very late. When automated Pap smear analysis technology began in the late 1990s with the AutoPap[2] there was much criticism and it took many years to become accepted.[3] With any type of digital imaging enhancement, the signal to noise characterization [sensitivity] is far in excess of anything the eye could see, thus further enabling earlier diagnostics. The question is: how will those technologies fit into a diagnostic workflow?

I first started using digital cameras in 1989. This is one sector showing remarkable change. In 2000, I was building spectrophometers that cost $500,000. By 2007, some of that critical capability was achieved with a $300 digital camera. Suddenly the hardware was not relevant and the focus turned to how to extract data from low cost hardware with extraordinary software. We did a small clinical trial of skin fluorescence lesion data from digital cameras and found that there was enough information captured to use this as a platform, even without any filters. Physicians used this inexpensive technology to create relevant output. That is a very different approach from direct fluorescence visualization, which is more like the old school Woods Lamp that some dermatology clinics are still using.

Nevertheless there were a few problems with the clinical use of digital cameras. The first and biggest being that nobody would adhere to a routine of image capture, then at the end of a day, label and send an email to the lab for us to process the image. Also, importantly, the patient was long gone by that time, so the opportunity to engage the clinical workflow was lost. In the end, if the doctor thought there was something suspicious, based on ABCD rules, [Asymmetry, Border, Color, Diameter] as first described by Friedman et al[4], then there would be some very specific responses: excise, biopsy and/or refer, and usually before imaging results were ready. To impact the clinical workflow, earlier intervention and real time 'scan to interpretation' are both required. Furthermore, there must be little cost to the clinician, and ideally a profit without a big cash outlay.

If technology can provide an interpretation that might flag anything suspicious, can it improve the intuition of the clinician in a fast paced workflow? The use of a camera without a means to provide results and manage data seemed improbable. Further the ABCD rules of dermatology require a time series. Enter the smart phone, the ultimate platform/modules for what is needed to connect the dots. Alpha trials[5] of smart phone camera software can take images of any skin lesion and compare a separate image in a time series, and then rectify [correct] and register [compare] the images.

Some of my interests include[6]: patient analytics for interactive medical health questionnaires; characterizing patient needs and concerns to define appropriate clinical services, essentially direct marketing based on needs that a patient defines; and assessing probabilities. Another interest is communications and informatics where so much happening in every aspect of society. I asked Ted DeVries[7] of Exan, a dental business leader, his thoughts on that, he said:

"Personally, I believe that technology in health care will go like all other industries. Our patients' demands for technology in their healthcare will be no different than they are in all other aspects of their life. They will want to have all of the health care information, when they want it, where they want, whether that is on a computer, in the comfort of their own home or on their mobile device. Their demands for information will not slow down but rather increase consistently over time. In that not so distant future, patients will not accept that they have to wait for information and the lack of information will be a reflection of an office 'not with the times.' Patients will evaluate providers of care by their ability to be 'current' as a direct correlation to their expertise in the health care field. People will start to evaluate the competency of their health care provider by his/her acceptance and implementation of technology. If a provider of care is behind in technology there will be an assumption that they are also behind in current health care practices."

The smart phone is the right platform for the coming collaboration and communication technologies; for instance, people are already enabling auto dictation. Simple communication techniques will become common with patients, their data, and integration of that into practice

management, in collaboration with staff, and referrals to adjunct therapies, or specialists. Records can be shared with other clinicians, staff, payors, therapists. An image record can be annotated showing changes, and can further include video/voice or any other media, in 2D or 3D. Again, the technology is coming from outside the health world.

All this will increase the pressure on security and privacy: archiving, encryption, file transfers, logins, are all key components of any health systems now. These principles have their origin in military and banking security systems development, but are part of what a single user must implement to safely share data via the internet. While mostly defensive technology, it is critical. No systems are immune to hacking, and with big changes coming into the digital clinic, dentists are going to be pressed to assure that not only their patient records, but also their 3D scanning and laboratory systems etc. are not being hacked. As for HIPPA[8], it's the standard that isn't really a standard yet. We can expect some big changes to that too. For mobile, the FDA[9] is beginning to manage things, but there is so much happening that they simply don't have the resources to provide much oversight; therefore FDA compliance will not mean tested and approved.

At my recent video tracking demo at CARDP – Montreal, I presented some data from trials of a head and neck scanning routine and a live demo of jaw tracking with a smart phone. I use my iPhone6 to measure cranial and cervical movement, muscle spasms, TMJ condyle translations, differentiation of CR–CO and so on. Measureable jaw, head and neck biomechanics could be expanded to include many subtle variances. I decided to take on the idea of using rapid image processing techniques that had been learnt in image correlation, to video tracking. Its truly amazing to see complex movements simplified into a first effort of standardized graphics.

If simple movement analysis is standardized then it reduces the subjectivity and brings it down to what it should be, a simple check, not a diagnosis. If the data becomes good enough to be used to envision inter-joint functions, based on known patterns and probabilities, an output that simulates the actual TMJ condylar function is very appealing. I can say that it works, that I am using it on my smart phone, but the TMJ app will not be in the product pipeline until there has been a lot of validation and analysis to correlate and correct for things such as occlusal interferences in lateral deviations.

According to the basic rules of biomechanics, an ideal jaw opening path should be pretty straight up and down, with no serious lateral deviations and smooth acceleration and deceleration. Using a pattern analysis routine, my automated jaw movement analyzer characterizes the variables and interprets these based on a pattern. So in such cases, even if the data were not perfectly accurate, one could repeat the movement and then see if the patient is making a repeatable pattern; all in a few seconds, with very inexpensive technology.

And that brings me to another place. Those who know me, remember the low cost 3D dental scanner we built in 1986 powered by a handwired 286 computer running in turbo mode at 17kHz. An equivalent effort now is underway; except we are now using a smart phone platform running at 1.2GHz. Imagine a low cost 3D scanner based on a smartphone platform; it is coming. Other things I am involved with include digital auscultation, automated infection analysis perhaps for characterizing periodontal tissue, new methods to manage massive CT and other data sets into simple non battery consuming, visualizations for a mobile phone. I know of a few other projects as well such as optical periodontal probing, interproximal scanning and correlation of image with radiographic data, and more than one of the big digital dental companies is talking about how to become the digital hub of dentistry.

Technologies are evolving, and developers, marketers and users of these technologies will have to evolve too. The App world and social media, love it or hate it, are defining the world that developers need to survive in. I hope that collaboration and practice based research are potential outcomes of mobile health. I imagine an online community of dentists first testing and then reporting, where results will be shared at the click of a button. When good clinical results are combined with staff education, patient direct marketing and CE credits, many dentists will be happily part of the wave that drives mobile practice towards a new generation of mobile learning tools. ■

References

1 L. Bachelier, The Theory of Speculation, Annales scientifiques de l'École Normale Supérieure, Sér. 3, 17 (1900) p. 21-86
2 Lee JS, et al A feasibility study of the AutoPap system location-guided screening. Acta Cytol.1998 Jan-Feb;42(1):221-6.
3 Willis BH, et al, Cervical screening programmes: can automation help? Evidence from systematic reviews, an economic analysis and a simulation modelling exercise applied to the UK . Health Technol Assess 2005 9(13).
4 RJ Friedman et al, Early detection of malignant melanoma: the role of physician examination and self-examination of the skin, CA Cancer J Clin. 1985 May-Jun;35(3):130-51.
5 BW Adams, Private company Alpha trials MPA/ SILC / Cernoval, Inc.
6 BW Adams, Private company Alpha and Practice Based Research trials MPA / Adams Lab.
7 Ted DeVries; President and CEO of Exan Group, Dental Software
8 US Health Insurance Portability and Accountability Act of 1996, [HIPPA] and Health Information Technology for Economic and Clinical Health Act, [HITECH]
9 FDA Mobile Medical Applications Guidance for Industry and Food and Drug Administration Staff, Sept, 2013

Comments/Commentaires

Bruce Adams is the founder of Spatial Lab, and the MPA (Mobile Practice Assistant™) smartphone mobile health platform. Bruce has a mixed background in physics, physiology, pathology and dental technology and has worked in technology & product development for about 25 years. He now operates his own tech lab, creating prototypes, products and intellectual property on his own and in collaboration with academic labs and private industry.
brucewadams@mobilepractice.ca

AdIa
Aesthetic Design & Implant Academy

17 SEMINARS FOR AN UNBEATABLE PRICE!

2015 Program

10 Half Day Seminars

(Breakfast, break and parking included)

7 Evening Seminars

(Dinner and Parking included)

Extended Early Bird Until January 15, 2015	As of January 16, 2015	NEW Student Price
$825.00+ HST	$950.00+ HST	$299.00+ HST

Courtyard Toronto Northeast/Markham

7095 Woodbine Avenue, Markham, ON L3R 1A3

Please contact:
events@palmeripublishing.com | seminars@palmeripublishing.com
905.489.1970 ext. 206/207 | Toll Free 1.866.581.8949

www.adiacanada.com

Palmeri Media Group
PMG
Palmeri Media Group
A division of Palmeri Publishing Inc.

Academy of General Dentistry
PACE Program Approval for Continuing Education

Approved PACE Program Provider
FAGD/MAGD Credit
Approval does not imply acceptance by a state or provincial board of dentistry or AGD endorsement
9/1/2013 to 8/31/2015
Provider ID# 355116

Rédacteur Invité

Journal Canadien de dentisterie restauratrice et de Prosthodontie (JCDRP)

Une nouvelle génération de pratiques *et d'outils d'apprentissage mobiles*

Bruce Adams

Quand je repense à mes 25 ans de carrière dans les systèmes médicaux, les améliorations apportées sur le plan de l'électronique, de l'optique et de la conception sont tout à fait incroyables. Du point de vue de l'ingénierie de systèmes, il est de plus en plus facile de prédire les circonstances opportunes, puis de développer des choses moyennant un budget plus modeste, notamment engager des cliniciens, « payeurs » et patients à s'inscrire dans un cycle de développement. Plusieurs composants qui coûtaient des millions de dollars à développer en 1990 peuvent maintenant être achetés sous forme de modules, souvent pour moins de quelques centaines de dollars. Dans ce contexte, j'ai choisi de parler de l'historique de certaines technologies émergentes.

Pensez à quelques-uns des domaines d'intervention de la technologie actuelle: veille stratégique; modélisation financière; communications; analyse de données; et exploration de données. Vous pourriez vous demander ce qu'ils ont en commun avec la pratique clinique dans un avenir rapproché. Comme plusieurs d'entre nous utilisent un téléphone intelligent et que l'industrie des technologies mise sur cette plateforme, le progrès qui sera accompli dans d'autres professions contribuera à définir les éléments clés reliés aux plateformes de services de santé. La sphère médicale est un terrain un peu ingrat, car les innovations y évoluent lentement, mais on dénote néanmoins des similitudes dans tous les secteurs d'activité.

L'analytique de données volumineuses a d'abord été introduite dans le domaine financier. Au début du siècle dernier, les bacheliers appliquaient des principes mathématiques aux modèles financiers en utilisant des concepts comme la loi de Gauss et le mouvement brownien[1]. En tant que nouveau concept, il était sujet de controverses. Puis, dans les années 70, ces vieux concepts ont permis à des économistes de remporter un prix Nobel. Lorsque les possibilités inhérentes au développement d'une plateforme sont effectives, les choses peuvent évoluer rapidement. Certaines techniques mathématiques utilisées dans l'analyse des performances et des risques sont aussi pertinentes pour les services de santé. Des concepts et des modèles similaires de données volumineuses seront appliqués pour chaque patient. J'estime que sans ces mesures d'analyse de données volumineuses mises de l'avant pour le compte de grandes entreprises, l'implantation d'une analyse complexe par patient ne serait pas un sujet de conversation. Nous verrons plus de technologie analytique au sein des cliniques qui touchera d'autres procédés que le processus de travail quotidien ou la puissance de calcul. Ces éléments incluent l'analyse structurelle des tendances pour le marketing, l'imagerie, l'analytique du patient et ainsi de suite.

Les imageries 2D-3D-4D sont à nos portes. Grâce à celles-ci, nous obtiendrons de meilleures données et des interprétations plus pertinentes en temps réel. Cet aspect critique, l'interprétation, ne fait présentement pas partie du paysage; en effet, plusieurs docteurs se tournent encore vers les négatoscopes pour visionner des images sur pellicules. Ceci explique pourquoi les produits qui utilisent la détection par fluorescence n'ont pas l'impact qu'ils pourraient avoir. Il peut être difficile d'interpréter des changements dans les tissus si vous n'êtes pas un expert, et ce, même si vous utilisez d'excellents outils. Mais tout ceci est sur le point de changer.

À la fin des années 90, j'ai travaillé dans un laboratoire de pathologie, où j'ai créé un spectrophotomètre pour évaluer divers types de tissus humains. Au moment de caractériser les résultats, j'ai réalisé que les données constantes par patient étaient plus importantes que les données spectrales, à quelque moment que ce soit; dans ce cas, le ratio d'eau, d'hémoglobine, d'oxygène et de fluorescence ainsi que d'autres caractéristiques optiques. Les niveaux sont légèrement différents pour chaque type de tissu et chaque personne, mais on dénote des constantes. Si ces dernières sont efficacement analysées, la sensibilité à caractériser des tissus dysplastiques vs enflammés augmentera à des niveaux encore inégalés par les systèmes utilisés pour l'analyse visuelle de lésions cutanées. Certains s'opposeront à l'analyse informatisée, estimant qu'elle n'est ni éprouvée ou fiable, mais nous pourrions argumenter qu'un clinicien utilisant la visualisation optique est aussi très subjectif, et probablement très inactuel. Lorsque la technologie des tests Pap automatisés est apparue à la fin des années 90, avec l'AutoPap[2], les critiques ont fusé de toutes parts, et il a fallu plusieurs années avant qu'il soit admis.[3] Avec tout type d'amélioration d'images numériques, la caractéristique signal sur bruit (sensibilité)

excède de loin ce que l'œil peut voir, permettant ainsi d'établir des diagnostics plus rapidement. La question est: comment intégrer ces technologies dans le processus de diagnostic?

J'ai commencé à utiliser les appareils photo numériques en 1989. Ce secteur a connu une évolution remarquable. En 2000, je fabriquais des spectrophotomètres qui coûtaient 500 000 $. Dès 2007, il était possible de reproduire certaines fonctions essentielles avec un appareil photo numérique de 300 $. Soudainement, le matériel informatique n'était plus aussi pertinent, et l'accent était mis sur la façon d'extraire des données d'un outil bon marché doté d'une solution logicielle extraordinaire. Nous avons effectué un petit essai clinique en recueillant des données sur la fluorescence d'une lésion cutanée à l'aide d'un appareil numérique et découvert que la saisie d'information suffisait pour pouvoir l'utiliser comme une plateforme, sans aucun filtre. Les physiciens tiraient profit de cette technologie bon marché. C'est une approche très différente de la visualisation directe par fluorescence, qui s'apparente plus aux lampes de Wood de la vieille école, que certaines cliniques de dermatologie utilisent encore aujourd'hui.

L'utilisation clinique d'appareils photo numériques était néanmoins problématique à certains égards. Le premier et le plus important facteur était que personne ne traitait une capture d'image de la même façon, alors à la fin de la journée, il fallait l'identifier, puis l'acheminer par courriel au laboratoire pour qu'elle soit traitée. De même, comme le patient était retourné chez lui entre-temps, le docteur ne pouvait commencer le processus clinique. Enfin, s'il soupçonnait un problème quelconque, selon les règles ABCD – Asymétrie, Bords, Couleur, Diamètre –, tel qu'initialement décrites par Friedman et al.[4], il intervenait en conséquence : excision, biopsie et/ou référence à un autre professionnel, et ce, généralement avant d'avoir les résultats de l'imagerie. Pour avoir un impact sur le processus clinique, une intervention rapide et une 'interprétation des données' en temps réel sont requises. De plus, les frais doivent être minimes pour le clinicien qui, idéalement, fera aussi un profit tout en réduisant ses dépenses.

Si la technologie procure une interprétation pouvant signaler tout élément suspect, peut-elle améliorer l'intuition du clinicien dans un milieu de travail mouvementé? L'utilisation d'un appareil photo conjuguant résultats et gestion de données semblait improbable. De plus, les règles ABCD en dermatologie requièrent une série chronologique. Arrive alors le téléphone intelligent, la plateforme/les modules requis pour réunir toutes les pièces du casse-tête. Des essais alpha[5] menés sur le logiciel d'imagerie d'un téléphone intelligent ont permis de prendre des images de n'importe quel type de lésion cutanée et de les comparer avec une autre image, dans une série chronologique, puis de les rectifier [corriger] et les enregistrer [comparer].

Certains de mes intérêts incluent[6] : l'analytique des patients pour l'élaboration de questionnaires médicaux interactifs; la caractérisation des besoins et des préoccupations des patients pour définir les services cliniques appropriés; essentiellement, le marketing direct basé sur les besoins des patients; et l'évaluation des probabilités. Parmi mes intérêts se trouvent aussi les communications et l'informatique, qui touchent tous les aspects de la société. J'ai demandé à Ted DeVries[7] d'Exan, un chef de file dans le domaine de la dentisterie, ce qu'il en pensait, et il a répondu :

« Personnellement, je crois que la technologie dans le domaine de la santé sera à l'instar de n'importe quelle industrie. Les demandes de nos patients en matière de technologie seront les mêmes que dans les autres aspects de leur vie. Ils voudront avoir toute l'information médicale sous la main, au moment qui leur convient, à l'endroit qui leur convient, que ce soit sur un ordinateur, dans le confort de leur maison, ou un dispositif mobile. Leurs demandes d'information ne ralentiront pas, mais augmenteront constamment, au fil du temps. Dans cet avenir rapproché, les patients n'accepteront pas d'attendre pour avoir cette information, et tout manque d'information sera associé à un cabinet 'aux pratiques désuètes'. Les patients évalueront les fournisseurs de services de santé par leur habileté à être 'à jour' dans leur domaine d'expertise. Les gens commenceront aussi à évaluer la compétence de leur fournisseur d'un point de vue technologique. S'il n'est pas à la fine pointe, ils auront tendance à présumer que ses compétences sont aussi dépassées. »

Le téléphone intelligent est la plateforme tout indiquée pour les technologies collaboratives et de communication émergentes; par exemple, les gens maîtrisent déjà l'utilisation d'un dictaphone. Des techniques de communication simples seront chose commune pour les patients, leurs données, tout comme leur intégration dans les pratiques de gestion, en collaboration avec les employés, pour des références à des thérapies auxiliaires, ou des spécialistes. Leurs dossiers pourront être partagés entre cliniciens, employés, payeurs, thérapeutes. Une image du dossier pourra être annotée, démontrant les changements, et même inclure une vidéo/voix ou tout autre média 2D ou 3D. Encore une fois, la technologie possède une dimension extrinsèque à la sphère médicale.

Ceci viendra intensifier les questions de sécurité et de vie privée : l'archivage, le cryptage, les transferts de fichiers, les connexions sont maintenant des composants clés de tout système de santé. Ces principes proviennent du développement de systèmes de sécurité pour l'armée et les banques, mais font partie intégrante de ce qu'un utilisateur doit implanter pour partager en toute sécurité des données sur Internet. Bien que ce soit surtout une technologie défensive, elle est néanmoins essentielle. Aucun système n'est à l'abri du piratage, et avec les grands changements qui se profilent à l'horizon dans la clinique numérique, les dentistes devront assurer la sécurité non seulement de leurs dossiers patients, mais aussi de leurs systèmes d'imagerie 3D et leurs

laboratoires, etc., contre le piratage. Tout comme la loi HIPPA[8], c'est le standard qui n'en est pas encore réellement un. Nous pouvons d'ailleurs nous attendre à de grands changements à cet égard. Pour les mobiles, la FDA[9] commence à adapter ses techniques de gestion, mais les choses évoluent si rapidement qu'elle n'a tout simplement pas les ressources pour assurer une bonne surveillance; par conséquent, les produits qui répondent aux normes de la FDA ne rimeront pas nécessairement avec testés et approuvés.

Lors de ma récente démonstration vidéo à l'ACDRP – Montréal, j'ai présenté des données provenant d'essais menés sur une tête et un cou, puis j'ai fait une démonstration en direct des mouvements d'une mâchoire avec mon téléphone intelligent. J'ai utilisé mon iPhone6 pour mesurer les mouvements crâniens et cervicaux, les spasmes musculaires, les translations du condyle de l'ATM, la différenciation de CR-CO et ainsi de suite. Les biomécaniques mesurables de la mâchoire, de la tête et du cou pourraient aussi comprendre plusieurs variantes subtiles. J'ai décidé d'appliquer des techniques de traitement d'images rapide, apprises dans la corrélation d'images, à la surveillance vidéo. Il est réellement incroyable de voir des mouvements complexes simplifiés dans un premier effort de graphiques standardisés.

L'analyse standardisée d'un mouvement simple réduit la subjectivité et permet d'aller droit au but, soit d'effectuer une vérification et non un diagnostic. Si les données suffisent pour prévoir les fonctions interarticulaires, selon les modèles et les probabilités connus, une simulation de la fonction réelle du condyle de l'ATM s'avère fort intéressante. Je peux dire que cela fonctionne, que je l'utilise sur mon téléphone intelligent, mais l'application de l'ATM ne sera pas offerte avant d'être soumise à un processus de validation et d'analyse pour corréler et corriger des choses comme les interférences occlusales dans les déviations latérales.

Selon les règles de base de la biomécanique, l'ouverture mandibulaire idéale devrait être verticale, sans déviations latérales graves, avec une accélération et une décélération régulières. À l'aide d'une analyse structurelle des tendances, mon analyseur automatisé de mouvements mandibulaires caractérise les variables et les interprète selon un modèle. Ainsi, même si les données ne sont pas parfaitement précises, l'utilisateur peut répéter le mouvement et voir si une tendance se manifeste chez le patient; et ce, en quelques secondes, avec une technologie bon marché.

Ceci m'amène à aborder un autre aspect. Ceux qui me connaissent se souviennent du scanneur dentaire 3D que nous avons fabriqué à faible coût en 1986, alimenté par un ordinateur 286 câblé à la main et fonctionnant en mode turbo à 17kHz. Nous déployons actuellement des efforts analogues; mais avec une plateforme pour téléphones intelligents fonctionnant à 1,2GH. Imaginez un scanneur 3D bon marché sur une plateforme pour téléphones intelligents; c'est une simple question de temps. Parmi les autres projets sur lesquels je travaille se trouvent l'auscultation numérique, l'analyse automatique des infections, possiblement pour la caractérisation de tissus parodontaux, de nouvelles méthodes de gestion de CT multiples et d'autres données de visualisations sur un téléphone mobile peu énergivore. Je sais que d'autres projets sont aussi sur la table dans le domaine, comme le sondage parodontal optique, la numérisation des interproximales et la corrélation de l'image avec des données radiographiques, et plusieurs importantes compagnies dentaires spécialisées dans le numérique cherchent à s'imposer dans ce créneau porteur d'avenir.

Les technologies évoluent, et leurs développeurs, spécialistes du marketing et utilisateurs devront eux aussi évoluer. Le monde des applications et des médias sociaux, qu'on le veuille ou non, est en train de définir le monde dans lequel les développeurs seront appelés à survivre. J'espère que la collaboration et la recherche axées sur la pratique sont des issues potentielles pour les services de santé mobiles. J'imagine une communauté de dentistes en ligne testant et évaluant des produits, puis partageant l'information d'un simple clic. Avec de bons résultats cliniques combinés à la formation du personnel, au marketing direct auprès des patients et aux crédits d'EC, plusieurs dentistes seront heureux de faire partie de cette vague novatrice vers une nouvelle génération d'outils d'apprentissage mobiles. ■

Références

1 L. Bachelier, The Theory of Speculation, Annales scientifiques de l'École Normale Supérieure, Sér. 3, 17 (1900) p. 21-86
2 Lee JS, et al A feasibility study of the AutoPap system location-guided screening. Acta Cytol.1998 Jan-Feb;42(1):221-6.
3 Willis BH, et al, Cervical screening programmes: can automation help? Evidence from systematic reviews, an economic analysis and a simulation modelling exercise applied to the UK . Health Technol Assess 2005 9(13).
4 RJ Friedman et al, Early detection of malignant melanoma: the role of physician examination and self-examination of the skin, CA Cancer J Clin. 1985 May-Jun;35(3):130-51.
5 BW Adams, Private company Alpha trials MPA/ SILC / Cernoval, Inc.
6 BW Adams, Private company Alpha and Practice Based Research trials MPA / Adams Lab.
7 Ted DeVries; President and CEO of Exan Group, Dental Software
8 US Health Insurance Portability and Accountability Act of 1996, [HIPPA] and Health Information Technology for Economic and Clinical Health Act, [HITECH]
9 FDA Mobile Medical Applications Guidance for Industry and Food and Drug Administration Staff, Sept, 2013

comments/commentaires

Bruce Adams est le fondateur du Spatial Lab et de la plateforme de services de santé mobiles pour téléphones intelligents MPA (Mobile Practice Assistant[mc]). Bruce possède de l'expérience dans les domaines de la physique, de la physiologie, de la pathologie et de la technologie dentaire et il a travaillé dans le secteur du développement de technologies et de produits pendant environ 25 ans. Il gère maintenant son propre laboratoire technique, créant des prototypes, des produits et des propriétés intellectuelles en collaboration avec des laboratoires universitaires et des entreprises privées.
brucewadams@mobilepractice.ca

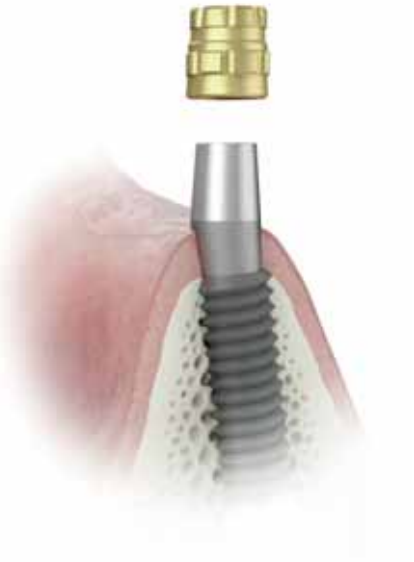
ATLANTIS™

NEW

Stability of a fixed solution with the convenience of a removable prosthesis

ATLANTIS™ Conus Concept

Available for all major implant systems, the **ATLANTIS Conus Concept** allows for friction-fit, non-resilient prosthetic solutions for fully edentulous patients.



- Individually designed using the patented ATLANTIS VAD (Virtual Abutment Design) software for parallel abutments and margin levels as close to the soft tissue as possible.
- Designed to fit SynCone caps, ensuring a tightly-seated final restoration and minimizing gaps and micro-movement.
- Stable and comfortable implant-supported prosthesis designed for optimal access for oral hygiene.

STEPPS™ SIMPLANT® SYMBIOS® ANKYLOS® ASTRA TECH IMPLANT SYSTEM XiVE® ATLANTIS™

www.dentsplyimplants.com

DENTSPLY IMPLANTS

People and Product News

Avinent™ Canada Launches New Website

Avinent Canada is pleased to announce the launch of its fullyfeatured website at www.canada.avinent.com. The new site has extensive content, on-line and available for download, including the Biomimetic OCEAN tapered and Biomimetic CORAL parallel-walled implants, both proven on five continents.

GO DIGITAL with the Avinent ™ Implant System! A whole new way of looking at implantology, the site also offers full access to exciting new Avinent developments like *Avinent Glass* (the world's first dental implant technique application for Google Glass) and FREE Dentist and Patient Downloads of *My Digital Treatment App* (a comprehensive patient education tool illustrating the details of their treatment plan simply and visually).

To visit the new site, visit www.canada.avinent.com. For more information, contact Avinent ® Canada Ltd. Toll-free 1-855-566-5928 or by email at info@avinentcanada.com.

Bisco TheraCal® LC

TheraCal LC is a radiopaque, light-curable flowable composite containing calcium silicates to protect and stimulate pulpal and dentin repair. It's the optimal replacement to calcium hydroxide, glass ionomer-based or RMGI materials because of its optimal handling, ease of placement, and enhanced biological properties.

It performs as a barrier and protectant of the dental pulpal complex. With high physical properties and low solubility immediately following light cure, the composite is well suited for all deep cavity preparations. Easy placement is facilitated by a 20-second light cure and ability to be syringed directly onto the preparation and pulp without pre-mixing or the need for any additional activators.

The proprietary hydrophilic resin formulation creates a stable and durable liner. Following placement of TheraCal LC the final restorative may be placed immediately.

For more information contact Bisco — website: www.biscocanada.com; e-mail: info@biscocanada.com

Henry Schein Canada first to offer dentists curing light testing service by bluelight analytics

Henry Schein Canada, the Canadian dental business of Henry Schein, Inc., (NASDAQ: HSIC), announced today the launch of checkMARC®, the world's only independent and accurate measurement system for testing curing lights at the dental chair-side. Henry Schein Canada will be the first distributor to offer this chair-side service in partnership with BlueLight Analytics, Inc., a technology company specializing in the measurement of curing light energy delivery in dental practices.

BlueLight's checkMARC® measurement system brings state-of-the-art technology to dental practices by providing accurate readings of curing light performance and energy output, which is critical to ensuring the quality of resin-based composite dental restorations.

Sirona celebrates 100,000 Facebook fans

Sirona Dental is thrilled to have a community of more than 100,000 users after just over 2 years of Facebook activity. With posts for specific target groups in eleven different languages, the global dental market leader proves its strength in international dialogue and reaches users all around the world.

For more information contact at: contact@sirona.com


PICASSO
DENTAL STUDIOS INC.
Where Dentistry Becomes Art
The Imprint of Beauty is our Commitment to Excellence
Specializing In Implants
• BICON • BIOMET 3I • BIOHORIZONS • DENTSPLY IMPLANTS • MIS
• NOBEL BIOCARE • STRAUMANN • SOUTHERN IMPLANTS • THOMMEN • ZIMMER
Other Specialities
Captek System
IPS e.max
Gradia Composite System
CAD/CAM System inEos Blue
Implants
Laser Welding Technology
TCS Flexible Denture
SR Ivocap injection System
Picasso Dental Studios Inc.
www.picassodentalstudios.com
Masoud Niknejad, RDT
565 Edward Ave, Unit 4 Richmond Hill,On L4C 9W8
Tel: 905.883.9447

Strong Response to NSK Dental's iCare System Shows Practices Care about Handpiece Maintenance

Leading dental equipment manufacturer NSK Dental LLC today announced that its recently launched iCare handpiece maintenance system is enjoying a very strong reception from dental practices.

The iCare system makes it possible for dental practices to perform handpiece maintenance with the simple touch of a few buttons. This state-of-the-art system allows the practice to give each type of handpiece its own cleaning program, which includes specifying the volume of lubrication oil to be injected to ensure consistent and cost-effective operation. In addition, an advanced chuck-cleaning function makes it easy to effectively remove dirt and abrasive powder from the inside of the chuck to ensure smooth operation and prevent chuck-related problems. This maintains the optimal condition of handpieces and greatly extends their operating life.

Additional information about the as well as other NSK Dental products, can be found at www.nskdental.com.

ITI launches next generation e-learning platform

Groundbreaking e-learning platform offers unique user-centric approach that guides learners at every level of experience through a continuously expanding implant dentistry curriculum.

The International Team for Implantology (ITI), a leading academic organization dedicated to the promotion of evidence-based education and research in the field of implant dentistry, today launched its most significant educational offering to date, the ITI Online Academy.

Built from the ground up to meet the needs of implant dentistry professionals, the ITI Online Academy combines high quality, evidence-based content, maximum flexibility and ease of use to deliver a motivating and rewarding learning experience. A comprehensive peer-reviewed curriculum made up of optimally structured learning modules addresses users at all levels of knowledge and experience. The modules are supplemented by a broad range of additional learning materials such as recorded lectures, clinical videos and case studies that combine to provide focused learning pathways.

The ITI Online Academy is being continuously updated and extended. To complement the current offering, further educational formats will be added over time. Anyone with an interest in implant dentistry should register now for a free lifelong account at http://academy.iti.org.

Global success – Sirona Connect portal now available in eight languages

Take digital impressions and order the restoration online, quickly and easily via the global Sirona Connect portal. Sirona Connect is the first innovative system for digital cooperation between dentists and dental labs. The rapidly growing number of users is creating a true boom in orders – this year Sirona anticipates a 60-percent increase in orders around the world.

Sirona Connect allows dentists and dental technicians to connect in a very modern way – they can exchange data conveniently and securely via the portal. The portal interface is integrated into the dentist's and technician's software, regardless of which software version is being used by either party, thus greatly facilitating workflow.

For more information contact: www.sirona-connect.net

"Dale is an expert at guiding your team to developing their own "home-made" solutions, which they take ownership of - and then actually get implemented.

Dale's knowledge, experience and skill in making our operation run efficiently and effectively are without peer in the dental consultant community. Having Dale on board is one of the best business decisions we've made."

- Dr. Mark Antosz, Antosz Orthodontics. Calgary, AB

daletucci

MANAGING SUCCESS

TUCCI MANAGEMENT CONSULTANTS INC.

www.daletucci.com • dale@daletucci.com • 905.643.6782

Ask the Experts

Reason for Incorporating

Q When should I incorporate?

Darrell Tracey answers:

I get asked this all the time by young dentists. This is what I tell them: *"It depends on the situation."*

Arguably, the main reason for incorporating as a dental practitioner, or in any business, is to save or defer taxes so the with the individual's ability to take advantage of these tax benefits which arise from the Canadian graduated personal tax rate system favoring the spreading of income among more people to keep individual taxable income levels below the highest rate brackets. A professional corporation allows you to do that. Also, to stimulate small businesses, the corporate tax rate on active business income is comparatively very low. A dental practice is an active business for this purpose.

It may be time to incorporate if either of these factors applies to an extent sufficient to justify the costs:

- You have lower income family members with whom you can split dividends within the restrictions of your provincial governing body (College) as to whom may own shares;
- You do NOT require personally all the cash you generate in the practice.

It is too soon to incorporate if these comments describe your situation:

- You are single or your immediate family members have incomes too high to utilize income splitting;
- You have personal cash flow needs that require all of the profits from the practice (for example, student loans or big mortgages).

While there are other things to consider which are beyond the scope of this brief outline, it really is simply a matter of assessing your current situation. I encourage you to consult an experienced advisor for advice specific to your current situation and jurisdiction.

Team Bonus Plans

Q My question pertains to our bonus plan for staff members which has been in place for about five years. Records show our staff have been receiving a bonus about ten months of the year. I'm an office manager and have been asked by my employer to develop a better method of incentivizing staff. My question is: How do I begin this task?

Dale Tucci explains:

This question sounds very straight forward, when in fact it is a complex task to undertake due to the length of time the bonus has been in place. Without knowing more about the details of the incentive plan it is difficult to give you advice.

What I can offer is some general thoughts and ideas about practice bonus plans based on my consulting experience over the past three decades. To begin I think many dentists believe an incentive program will help motivate people and

Darrell Tracey, CA is the regional leader for MNP for the provision of services to professional clients in the B.C. lower mainland area. Based in Surrey, British Columbia he has over 30 years' experience serving dental professionals with their planning needs in the areas of tax, business, practice transition, retirement and succession. To locate a MNP Adviser in your area or to learn more about MNP's diverse suite of Accounting and Advisory services, contact Darrell darrell.tracey@mnp.ca or call 1-778-581-3500

Dale Tucci is owner and president of Tucci Management Consultants Inc. Dale and her team offers a wide variety of custom practice management solutions, transition planning, business coaching, associate recruiting, marketing and human resource services.

You can reach Dale Tucci directly at 416.450.8769
Fax: 905.643.6529
Email: dale@daletucci.com
www.daletucci.com

improve practice outcomes. Although this may hold true when team receive the bonus on a monthly or regular basis it is likely due to the goals being too easy to achieve rather than for stellar team performance. Therefore, step number one is designing an incentive plan based on goals or targets that require exceptional efforts to reach. Goals should be based on the S.M.A.R.T. model which is an acronym for Specific, Measurable, Achievable, Relevant and Time-bound.

Here is a quick review of the meaning of **S.M.A.R.T.** as a tool to set goals:

Specific: This should address the who, what, when, where and why around goals and are time-bound actions.

Measurable: Goals should be numeric or quality based.

Attainable: Set goals that can be a stretch to meet but are still attainable.

Relevant: Goals should be linked to the departmental and organizational goals.

Time-bound: The expected timelines to meet goals should be defined and progress checked regularly.

If you have never used this model before this is an appropriate time to use it as a guide to develop goals on which incentive plans can be created.

Your opening comments indicated team members typically receive a bonus about ten months of the year. If this has been the case for several years, team members likely consider the bonus payment part of their compensation. From my vantage point, the most repetitive problem I see in dental offices is flawed bonus plans that are not reassessed yearly. Generally speaking I would describe dental office bonus plans as "evergreen" meaning that once they are developed they usually remain in place for more than a year before being reviewed and redefined based on the goals of the practice. So my advice, once an incentive plan has been detailed take the time to assess the structure and make necessary adjustments yearly.

Next you must consider the bonus from the point of view of team members. By this I mean, if staff have been participating in a bonus plan for years and have not been advised of new goals to receive a bonus they believe *business as usual* is the expectation of the organization. My advice here is to consult the practice lawyer about this matter before

making any formal changes or announcements about a new bonus structure.

I would ask you to meet with the practice owner and ask a fundamental question; "What is the intent of offering a team bonus plan?" If it truly is to motivate people towards exceptional performance then the criteria around performance may need to be developed by department rather than practice overall. For example; a bonus based on meeting overall practice production and collection targets where all team members receive a pro-rated amount based on their working hours rewards and acknowledges all employees. If this is the plan you choose then stellar employees and mediocre employees are awarded equal bonus amounts based on working the same number of hours. If this fits into your belief system then this structure can be developed with advice from the practice accountant. The accountant would meet with the dentist and together they would determine an appropriate percentage of profit to share with team members. I would not undertake designing or implementing a bonus plan without this key advisor as this is a significant financial decision.

If the above structure does not meet your needs consider developing bonus plans based on the performance of each department. It will take time for the practice owner, accountant and practice manager to determine performance targets but this task can be achieved when all collaborate. For example performance goals for business personnel could include: collecting 98% of production, meeting specific goals for managing provider production, meeting provider downtime targets and/or meeting specific case compliance goals. By establishing goals by department the people responsible for meeting performance goals and thus receiving a bonus are rewarded for their efforts. When an organization has departmental goals it is possible that some but not all employees participate in an incentive in any given period of time.

When all is said and done defining employee bonus plans require time and thought. Those put together in haste will be fraught with problems. To office managers and dentists alike invest the time to meet with your lawyer and accountant to ensure the viability of the bonus plan and the frequency it will be awarded to team members.

Changing Contract

Q Due to the growing demands on our practice, we plan to alter the working hours of a couple of our dental nurses. However, we have spoken to both and they are not happy about changing as they have outside activities which clash with the proposed new times. Can we enforce this change on the employees as it is a genuine business need?

Liz Symon explains:

It is very difficult, but not impossible, for an employer to alter an employee's terms and conditions of employment. Like all legally binding contracts, the terms of an employment contract can only be altered if both parties agree to the changes.

The terms of a contract are the rights and obligations that bind the parties together. In order to change a term of an existing contract of employment, consultation and agreement needs to take place. The practice will need to fully consult with both nurses and explain the reason why the change is needed.

The practice should have individual meetings with each staff member to discuss the staffing plans of the practice and why there is a need to alter their hours. It is important to listen to their views, discuss any concerns they have and the reasons why the employees are not keen to change.

If the dental nurses agree to the change in their finishing times, the practice should confirm this in writing. If agreement cannot be reached, then one option the practice has is to impose the change upon them. This may lead to a potential breach of contract claim by the employee if the change is deemed to be fundamental. A fundamental change will include such aspects as pay, hours, contractual sick pay and holiday entitlement.

There is also a risk that, if the dental nurses feel the practice has acted unreasonably, one or both of them decide to leave their employment and raise a constructive dismissal claim (depending on their length of service).

Another option is to terminate the original contract, giving the proper notice, and offer the dental nurses re-engagement under a new contract, with the revised working times. In this situation there will be no breach of contract, but the termination of the old contract will be regarded as a dismissal and open to a claim of unfair dismissal.

When a practice terminates the old contract and offers a new one, it is essential that the matter is handled correctly. When considering whether a dismissal has been fair, some of the aspects that an employment tribunal would consider include:

- The business reasons for the change
- The employee's reasons for objecting
- If any alternatives to dismissal were considered
- Has a fair procedure been followed
- Have majority of other employees accepted the change
- The benefit to employer versus the adverse impact on the employee.

The subject of changing terms and conditions is a contentious one, and any dental practices with concerns in this area should always seek legal advice before taking any action. ■

Striving for perfection and achieving excellence

Products

- All Custom Dental Implants
  - ➲ Titanium
  - ➲ Zirconia
- PFM Crowns
  - ➲ Captek (Including Captek Bridges)
- All Ceramic Crowns
  - ➲ Alumina Procera
  - ➲ E-Max
  - ➲ Empress Esthetic
  - ➲ Zirconia
- Porcelain Veneers
- Combination Removable and Fixed Prosthesis
- Essix Retainers
- Sports Guards
- Night Guards
  - ➲ Dual Laminate
  - ➲ Hard & Soft
- Full Metal Crowns
  - ➲ Gold
  - ➲ Silver Palladium
  - ➲ Titanium
- Telio Temporary Crowns

Certified Laboratory in the Following

- Nobel Biocare Implants
- Nobel Biocare CAD/CAM
- Straumann Implants
- Sirona Cerec
- Captek
- Ivoclar Empress & E-max
- Laser Welding

INCISAL · EDGE · DENTAL LABORATORY

Thomas Kitsos, RDT
Owner and Principal

Incisal Edge Dental
3410 Yonge Street, Toronto
ON., M4N 2M9

Telephone: **416.489.6533**
Toll free: **1.877.INCISAL**
Fax: **416.489.6541**

E-mail: **incisaledge@on.aibn.com**
Website: **www.incisaledge.ca**

Oral Surgery Academy for General Dentists *presents:*

Oral Surgery for the GP: A Practical Approach

Dr. Lawrence I. Gaum DDS, FADSA, FICD, FADI, Cert. Anaesthesia

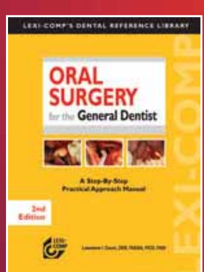
A 3-Day Hands-On Seminar

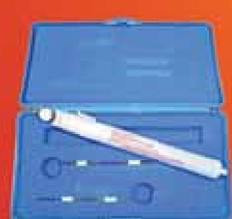
	New 2015 Dates	
Toronto	**Niagara-on-the-Lake**	**Toronto**
April 17-19, 2015 Springhill Suites by Marriott 612 Applewood Crescent, Vaughan, ON L4K 4B4 **SOLD OUT!**	**July 10-12, 2015** White Oaks Resort & Spa 253 Taylor Road SS4 Niagara-on-the-Lake, ON L0S 1J0	**October 23 - 25, 2015** Hilton Toronto / Markham Suites Conference Centre and Spa 8500 Warden Ave, Markham, ON L6G 1A5
$2395 + HST ▪ Includes a $499 Lab Fee		

To register contact:
Palmeri Media Group at **905.489.1970** ext. 206 / 207 or
Email: **events@palmeripublishing.com** / **seminars@palmeripublishing.com**
21 credits for seminar attendance

Sign up today!

The Most Sold Out Oral Surgery Course in North America!
You Won't be Disappointed!





Course price includes
Oral Surgery book and DVD & Portable Surgical/Cautery Kit

PMG
Palmeri Media Group A division of Palmeri Publishing Inc.
Phone: **905.489.1970 ext. 206 / 207**
Fax Orders: **905.489.1971**

Academy of General Dentistry PACE Program Approval for Continuing Education
Approved PACE Program Provider FAGD/MAGD Credit
Approval does not imply acceptance by a state or provincial board of dentistry or AGD endorsement
9/1/2013 to 8/31/2015
Provider ID# 355116

Dr. Lawrence I. Gaum
DDS, FADSA, FICD, FADI, Cert. Anaesthesia

Oral Surgery Academy for General Dentists presents:
The most successful course on...

Oral Surgery for the GP: A Practical Approach

Dr. Lawrence I. Gaum DDS, FADSA, FICD, FADI, Cert. Anaesthesia

A 3-Day Hands-On Seminar

Attend, Learn, Enhance, Advance & Perform.

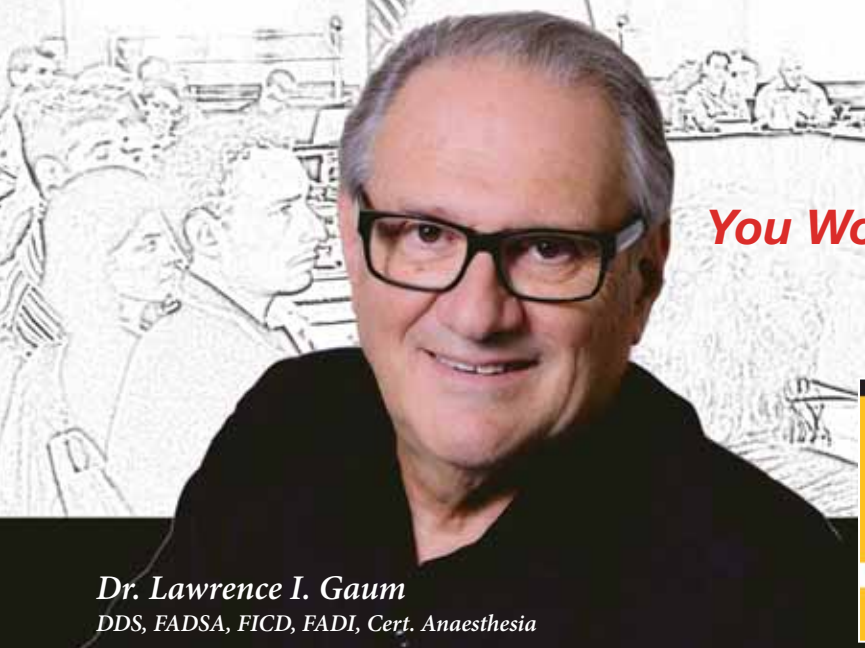
March 20-22, 2015

Wyndham Grand Orlando Resort Bonnet Creek, 14651 Chelonia Pkwy, Orlando, Florida 32821

$2,395 ▪ Includes a $499 Lab Fee

To register contact:
Palmeri Media Group at **905.489.1970 ext 206 / 207** or
Email: **events@palmeripublishing.com / seminars@palmeripublishing.com**
21 credits for seminar attendance

You Won't be Disappointed!



Dr. Lawrence I. Gaum
DDS, FADSA, FICD, FADI, Cert. Anaesthesia

Course materials include Oral Surgery book, video and Bovie Change-A-tip™ deluxe high-temp Cautery kit

Approved PACE Program Provider FAGD/MAGD Credit
Approval does not imply acceptance by a state or provincial board of dentistry or AGD endorsement 9/1/2013 to 8/31/2015
Provider ID# 355116

Palmeri Media Group
A division of Palmeri Publishing Inc.
Phone: 905.489.1970 ext. 206 / 207
Fax: 905.489.1971

How To *Fail*

Nadean Burkett

In virtually all of my past articles, the focus has been on how to succeed, be successful and achieve success. It is said that we learn more from failure than from success, and so this time I thought it might be fun to explore the most common ways in which dentists fail.

Here's my Top Five Ways To Fail in Your Dental Career:

5 Allow others to make your career and business decisions. This includes your accountant, lawyer, mother, father, spouse, girlfriend/boyfriend, partner, or advisor. Nothing in life is perfect but diluting your dreams to appease others can lead to conflict, bitterness and resentment – all devastating to a relationship. You will have to live with the consequences of your decisions. While this may give you some relief and reason to point a finger of blame later, it is wise to remember that at that same moment there are three more fingers pointing back at you. Grow up and make you own choices. Base your decisions on your own vision, core values and strengths. Consider what you will have to do, what you will need to sacrifice and how these things will affect others. Formulate measurable goals and objectives with deadlines, and write them down. Make them challenging but achievable. Share these with those who will be part of and affected by your plan so that they know what to expect and can support you along the way.

4 Focusing solely on monetary gain. Who we are is not defined by what we have. While I agree that all goals must be quantifiable, a dollar amount is not the only measurable outcome. I ask you to consider money as a tool. That tool can be used in a variety of ways – we can spend it, we can save it, and we can invest it. The way that we think about how we use money speaks to our values and core beliefs. For example: Do you consider practice acquisition a purchase or investment? When we measure our success in monetary or material ways, we are more apt to risk our integrity. When we focus on how we can improve the lives of others by helping them to achieve their goals through our skills, talents, efforts and good fortune, we are rewarded. What we do (and how we do it) makes us who we are and that results in what we have.

3 Believing that easy and simple have the same meaning. Every situation has multiple impacts and aspects to consider; like ripples from a pebble tossed into a pond so are the results from the situation and any possible actions taken to resolve it. Easy is seldom simple, and simple is rarely easy. Taking the time to consider others who are affected by the situation as well as yourself is not easy. It is much easier to think only of yourself, especially when facing a traumatic or devastating matter. We are conditioned to survive first – even the instructions for using the emergency oxygen masks tell us to don our own first and assist others after. Using response techniques rather than reaction provides time to process both the situation and its impacts – to identify not just the symptoms but also the root of the problem. This also allows time to weigh options available to address the matter in a strategic and confident manner. Use appropriate tools such as SWOT before taking action.

2 Ignorance. The one thing that we hear from dentists; all ages, genders and at all career stages is that they are not taught anything related to business in dental school. They lament that this is a problem for them as they become practice (business) owners and yet choose not to seek information, knowledge and training related to the things that they "know they don't know", let alone the things that they "don't know that they don't know". The result is that they don't know what questions to ask, who to ask, how to ask and when to ask. This creates vulnerability and fear of the unknown which often pushes them to friends, colleagues and family for advice and guidance. Unfortunately those advisers generally have limited expertise in the unique challenges and

MY PRACTICE MATTERS

A DIVISION OF NADEAN BURKETT & ASSOCIATES, INC.

... because transition is more than buying and selling practices

know more™

Our team of professionals has over 50 years combined experience working for and with dentists. We research and monitor the rapidly changing business and socio-economic environment that influences dentistry and your practice.

get more™

Get the service and support you need, when you need it. MPM gives back generously to our communities as donors and sponsors.

smile more™

We empower you to make informed choices, giving you the confidence to take control of your future. You always own the results of your accomplishments.

- practice & business management
- career prep
- practice valuations
- associate recruiting & placement
- transitions – in/out

we deliver your full service practice solutions

Nadean Burkett | Caroll Korner-Dickson | Shirley Goebel | Paddy Briggs

604.939.5009 | info@mypracticematters.com | www.mypracticematters.com

opportunities that exist in the profession of dentistry and because of the nature of their relationship with the dentist, are reluctant to admit that they are unable to provide the level of assistance required. More often than not, decisions and choices are made based on assumptions and uninformed opinions.

1 Arrogance. This is demonstrated in many ways but all come from the same attitude of self-importance. Whether you are late for a meeting or appointment (with a colleague, patient, or other person); fail to acknowledge or return a phone call or e mail (especially when you initiated the discussion) or do not follow through with what you have promised (explicit or implied), you may be guilty of this. Feeling entitled to receiving special favors or services that have a benefit you is another sign of arrogance. One piece of advice that I offer to all dental students that I have the pleasure and honor to speak with each year is this – a dental degree and licensing entitles you to work in an honorable profession and serve those in need for the life of your career, in which you will be rewarded in ways that can be counted and most importantly in ways that really count. The quality of your relationships will determine your degree of success, not simply clinical competence. Be humble and respectful of others – their time, feelings and rights. When you do genuinely, you will earn their respect and trust; and that is what will make you successful.

Failure is almost always our own fault. Avoiding these top five will not guarantee that you will never fail but at least you will have protected what is most important – mutual respect and trust – with those whom you rely upon personally and professionally. ■

Your feedback is always welcome. Contact Nadean via email nadean@mypracticematters.com or visit our website www.mypracticematters.com. Follow us on Twitter; like us on Facebook; connect with Nadean on LinkedIn.

Nadean Burkett is a career and business transition coach with more than 30 years experience in the dental profession – now assisting accountants and other professionals in private practice by referral. Trusted practice evaluator, business planner and respected coach and advisor for the past 10 years – Nadean facilitates The Empowerment Program series, Career & Practice Management for Dentists both online and from NBAI's head office situated in beautiful Vancouver, British Columbia. Visit www.mypracticematters.com, e-mail nadean@mypracticematters.com for listings, job postings, and more resources with your practice transition coach.

Periodontics for the GP: A Practical Approach

Dr. Edy Braun, Hon. BSc, DDS, Cert. Perio, FRCD(C)

A Three Day Hands-on Seminar

Date: March 27th – 29th, 2015 - $2,299 + HST

Location: SpringHill Suites by Marriott Toronto Vaughan
612 Applewood Crescent, Vaughan, ON L4K 4B4

Day 1: Periodontal Disease

1. disease etiology overview, monitoring and charting, hygiene surveillance
2. radiographic interpretation, treatment planning, proper sequencing
3. non-surgical options, chemotherapeutics, lasers
4. resective surgical techniques
   a) open flap debridement - flap curettage, distal wedge
   b) crown-lengthening (esthetic and functional)

Day 2: Regenerative surgical techniques

1. Soft-tissue grafting
   a) free gingival graft
   b) connective tissue graft
   c) frenectomy
2. Hard-tissue grafting
   a) guided tissue regeneration (osseous defects around teeth)
   b) guided bone regeneration (for implant or pontic site development)

Day 3: Hands-On Surgery and Suturing

1. practice techniques learned in the first 2 days....
2. open flap debridement surgery, continuous sling sutures
3. crown-lengthening surgery, vertical external mattress sutures
4. ridge augmentation surgery/implant bone graft, split-thickness flap
5. free gingival grafting and associated suturing
6. connective tissue grafting and associated suturing

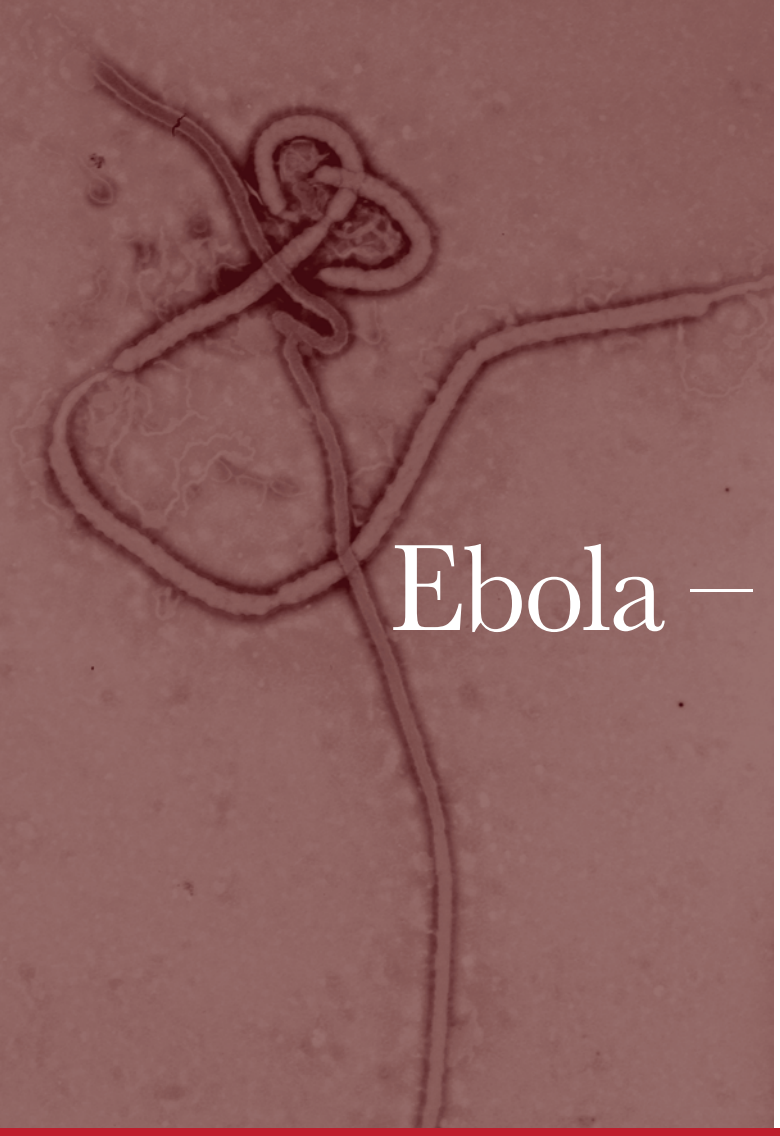
To register contact:

Palmeri Publishing at **905.489.1970** Ext. 206/207 or
Email: **seminars@palmeripublishing.com**
events@palmeripublishing.com

▶ ***21 credits for seminar attendance***

Approved PACE Program Provider FAGD/MAGD Credit Approval does not imply acceptance by a stateor provincial board of dentistry or AGD endorsement 9/1/2013 to 8/31/2015 . Provider ID# 355116

Palmeri Media Group
A division of Palmeri Publishing Inc.
Phone : 905. 489.1970 Ext. 206/207
Fax Orders: 905. 489.1971



Ebola – *Hold your breath or Get Rational*

Dean Swift, B.Sc. B.Ed. FADM Cert. Tox.

Introduction

After terrorism, *Ebolavirus* has been the most frequent participant in the world media spectrum. The resulting disease from this viral infection is truly horrific leading to a painful death in a very short time. All the North American hype and belly-button gazing is difficult to understand if you don't have the background to put it in context.

If we don't contribute, this situation will become a problem for all of us.

The true worry is for the people of West Africa at the *Ebolavirus* epicentre. Poor sanitation, water quality issues and hospitals without the basics should dominate the discussion. Unfortunately, the two aid workers sent back to the US for treatment helped create the media frenzy. Then the death in Dallas and the two subsequent cases really created an uncomfortable paranoia. This severe distraction took our (Western) focus away from the African epicenter. Paranoia has lead to blocking supply ships to West Africa. Presently only one airline is flying in to the region from Europe. There are shortages of food, medicines and protective gear resulting in skyrocketing prices.

Medical teams started managing this outbreak as if it were Malaria or Typhoid back in March 2014 in rural areas of Guinea, Sierra Leone and Liberia. The knowledge about *Ebolavirus* was minimal and lead to misdiagnoses. As of the beginning of November, over 14,000 cases have been recorded with a 60% mortality rate.

If we don't contribute, this situation will become a problem for all of us.

There is a real endemic need for a vaccine to stop this disease from becoming a continental scourge. The key to preventing further suffering is to promote early detection,

without the feeling of stigma, and to build a trustful health care system in Africa.

The Facts

The original epidemic began in 1976 in Zaire and the transmission vector is believed to have originated from Fruit Bats. *Ebolavirus* is a hemorrhagic virus that leads to a high fever and subsequent organ membrane breakdown with severe internal bleeding. Its effects are similar to Marburg and the North American Hanta virus. It is quite remarkable that this outbreak in West Africa is 5,000 km from the area of previous outbreaks. At the beginning, in Sierra Leone and Liberia, there were only 200 local doctors serving 10 million people. During the past 6 months 1/3 of these doctors have died.

The saving grace of this epidemic was that Médecins Sans Frontiers (MSF) was in the area as part of a Typhoid project. MSF has participated in 10 previous Ebola epidemics or outbreaks since the beginning. The MSF field force has grown from 300 to 2,000 in the past 6 months. MSF, as a volunteer based group were very understaffed as they were, and are still, handling 60% of the cases. The local Health Systems collapsed as people travelled to cities for help and spread the disease to dozens of distinct areas including large cities like Monrovia. These are conditions that are already present on a regular basis, but because the clinics are so full of Ebola patients, people with other conditions such as malaria just can't get the care that they need.

Funeral traditions, such as returning the dead back to their villages with intimate end of life ceremonies, have only exacerbated the situation.

Where we go from here

I am no infectious disease expert, but I can guarantee that there are very few knowledgeable people on this continent who have first hand experience with the *Ebolavirus*. What I can explain is that the principles of infection control have at this time, once again, gone off the rails, as they have so many times in the past. The key to managing this crisis is to control each case correctly, by having thorough follow-up and giving education that minimizes stigma and enhances trust in the Medical system.

From a disinfection point of view, *Ebolavirus* is very easily inactivated by almost all disinfectants. It is an enveloped virus, which, in simple terms, means it has all of its "junk" on the outside of its envelope, much like HIV and H1N1. Products such as ***BioSURF*** are effective in as little as 20 seconds against similar types of viruses.

Infection Control has to be a global concern. We must collaborate and coordinate as "earthlings" in these endeavours. My suggestion, should you be very concerned about the plight of the African continent, is to support Médecins Sans Frontiers (MSF Doctors without Borders) who have been and continue to be the lead agency in so many humanitarian emergencies. ■

Dean Swift B.Sc. B.Ed. FADM Cert. Tox.
Research Director Biolennia Laboratories, Toronto, Canada

Canadian Journal of Restorative Dentistry & Prosthodontics
The official publication of the Canadian Academy of Restorative Dentistry and Prosthodontics
CJRDP
JCDRP
Journal canadien de dentisterie restauratrice et de prosthodontie
Publication officielle de l'Académie canadienne de dentisterie restauratrice et de prosthodontie

CJRDP Editorial Board/Le comité de rédaction JCDRP

Publisher:
Ettore Palmeri, MBA, AGDM, B.Ed., BA
Palmeri Publishing Inc.
Toronto, Canada
ettore@palmeripublishing.com

Office Administrators:
Lobat Lali – lobat@palmeripublishing.com
Tina Ellis – accounting@palmeripublishing.com
Bahar Palmeri, B.SC – bahar@palmeripublishing.com

Sales/Marketing:
Mark Behar Bannelier – mark@palmeripublishing.com
Gino Palmeri – gino@palmeripublishing.com

Production Manager:
Samira Sedigh, Design Dip. – production@palmeripublishing.com

Design & Layout:
Tim Faller – tim@palmeripublishing.com
Sophie Faller

Internet Marketing Director:
Ambianz Inc., Rashid Qadri

Canadian Office:
35-145 Royal Crest Court,
Markham, ON L3R 9Z4
Tel: 905-489-1970, Fax: 905-489-1971
Email: ettore@palmeripublishing.com
Website: www.palmeripublishing.com

PPI Palmeri Publishing Inc.

Printed in Canada
Canadian Publications Mail Product Sale Agreement 40020046

CEREC Connect

sirona Connect

VIVACLAIR DENTAL LABORATORY
LABORATOIRE DENTAIRE VIVACLAIR

CADENT iTero

VIVACLAIR LAB

QUALITY IS OUR SIGNATURE

A full service dental laboratory featuring: milling center,
fixed bridges, cowns and veneers,removable dentures
and metallic partials, implants and titanium prothesis

CANADA VIVACLAIR
Laboratoire dentaire
Dental laboratory

1 Place du Commerce, # 415
Ile des Soeurs, (Qc) CANADA H3E 1A2

T 514.582.7178 / 514.766.3777
1 866.921.VIVA (8482) / F 514.766.3377
order@vivaclair.ca / www.vivaclair.ca

Zirclair™
zirconia crowns & bridges

AACD American Academy of Cosmetic Dentistry MEMBER

Dr. Ben Balevi, B.Eng, DDS, Dip EBHC(Oxford), MSc.

Clinical Practice Guidelines are relevant to Dentistry

Les guides d'exercice clinique sont pertinents dans le domaine de la dentisterie

Abstract

Clinical Practice Guidelines are an evidence-based tool to transfer scientific knowledge to clinical practice with the aim of optimising patient care. CPGs should be understood as being a clinical tool that makes accessible the latest relevant scientific evidence in an approachable and unthreatening way, for the benefit of both the busy clinician and the inquiring patient. Society understands dentistry to be an applied science. Ignoring evidence-based CPG in clinical practice invites the erosion of public confidence and trust in the dental profession.

Key words Clinical Practice Guidelines, Evidence Based Dentistry

Résumé

Les guides d'exercice clinique sont des outils factuels visant à transférer les connaissances scientifiques au sein des pratiques cliniques dans le but d'optimiser les soins destinés aux patients. Ceux-ci devraient être perçus comme des outils cliniques facilitant l'accès aux plus récentes preuves scientifiques pertinentes, d'une façon conviviale et rassurante, au bénéfice du clinicien affairé et du patient qui cherche à obtenir des réponses à ses questions. La société considère que la dentisterie est une science appliquée. En ignorant les guides d'exercice clinique factuels dans la pratique clinique, la confiance du public envers la profession dentaire pourrait s'éroder.

Mots-clés Guides de pratique clinique, Dentisterie fondée sur les faits

Clinical decision making requires the dentist and the patient to decide on the best course of action amongst a number of competing treatment options. This decision is made in a world of uncertainty and choice. To quote Sir William Osler, "[clinical practice] *is a science of uncertainty and art of probability*". Nonetheless, clinical decisions are ideally based on the best information available at the time. Evidence-based dentistry (EBD) promotes "best evidence" decision making based on a systematic process of considering the dentist's clinical experience, the patient's values and preferences, and relevant scientific research.[1]

The last point is significant, as patients regard the dental professional to be an expert in oral sciences. They expect the dentist to be current in relevant scientific knowledge and its application to dental care. However, it is challenging for the busy clinician to stay abreast of scientific research in an era where knowledge grows at

As Benjamin Franklin so wisely said:
"Tell me and I will forget, teach me and I may remember, involve me and I learn."

It's All in a Days Work at Kids Dental with Dr. Carla Cohn

Coming on
Friday, May 1st, 2015
8:30am to 4:30pm

Practical Everyday Procedures for your Paediatric Patients - Hands On Workshop

$459 + HST
7 CE CREDITS

This course will give you practical points on how to treat your little patients well. Restorative treatment options and their clinical indications will be presented. Applications of a variety of dental materials and procedures in anterior and posterior teeth will be demonstrated. The participant will be able to use many of the materials discussed in the hands on component. Treat your kids well and your practice will soar.

"Practical Dentistry for your Paediatric Patients" is the most clinically relevant course for children's dentistry that you will ever attend. You will be shown the very best materials that dentistry has to offer. In this lecture and hands on workshop you will learn about and experience:

1. Reliable restorative materials and their application.
2. Practical procedures and techniques.
3. Aesthetic restorations, both anterior and posterior primary dentition.

Approved PACE Program Provider. FAGD/MAGD Credit Approval does not imply acceptance by a state or provincial board of dentistry or AGD endorsement 9/1/2013 to 8/31/2015. Provider ID# 355116

Location: **SpringHill Suites by Marriott Toronto Vaughan**
612 Applewood Crescent, Vaughan, ON L4K 4B4

For more information to contact:
Palmeri Media Group *A division of Palmeri Publishing Inc.*
Phone : 905. 489.1970 Ext. 206/207
Fax Orders: 905. 489.1971
Email: seminars@palmeripublishing.com | events@palmeripublishing.com

a geometric rate. Clinical Practice Guidelines are meant to bridge the gap between current scientific research and patient care at chairside.

Clinical Practice Guidelines (CPGs) are a tool to transfer scientific knowledge to clinical practice with the aim of optimising patient care.[2] High quality CPGs are based on the procedures of EBD, including a systematic and transparent process of summarising the best scientific information applicable to typical clinical scenarios. The guidelines are not just a summary of the gathered research, but a critical appraisal of its results and conclusions based on its validity, precision and generalisability to the clinical context. CPGs include recommendation statements on therapy that are based on the quality of the best current scientific evidence, the side-effects of the therapy and risk of harm, cost effectiveness, and the value and preferences of the patient.[3] High quality CPGs are considered the *"the strongest resources to aid dental professionals in clinical decision making and help incorporate evidence gained through scientific investigation into patient care."*[4]

However, a recently published article contains the remarkable claim that CPGs *"… need to be based on faultless research …* [and thus]*… are of limited value. Ultimately, the decision on care will be determined by the practitioner's judgment tempered by knowledge of patient's needs. It was ever such."*[5]

To suggest that science must be faultless for it to be relevant is extraordinary, to put it mildly. Of course there is error in any body of research, but reasonable people do not deny the power of science to advance knowledge and impact society. It is precisely the error correcting mechanisms inherent in the scientific process – the removal of bias through the discipline of evidence – that makes it so important.

The author seems to be promoting a return to an antiquated model of health care delivery based solely on "expertise", with little attention paid to the patient's voice and trivialising the science that dentistry should be based on. The field of medicine has already had its struggle with this paternalistic view of care, and rejected it in favour of an evidence based approach. As a result, CPGs are ubiquitous in medicine.[6] And now there is a growing number of evidence-based CPG for dentist that are freely available on the internet.[7,8]

CPGs should be understood as being a clinical tool that makes accessible the latest scientific evidence in an approachable and unthreatening way, for the benefit of both the busy clinician and the inquiring patient. CPGs are not meant to direct dental practice, but to guide clinical decision-making, along with the clinician's expertise and patient preferences and value.

Society understands dentistry to be an applied science. To argue that CPGs, and thus the science they embody, have no role to play in patient care is to deny the scientific foundation that patients and society expect from dentistry. Ignoring evidence-based CPG in clinical practice invites the erosion of public confidence and trust in the dental profession.

References

1. Balevi B, Evidence-Based Dentistry; critically appraising scientific evidence. Can J Rest Dent Prosth 2014, 7:11-15
2. Dave Davis, MD Joanne Goldman, MSc Valerie A. Palda, MD, MSc, Handbook of clincal practice guidelines. CMA July 2007 (https://www.cma.ca/Assets/assets-library/document/en/clinical-resources/CPG%20handbook-e.pdf accessed Nov.24th, 2014
3. Faggion CM, The development of Evidence-based Guidelines in Dentisry, J Dent Educt 2013 77:124-136
4. ADA Clinical Practice Guidelines Handbook 2013 Upate, American Dental Association http://ebd.ada.org/~/media/EBD/Files/ADA_Clinical_Practice_Guidelines_Handbook-2013.ashx accessed Nov.24th, 2014
5. Hardie J, Limited value of Evidence-Based Care, Oral Health Sept 2014 http://www.oralhealthgroup.com/news/the-limited-value-of-evidence-based-care-john-hardie-bds-msc-phd-frcdc/1003233815/ accessed Nov.24th, 2014
6. The National Guideline Clearinghouse , Agency of Healthcare Research and Quality, US Dept of Health & Human Services, (http://www.guideline.gov). accessed Nov.24th, 2014
7. Clinical Practice Guidelines, The American Dental Association – Center of Evidence-Based Dentistry http://ebd.ada.org/en/evidence/guidelines accessed Nov.24th, 2014
8. Canadian Agency for Drugs and Technologies in Health (CADTH), Dental Guidelines http://www.cadth.ca/en/search?q=&cmesh%5B0%5D=19 accessed Nov.24th, 2014

About the author

Dr. Balevi received degrees in Engineering and Dentistry from McGill University. He completed a dental residency at St Michael's Hospital in Toronto while teaching and pursuing research in dental material at the University of Toronto. He completed a Master of Science degree in Clinical Epidemiology / Evidence – Based Healthcare at the University of Oxford (U.K.).

Dr. Balevi is the author of several peer-reviewed publication and serves as a peer reviewer for several scientific journals. He is a Critical Review Panelist with the ADA- Center for Evidence-Based Dentistry and associated with the University of British Columbia's faculty of medicine. His research interests are in patients' health state utilities, decision tree analysis and economic analysis of health (including dental) care. Dr. Balevi is in full-time private practice in Vancouver and a board member with the College of Dental Surgeon of British Columbia. drben@dentalben.com

Comments/Commentaires

Technology and expertise

THE PERFECT COMBINATION

PARTIAL ORONAL / CU-SIL CU-SIL
ACETAL CLASPS / CAD TITANIUM IMPLANT BARS / BPS FINISH

Highly qualified staff and cutting-edge technology:
Our products are flawless to the last detail.
For more information on our services, visit ***lafonddesjardins.com*** or call us at ***450 669-9221 / 1 800 361-2145***

LAFOND DESJARDINS
LABORATOIRE DENTAIRE

Dr. Kelvin I. Afrashtehfar, DDS, MSc (c), FADI, FADFE

Dr. Hugo A. Zamora-Montes-de-Oca, DDS, Cert. Prosthodontist

Dr. Shahrokh Esfandiari, BSc, MSc, DMD, PhD, FICOI

Young Author Award Submission

McGill

Dental implant planning aided by a radiological diagnostic template using the Nobel Biocare all-on-four protocol

La planification de l'implant dentaire assistée par un modèle de diagnostic radiologique utilisant le protocole Nobel Biocare All-on-four

Abstract

Endosseous dental implants have been used to provide prosthetic replacement from a single tooth up to completely edentulous ridges with successful long-term outcomes. Accurate diagnosis enhances this already highly successful dental implant therapy. This article presents the diagnostic planning phase, aided by tomographic templates and computer software, for two patients preparing for dental implant treatment.

Key words

computer, software, diagnostic, template, dental implant planning, pre-surgical planning for implants, all-on-four.

Introduction

Endosseous implants have been used in patients to replace from a single missing tooth up to complete edentulousness with two possible solutions: fixed and removable prosthodontics.[1,2] In order to complete the diagnosis and to select a proper treatment plan, it is necessary to use the aid of a bi-dimensional (i.e. orthopantomography) and more often tri-dimensional (3-D) radiographic technique (i.e. computerized tomography) in pre-surgical assessment of implant sites.[3-5] When the patient has selected a treatment with endosseous implants, the radiographic technique should complement the anatomic findings and the planned rehabilitation by the means of a radiographic template. Utilizing a correctly developed radiographic template will help ensure the correct position of the dental implants and improve the ability to provide a predictable outcome.

Résumé

Les implants dentaires endo-osseux sont utilisés pour assurer un remplacement prothétique d'une seule dent ou de crêtes édentées complètes avec succès à long terme. Un diagnostic précis améliore la thérapie d'implant dentaire qui a déjà un grand succès. Cet article présente la phase de planification de diagnostic assistée par des modèles tomographiques et de logiciels pour deux patients prévus pour le traitement d'implants dentaires.

Mots-clés

ordinateur, logiciels, diagnostic, modèle, planification de l'implant dentaire, la planification pré- chirurgicale pour les implants, all-on-four.

The "All-on-four" protocol (Nobel Biocare AB, Göteborg Sweden) provides a fixed or removable method of rehabilitation (with an overdenture supported by a bar) utilizing the placement of four implants within the edentulous maxilla or mandible. With the use of a radiological or tomographic template and Computerized Axial Tomography (CAT), a surgical guide is fabricated to assist with the precise placement of the implants during the potential flapless surgical procedure.[4,6-8] There have been reported errors in treatment planning while using these types of surgical guides. Most of the errors were due to the incorrect fabrication of the tomographic templates, their misfit during the tomographic procedure, the absence of some of their components, and the variation and specific features of the software planning.[8,9] Some of the factors related to incorrect fabrication may be:

1. ***Misfit during the tomographic procedure.*** Since the guide is a duplicate of the template, any misfit (retention, support or stability) will be transferred to a surgical guide during the virtual planning.
2. ***Lack of support of the template while taking the CAT scan.*** Lack of the correct seating of the template could happen while placing it in the patient, even when it appears to be well adapted.
3. ***Not knowing the protocol for tomographic study.*** Nobel Clinical indicates: use gutta-percha as a contrast medium, DICOM format file and tomographic images (virtual 'slices') of 0.5mm.
4. ***Insufficient anchor pins.*** These pins are placed virtually during the planning phase and must have a buccal flange in the template to place the pins and anchor over the ridge bone. These have to be placed properly to guarantee stability during the drilling phrase.
5. ***Insufficient radiopaque elements*** (gutta-percha points).
6. ***Insufficient thickness of the guide.*** This kind of guide could fracture at the moment of surgery.
7. ***Lack of knowledge of the anatomical structures involved.*** In planning, there could be clinical consequences when invading any structure: nerve, vascular, maxillary sinuses, tooth-implant distance, implant-implant distance, apical-coronal depth, thickness of the osseous plates, etc.

There is a lack of evidence in treatment modalities that use the Nobel Guide guided-surgery system. The need to provide information and training about this technique is highly recommended for clinicians involved in the planning of dental implants.[4]

The Tomographic Template

The template could be a duplicate of a proposed prosthesis, a provisional restoration in the case of a fixed partial denture or a removable prosthesis in the case of a complete denture.[10] These templates are modified and a radiopaque element (metallic pellets, guide tubes, gutta-percha, barium sulfate) is integrated in their structure during manufacture to complement the radiographic information (2-D or 3-D) of the remaining bone and anatomic structures related to prosthetic information.[3,5] The template could also be used as a surgical guide for the dental implant placement.

A tomographic template must fulfill the following conditions:

1) In the case of a complete edentulous patient, the template has to be fabricated with a rigid material in order to get stability and to be supported by subjacent structures during the tomographic procedure.
2) For the partially edentulous patient, the rigid base of the template supported by adjacent teeth must have a window to visually verify the correct placement. Once the surgical guide is available, and since it is a duplicate of the template, adjustment is usually necessary before the actual surgical procedure.[6,10]
3) It is necessary to have an inter-occlusal registration to ensure stability with the opposing arch.
4) It is necessary to have radiopaque elements as a reference for the definitive restoration during

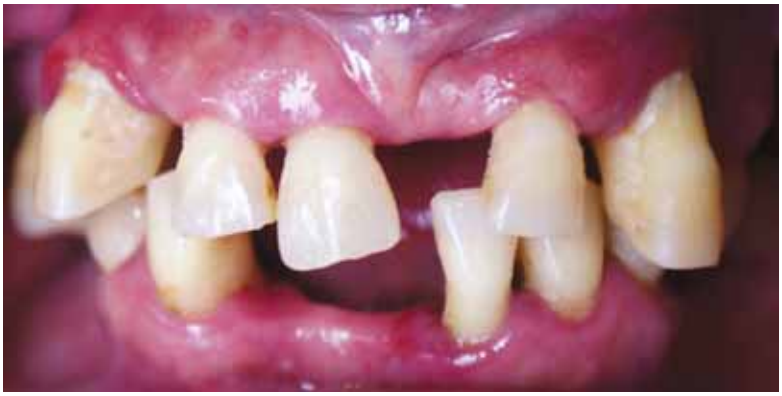


Figure 1 — Initial picture of the first case.

software planning.[4,8,9] In the Nobel protocol, cases should contain at least six gutta percha points (1.5mm diameter and 1mm deep) placed on the vestibular flange and at least three points at the palate surface to facilitate the virtual overlap of the template itself and the template placed in the mouth of the patient.

5) The tomographic template must be easy to manipulate and insert in position in case the patient has to place the template by himself.
6) The template must have in its design vestibular flanges in order to place attachment pins on the guide during software planning to ensure bone subjacent support during the surgical procedure protocol.
7) The template has to have enough pins and be placed as a tripod to guarantee absence of movement during surgery.

Material and Methods

There are three alternatives to fabricate tomographic templates. These alternatives are achieved

1) by duplicating a diagnostic wax and creating flanges for the template,
2) by using a provisional restoration in the edentulous space where the implants can be placed,
3) by duplicating or modifying a denture which can be used as a provisional prosthesis for immediate loading.[10]

This study is a case study based on two clinical cases in which the above first two alternatives were utilized.

First Clinical Case

This case is about a patient who was diagnosed with generalized periodontal disease and deficient periodontal support of remaining maxillary teeth (Figure 1).

The following maxillae treatment plans were offered to the patient:

1) immediate denture placement after teeth extraction and surgical modification of the alveolar process,

2) extraction of remaining teeth, alveolar osteotomy, alveolar bone preservation,[11] placement of 4 implants for an “All-on-four” implant-supported overdenture, and

3) extraction of remaining teeth, surgical modification of the alveolar process, alveolar bone preservation,[11] and placement of 4 or more implants for an “All-on-four” implant-supported fixed prosthesis.

The patient preferred the third treatment option. Primary casts were obtained in order to fabricate an individual impression rim for a physiological cast. An inter-maxillary registration made of silicon diminished

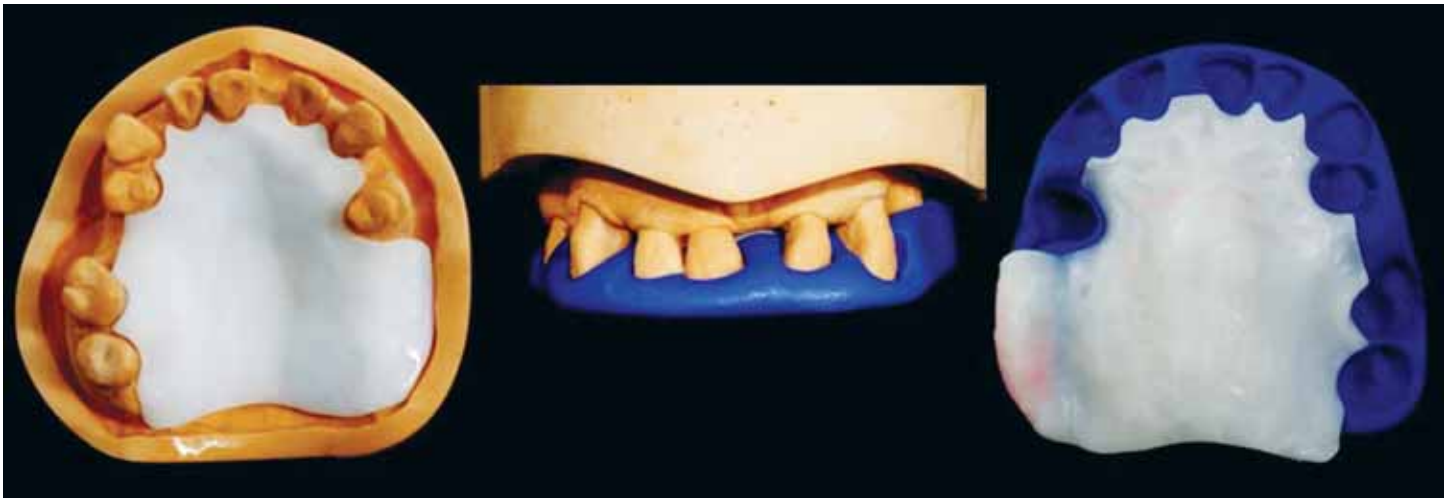


Figure 2 — Silicone roll to obtain jaw relationships.

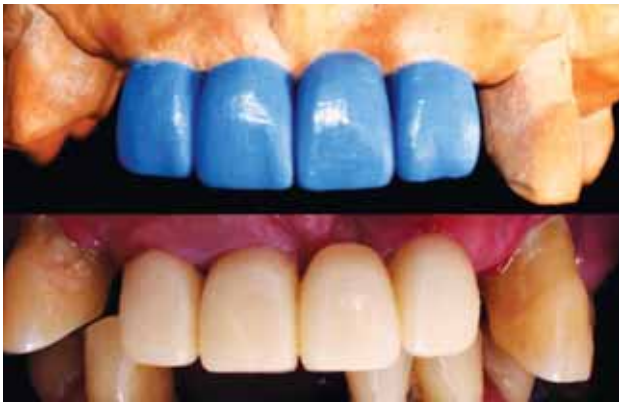


Figure 3 — Trial arrangement of incisors for conducting mock-up prior to extractions of remaining teeth.

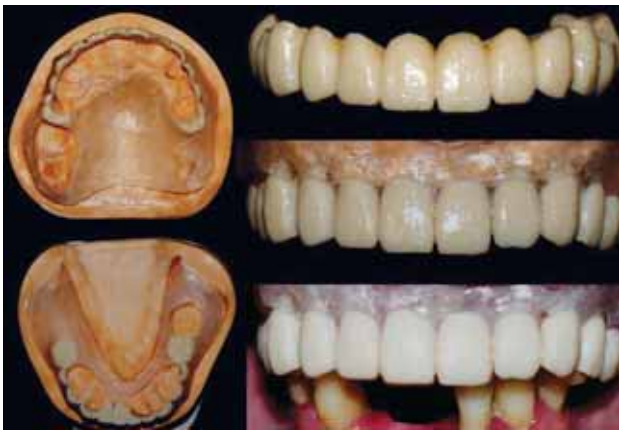


Figure 5 — Left side: Finished templates, which will have gutta-percha points placed for the virtual junction and planning with Nobel Clinician. Right side: acrylized trial arrangement used for template confection and for the immediate load with provisional prosthesis.

the degree of movement of the remaining teeth and the casts were transported to the semi-adjustable articulator (SAA) (Figure 2).

For the template fabrication, a trial arrangement was made accounting for the upper lip support and maxillary teeth incisal borders. A mock-up trial was made to increase the predictability (Figure 3). The extractions were simulated in the cast and the trial arrangement was completed to explain the expected outcomes to the patient.

We then waxed the vestibular flanges for the template fabrication (Figure 4). Finally, the gutta-percha points were placed in order to test the template in the patient's mouth for the first tomographic scan. The second scan was done for the template alone (Figure 5). The dental implants were virtually and accordingly placed. The surgical guide was created by transferring this information to the Nobel Clinician software.

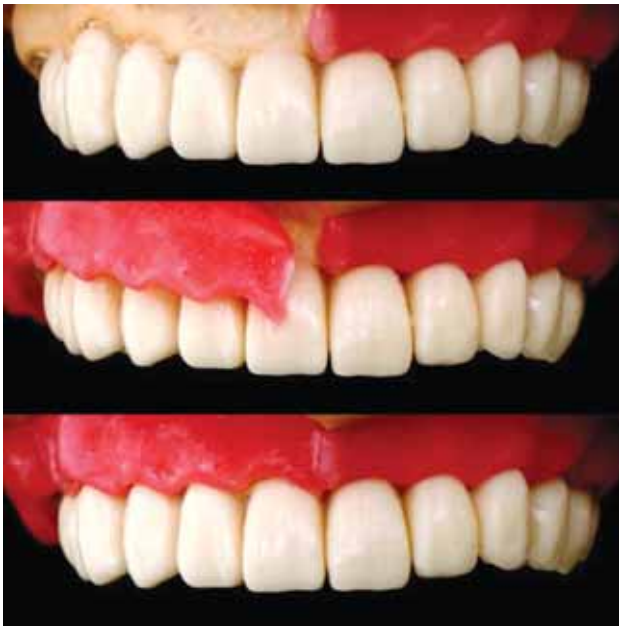


Figure 4 — Diagnostic trial arrangement completed with attached gingival edges which are placed over the points of gutta-percha during virtual manufacturing of the surgical guide.

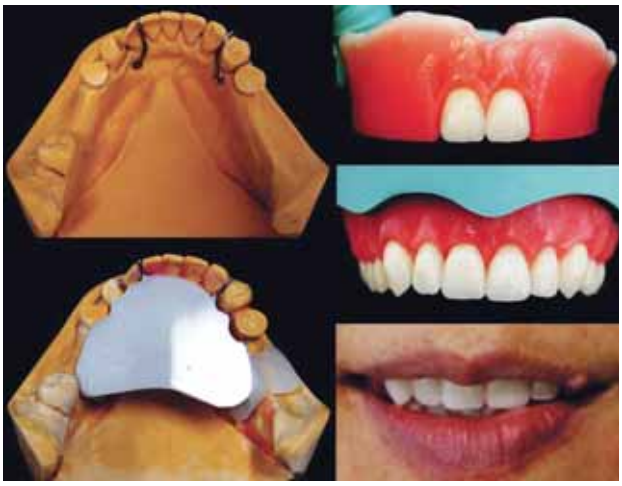


Figure 6 — Second Case. In the mandibular cast, the ball retainers are bent and adjusted to retain the plate which will host the Gothic arch tracing.

Second Clinical Case

This case involves a maxillary edentulous patient who presented with a partially edentulous mandible of class II modification 1.

The maxillae treatment plans were:

1) a complete denture,

2) to place two implants for an implant retained overdenture, and

3) to place 4 implants for a fixed implant supported denture. This last alternative was the patient's choice.

Treatment began conventionally by fabricating one complete denture. Anatomic impressions had to be taken for fabrication of an individual rim. Then, a physiological

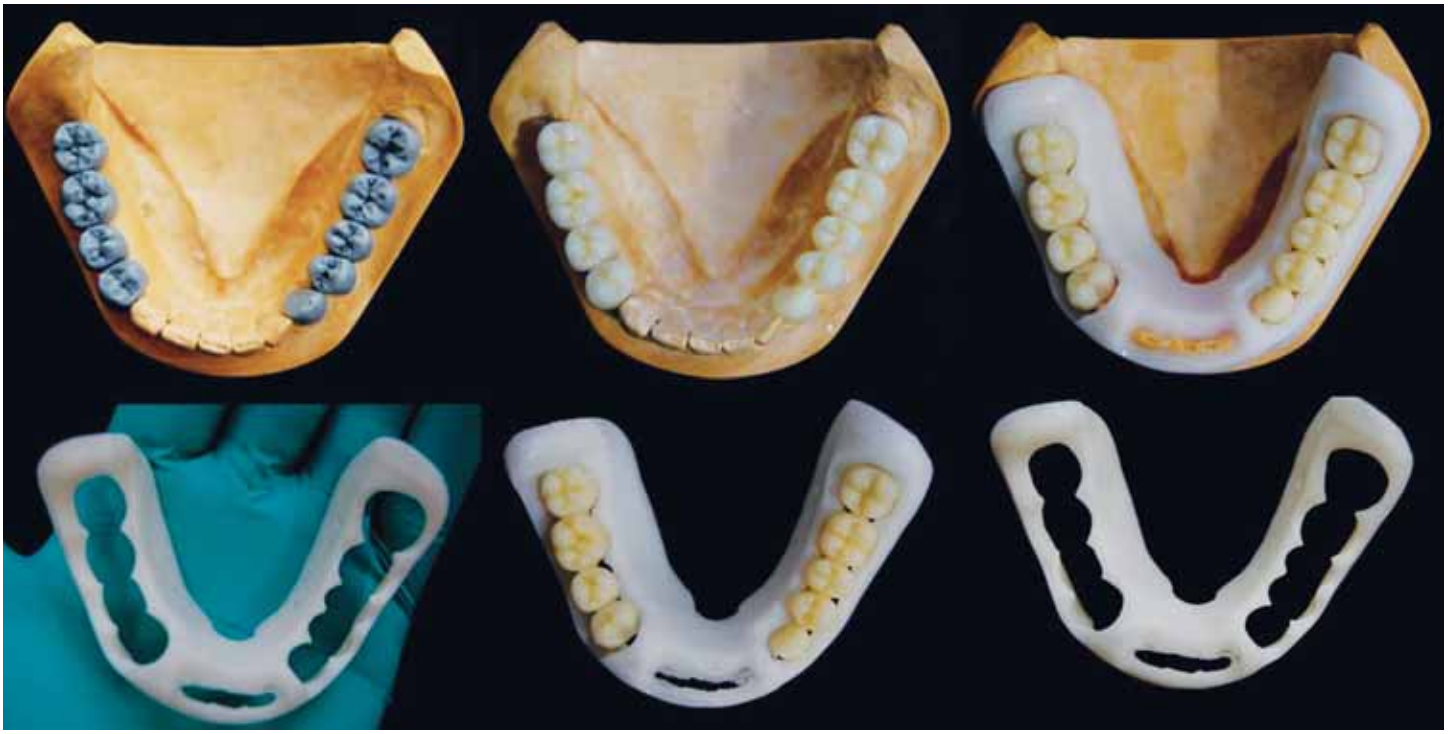


Figure 7 — A trial arrangement is created and is duplicated in acrylic for fabricating the provisional restoration, which remains in the mouth at the time of tomography. The tomographic template is designed with vestibular holes to place the gutta-percha.

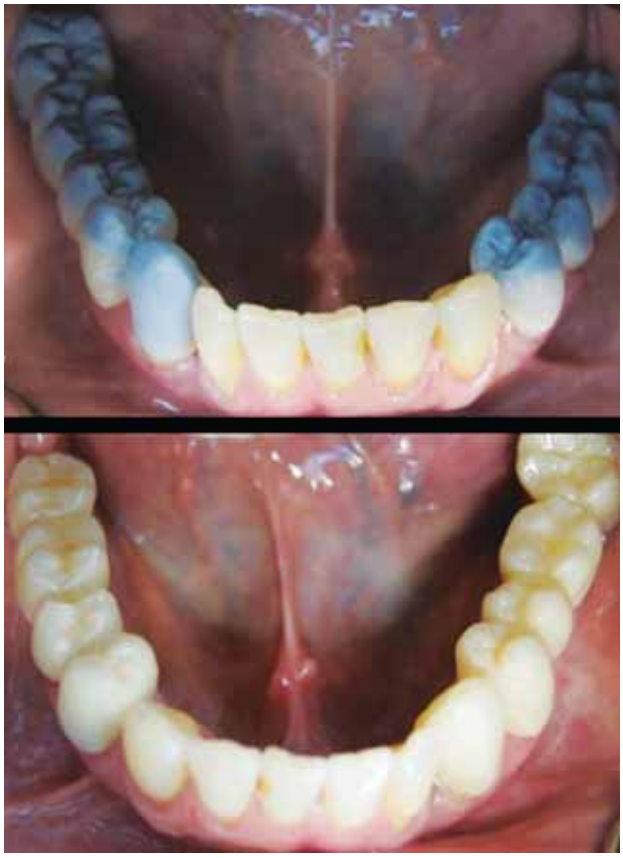


Figure 8 — Upper image: the trial arrangement on acrylic copings is tried in. Lower image: then the provisional restoration is fabricated, tried in and cemented.

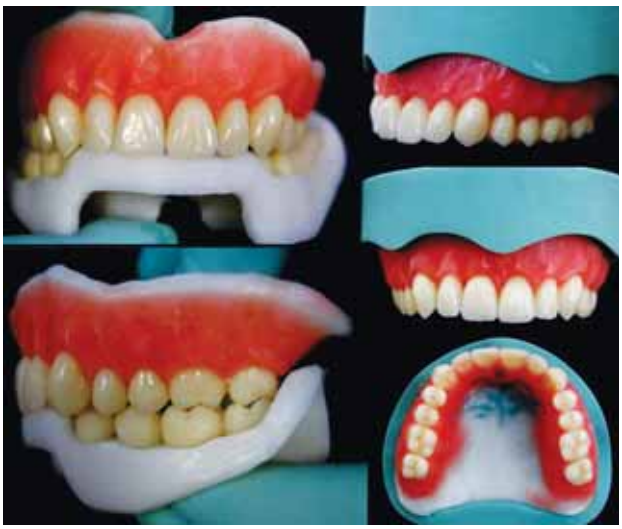
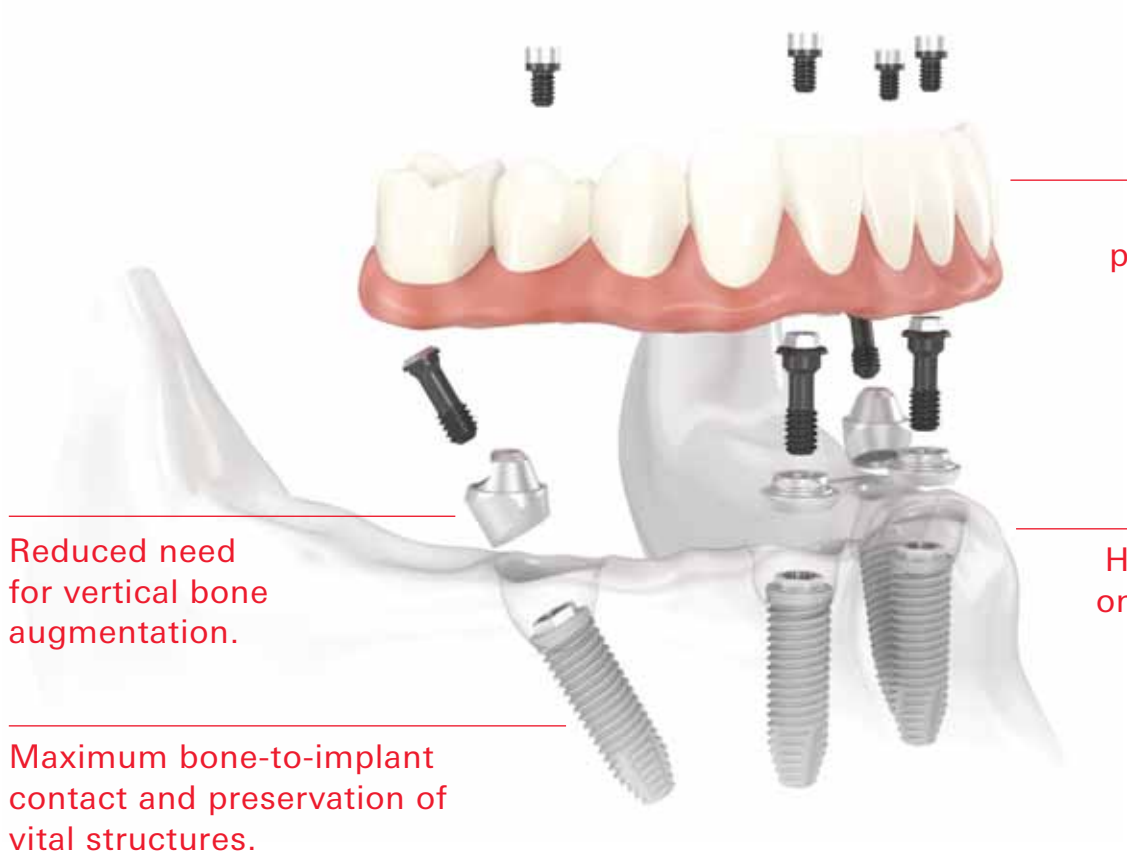


Figure 9 — Left side: the antagonists are tested and a silicone interocclusal record is made over them. Right side: maxillary teeth placed, scalloped denture and creation of palatal rugae.

impression with polyvinyl siloxane was taken to obtain study casts. Next, inter-maxillary relations were taken using a graphic intraoral tracer (Figure 6).

The diagnostic trial arrangement was done over acrylic covers to test them directly on the patient. Once approved, they were duplicated for provisional fabrication (Figures 7 and 8). As mentioned, maxillary template fabrication was conducted by duplicating the denture trial arrangement with silicon, as well as adding six

The efficient treatment concept with immediate loading.



Wide variety of prosthetic options with maximum function and fit.

High stability with only four implants.

Reduced need for vertical bone augmentation.

Maximum bone-to-implant contact and preservation of vital structures.

All-on-4® treatment concept

The All-on-4® treatment concept was developed to provide clinicians with an efficient and effective restoration using only four implants to support an immediately loaded full-arch prosthesis.* Final solutions include both fixed and removable prostheses such as NobelProcera Implant Bridge Titanium or Implant Bar Overdenture. The tilted posterior implants help avoid relevant anatomical structures, can be anchored in better quality anterior bone and offer maximum support of the prosthesis by reducing cantilevers. They also help eliminate the need for bone grafting by increasing bone-to-implant contact. The All-on-4® treatment concept can be planned and performed using the NobelClinician Software, ensuring accurate diagnostics, planning and implant placement. **Their smile, your skill, our solutions.**

For more information, call 800 939 9394

To purchase products, go to store.nobelbiocare.com

To see our latest videos, go to youtube.com/nobelbiocareamericas

Nobel Biocare®

Nobel Biocare Canada, Inc. 9133 Leslie Street, Unit 100, Richmond Hill, ON L4B 4N1; Phone 905 762 3500; Toll free 800 939 9394; Fax 800 900 4243

* If one-stage surgery with immediate loading is not indicated, cover screws are used for submerged healing.

Figure 10 — Sheath of template and CAT scan. Right lower image: planning is performed by Nobel Clinician software.

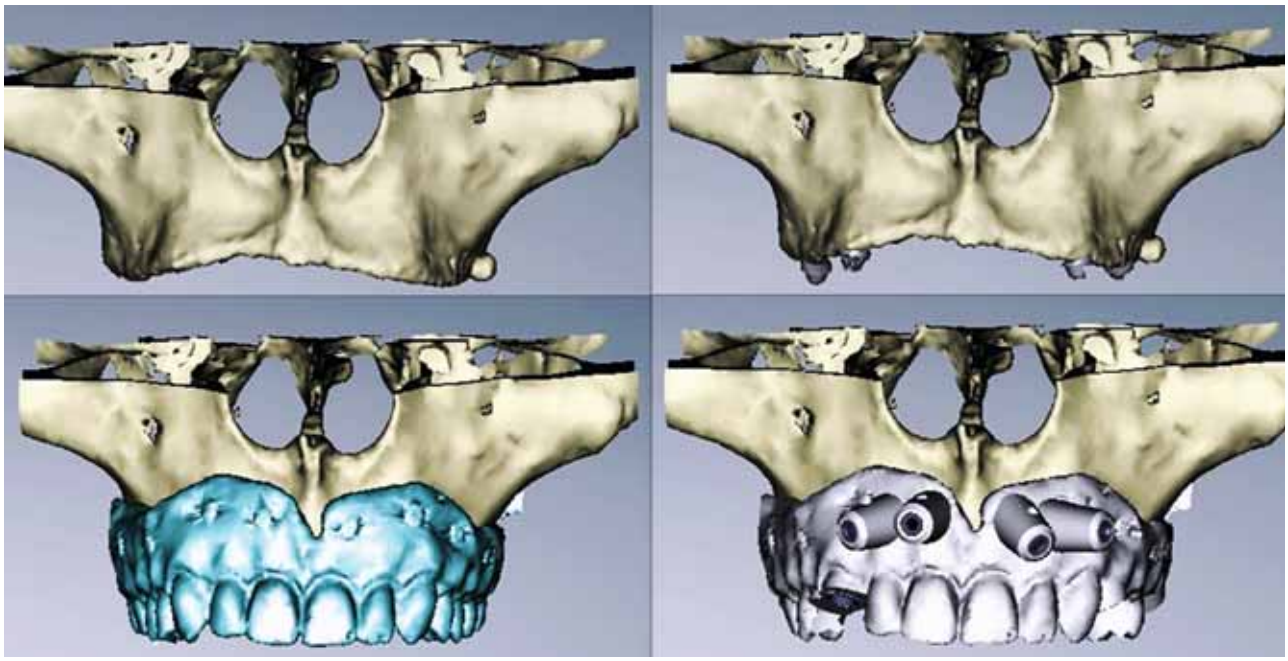


Figure 11 — Right upper image: planning is conducted by placing four implants in the maxillae. Left lower image: the bone volumen with the prosthesis shown by the template is associated. Right lower image: a surgical guide is fabricated virtually from the template design.

vestibular gutta-percha points and at least three on the palatal side (Figure 9).[10]

The mandibular template was achieved by constructing a cover above the provisional restorations. The template design must have some openings as windows in the anterior zone for visual confirmation of the template and surgical guide sitting. While virtually planning the design, it was also decided to add vestibular flanges for anchorage pins to maximize stability during the surgical phase (Figure 10).

Both, maxillary and mandible templates were stabilized with an interocclusal register for the CAT scan.

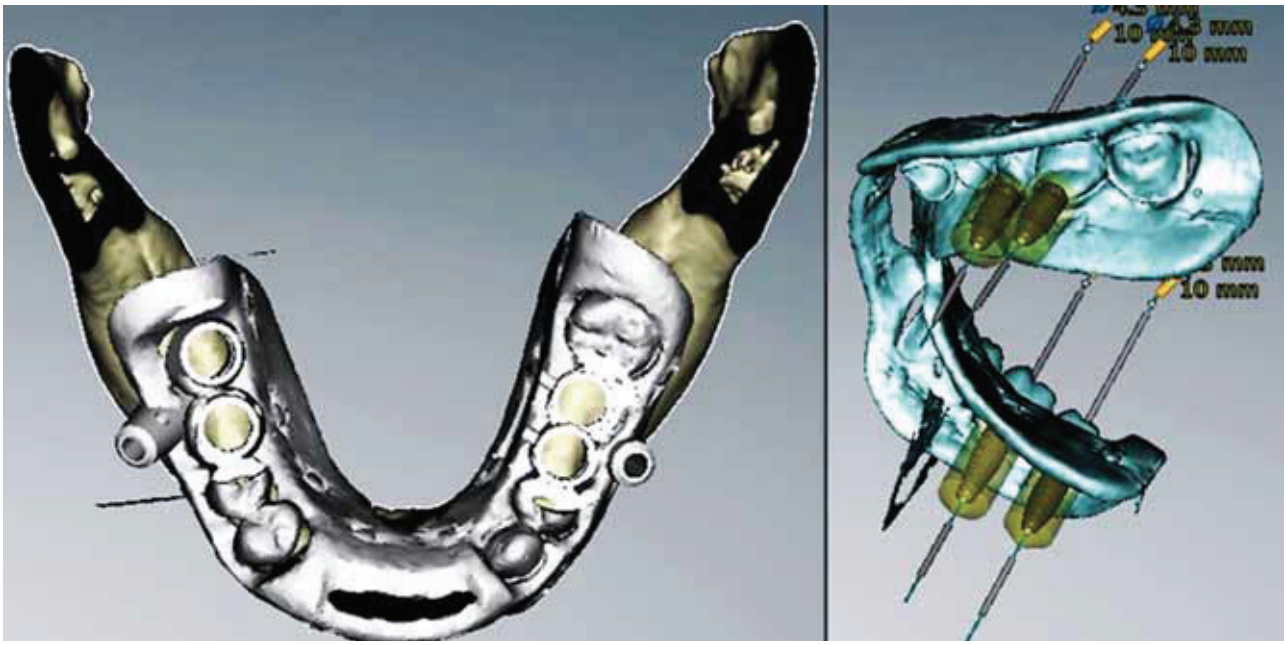


Figure 12 — The virtual placement of the mandibular implants shows the relationship of the implant platform with the tooth contours on the template.

For our virtual treatment planning we used the Nobel Clinician software which accounted for anatomic structures related to the implant angulation, diameter, size and final position (Figures 11 and 12). The surgical guide was fabricated. This could also have been considered for flapless intervention and guided the drilling sites.[7,8]

Conclusion

Fabricating a correct tomographic template is essential to avoid mistakes that may result in an unstable template. These templates may be used in virtual planning with software to duplicate accurate contours for the final prosthesis and accurate position of the dental implants.

Acknowledgments

To Dr. Richard Cooper for assistance with editing and proofreading.

Conflict of interests

There is no conflict of interests.

References

1. Esposito M, Maghaireh H, Grusovin MG, Ziounas I, Worthington HV. Interventions for replacing missing teeth: management of soft tissues for dental implants. Cochrane Database Syst Rev 2012;2:CD006697.
2. Esposito M, Grusovin MG, Chew YS, Coulthard P, Worthington HV. One-stage versus two-stage implant placement. A Cochrane systematic review of randomised controlled clinical trials. Eur J Oral Implantol 2009;2(2):91-9.
3. Afrashtehfar KI. [Using bi-dimensional and tri-dimensional radiography in Dentistry] Rev ADM 2012;69(3):114-9.
4. Parel SM, Triplett RG. Interactive imaging for implant planning, placement, and prosthesis construction. J Oral Maxillofac Surg 2004;62(9 Suppl 2):41-7.
5. Jeffcoat M, Jeffcoat RL, Reddy MS, Berland L. Planning interactive implant treatment with 3-D computed tomography. J Am Dent Assoc 1991;122(11):40-4.
6. Espinosa Marino J, Alvarez Arenal A, Pardo Ceballos A, Fernandez Vazquez JP, Ibaseta Diaz G. Fabrication of an implant radiologic-surgical stent for the partially edentulous patient. Quintessence Int 1995;26(2):111-4.
7. Rocci A, Martignoni M, Gottlow J. Immediate loading in the maxilla using flapless surgery, implants placed in predetermined positions, and prefabricated provisional restorations: a retrospective 3-year clinical study. Clin Implant Dent Relat Res 2003;5 Suppl 1:29-36.
8. Marchack CB. CAD/CAM-guided implant surgery and fabrication of an immediately loaded prosthesis for a partially edentulous patient. J Prosthet Dent 2007;97(6):389-94.
9. Abrahams JJ, Kalyanpur A. Dental implants and dental CT software programs. Semin Ultrasound CT MR 1995;16(6):468-86.
10. Wouters V, Mollemans W, Schutyser F. Calibrated segmentation of CBCT and CT images for digitization of dental prostheses. Int J Comput Assist Radiol Surg 2011;6(5):609-16.
11. Afrashtehfar KI, Kurtzman GM, Mahesh L. Improving oral rehabilitation through the preservation of the tissues through alveolar preservation. J Adv Prosthodont 2012;4(3):174-8.

About the authors

Kelvin I. Afrashtehfar, DDS, MSc (c), FADI, FADFE, Graduate Student/Research Assistant. Prosthodontics and Restorative Dentistry Division, Faculty of Dentistry, McGill University, Montreal, Canada.

Hugo A. Zamora-Montes-de-Oca, DDS, Cert. Prosthodontist, Director /Assistant Professor, Prosthodontic and Implantology continuing education programs at the National Autonomous University of Mexico (UNAM), Iztacala Campus. Mexico.

Shahrokh Esfandiari, BSc, MSc, DMD, PhD, FICOI, Associate Dean of Academic Affairs, Associate Professor, Faculty of Dentistry, McGill University, Montreal, Canada.

Editor's Note: *Dr. Peter Taylor, CJRDP's Academic Liaison, was instrumental in obtaining this* ***Young Author Award Submission.***

Comments/Commentaires


Dr. Begüm Akkayan, DDS, PhD


Dr. Zehra Çekirdek, DDS


Dr. Hubert Gaucher, DDS, MScD

Restoration of Endodontically Treated Teeth with Zirconia Post Alternatives:

Two case reports

Restauration de dents traitées endodontiquement à l'aide de pivots radiculaires en zircone :

deux rapports de cas

Abstract

The amount of intact coronal tooth structure and the root canal configuration are among the two important parameters that can directly affect the long term outcome of endodontically treated teeth restored with post and cores. The present case reports describe the restoration of two endodontically treated teeth with two different zirconia post-core treatment modalities. The article also highlights some of the basic criteria the clinician should take into account before choosing the post-core system that best fits the individual needs of each case.

Key words **Endodontically treated teeth, root canal configuration, prefabricated zirconia posts, one-piece zirconia post-cores, CAD/CAM post-cores.**

A common problem with the restoration of endodontically treated teeth complicated by total or partial loss of coronal tooth structure is deciding on the best restoration alternative. The primary purpose of a post-core system is to retain the coronal restoration of an endodontically treated tooth that has suffered an extensive loss of crown structure.[1,2] Numerous techniques and materials have been proposed for the restoration of endodontically treated teeth. More recently, in response to the development of all-ceramic restorations, a wide range of esthetic post systems have become commercially available, such as zirconia-based ceramic post systems and fiber reinforced composite resin post systems.

Prefabricated zirconia posts have positive qualities, such as high strength to bending forces and appropriate optical properties.[3] Prefabricated zirconia-based ceramic post systems have been used with compatible pressed ceramics or adhesively luted composite resin as core materials. In some cases available diameters of most esthetic post-core systems do not permit a conservative post space preparation or the presence of elliptical canals may limit the satisfactory adaptation of the prefabricated posts. A custom-made post may help to preserve the tooth structure and provide better retention for these cases.

The use of computer assisted design/computer assisted manufacturing (CAD/CAM) technology has been

Résumé

La quantité de structure coronaire intacte et la configuration du canal radiculaire sont deux paramètres importants pouvant affecter directement les résultats à long terme des dents traitées endodontiquement à l'aide de pivots et de piles. Les présents rapports de cas décrivent la restauration de deux dents traitées endodontiquement selon deux différentes modalités de traitements utilisant des pivots-piles en zircone. L'article souligne également certains critères de base que le clinicien devrait considérer avant de choisir le système de pivots-piles qui répond le mieux aux besoins individuels de chaque cas.

Mots-clés

Dents traitées endodontiquement, configuration du canal radiculaire, pivots préfabriqués en zircone, pivots-piles monoblocs en zircone, pivots-piles CAO/FAO.

described for milling one-piece zirconia post and cores by researchers.[4-6] They stated that the technique provided a one-piece post and core with greater toughness, maximal adaptability to the canal, and adequate esthetics. Post-core acrylic resin patterns were fabricated, scanned, and milled to fabricate one-piece zirconia based ceramic post-cores.

This article describes in detail the procedure of two treatment alternatives for restoring endodontically treated teeth with esthetic post and cores. The clinical cases present in sequence the dental examination, treatment plan, clinical procedures, laboratory procedures and cementation.

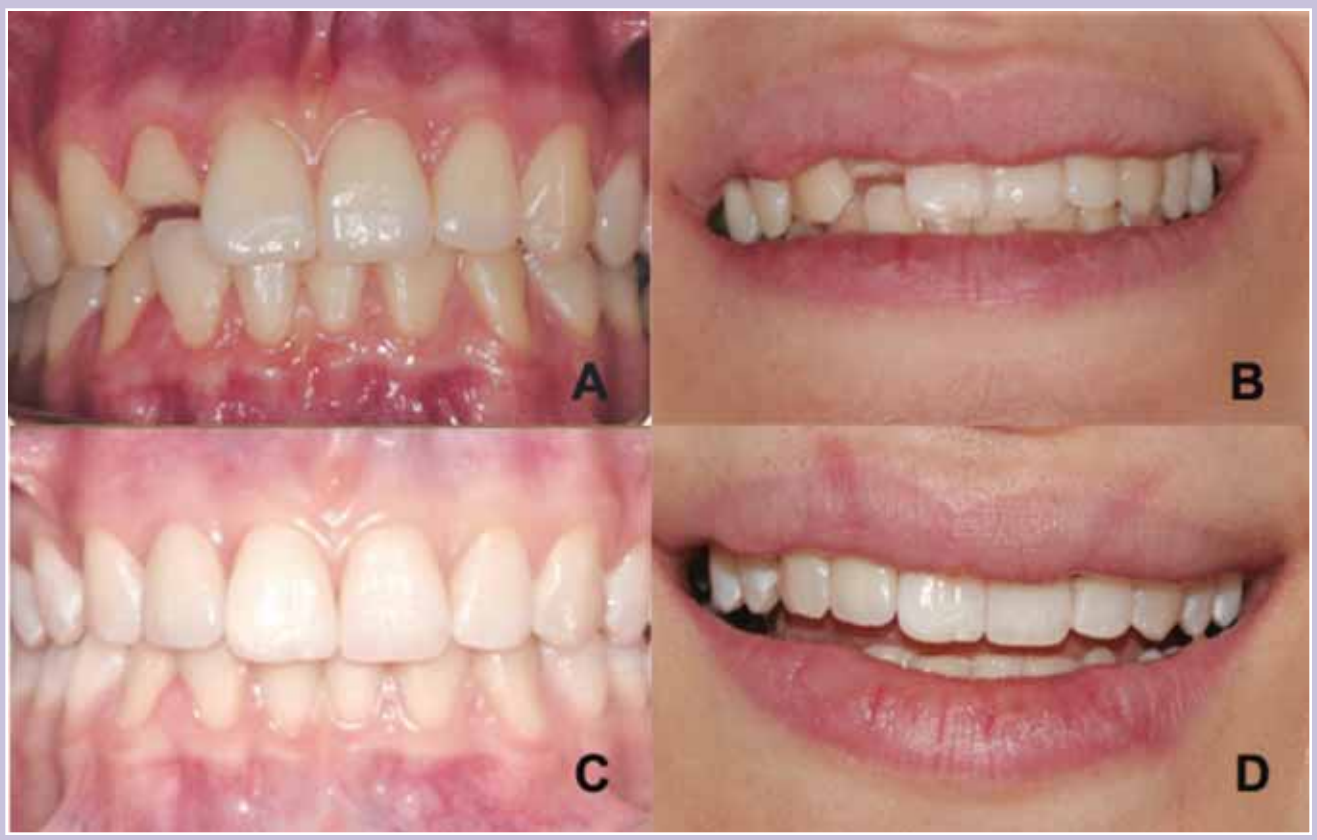


Figure 1. Patients pre treatment photographs (A & B) Fractured upper right lateral incisor (C&D) Final all-ceramic crown cemented onto the post-core assembly.

CLINICAL REPORTS

Case 1: Pre-fabricated zirconia post and ceramic pressed core

Dental examination and treatment plan

A 21-year-old female patient was referred for treatment at the Department of Prosthodontics, Faculty of Dentistry, Istanbul University for a fractured tooth. The intraoral examination revealed that the upper right lateral incisor had fractured (Figures 1 A&B). Patient stated that the fracture had occurred as a result of trauma. The diagnostic radiograph revealed no root fracture defect and the existing root-canal treatment was found to be successful and to be suitable for a post-core procedure. There was no pathological mobility and probing depths around the tooth were within physiological range. After the evaluation of the remaining tooth structure and surrounding soft tissues, the treatment plan was determined to be the implementation of a prefabricated zirconia post followed by a heat-pressed core system and an all-ceramic crown restoration.

Clinical procedures

The remaining coronal tooth structure on the lateral incisor was prepared before the post space preparation. The root canal filling material was removed using Gates Glidden (Dentsply Maillefer, Ballaigues, Switzerland) and Peeso reamers (Dentsply Maillefer, Ballaigues, Switzerland) leaving 4 mm of root-canal filling material as apical seal. After the removal of the root canal filling, mesio-distal and bucco-palatinal dimensions of the root and the root length were taken into account and a prefabricated zirconia post (CosmoPost, Ivoclar Vivadent, Schaan, Liechtenstein) of 17 mm in diameter was selected. A post length of 14 mm was determined to be used; 9 mm of the post inside the root canal and 5 mm

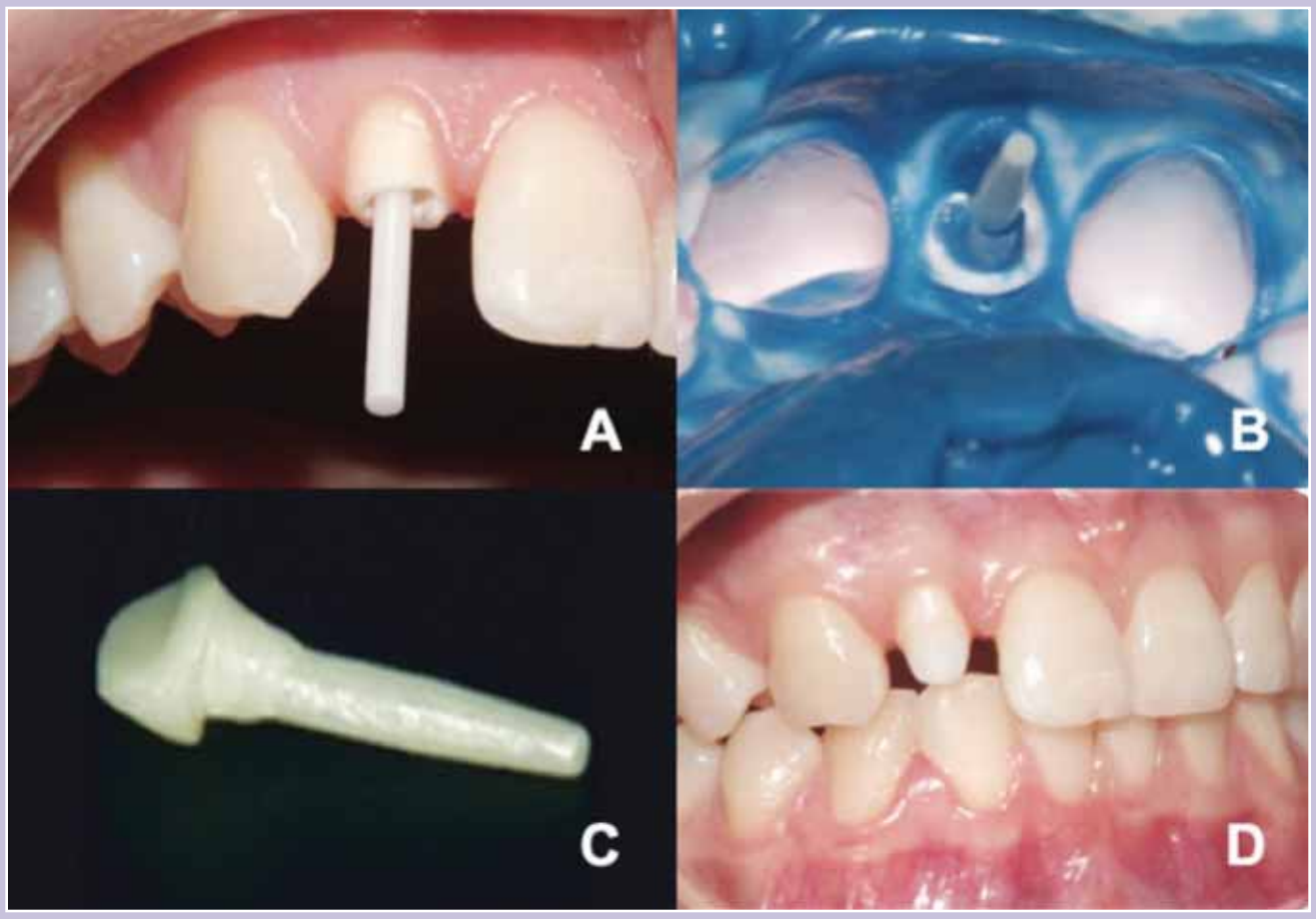
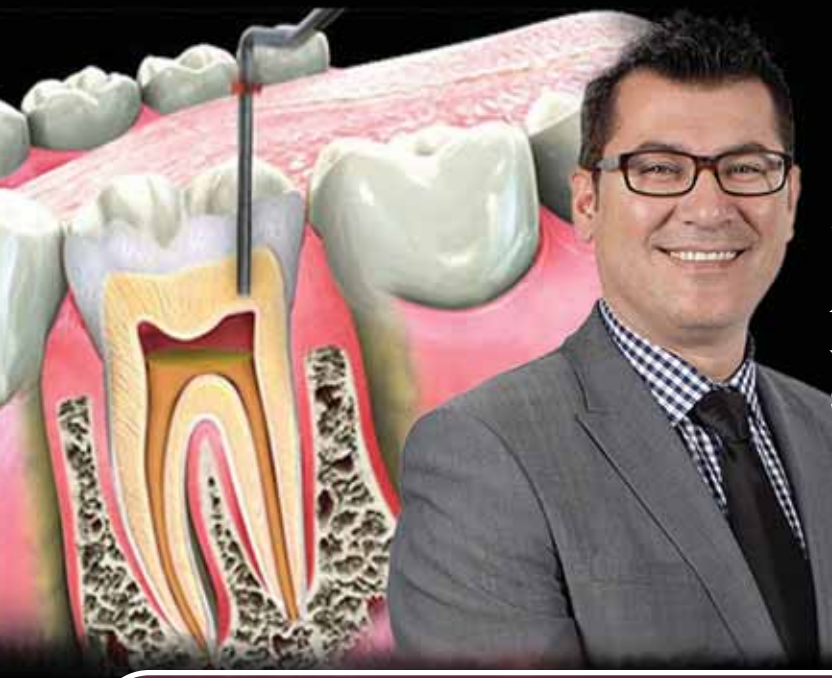


Figure 2. Stages of fabricating a post-core with prefabricated zirconia post and heat-pressed core (A)Try-in of the prefabricated zirconia post (B)Impression taken with post in position (C) Final post-core assembly (D) Cemented post-core assembly.



Endodontics
for General Practitioners

A Monday morning practical approach

with **Dr. Rony E. Dagher,** B.Sc., DDS, M.Sc (Endo), FRCD(C)
Specialist in Endodontics and traumatology

7 credits for seminar attendance

$429+HST

Date: **March 6th, 2015**

Location: **SpringHill Suites by Marriott Toronto Vaughan**
612 Applewood Crescent, Vaughan, ON L4K 4B4

A one day lecture and hands-on Endodontic course for GPs who aspire to provide exceptional endodontic related service to their patients:

Concepts covered:

- Diagnosis
- Patient Management
- Anxiety
- Pain Control

This course will teach you which cases to treat predictably and which cases to refer out for proper management. It introduces you to the fundamental concepts in rotary endodontics regardless of the system you currently use. It will discuss diagnostic skills you should have to properly zero in on the patient chief complaint.

This course will reinforce the SOAP concepts in achieving proper diagnosis and assess case difficulty and learn when to treat and to refer. Review local anesthesia techniques to help you achieve proper pain control. Cover and detail proper handling of endodontic procedure from isolation to access, canal location, instrumentation, disinfection and obturation details.

The course objectives will be for GPs to become confident in diagnosis, anesthesia, anatomy, instrumentation, irrigation and obturation.

The hands on component will involve various Tulsa rotary systems and products.

Palmeri Media Group PMG

To register contact:
Palmeri Media Group A division of Palmeri Publishing Inc.
at 905.489.1970 Ext. 206/207
Email: seminars@palmeripublishing.com /
events@palmeripublishing.com

Academy of General Dentistry PACE Program Approval for Continuing Education

Approved PACE Program Provider FAGD/MAGD Credit Approval does not imply acceptance by a stateor provincial board of dentistry or AGD endorsement 9/1/2013 to 8/31/2015. Provider ID# 355116

as extending to the core portion of the post-core assembly. The root was shaped for the prefabricated post using the corresponding drills of the system. The prepared post space was cleaned with normal saline and dried with absorbent paper points. The fit of the prefabricated post system was checked (Figure 2A) and an impression was taken from the full arch with the post seated intraorally (Figure 2B) The impression was checked to ascertain that the post was fully seated in the impression.

Laboratory procedures

The stone models of the impressions were prepared following the application of the separator liquid to the prefabricated post. The proper fit of the post into the post space was checked by removing the post applying rotating forces and then placing it back to its original position. The core pattern of the post was fabricated using a nonresidual wax material (Inlay Casting Wax, Kerr Cor, CA, USA) over the zirconia prefabricated post. The waxed core with the prefabricated zirconia post was invested with the phosphate-bonded investment (IPS PressVEST, Ivoclar Vivadent). A plunger (Alox Plunger, Ivoclar Vivadent) was preheated in the furnace (EP 600 Press Furnace, Ivoclar Vivadent) and applied to the pressed zirconia enriched glass ceramics (IPS Empress Cosmo Ingot, Ivoclar Vivadent) that were on top of the ring before placing the entire assembly in the furnace at 900°C pressing temperature for 10 minutes, with a heating rate of 60°C/min. After cooling, the ceramic core with the zirconia prefabricated post was divested with airborne-particle abrasion using 100 µ aluminum oxide (Special Jet Medium, Ivoclar Vivadent) at 1-bar pressure.

Cementation procedures

The fit of the zirconia post and all-ceramic core assembly was checked intraorally. The base and catalyst of a silicone disclosing agent (Fit Checker, GC, USA) was mixed and applied to the post and cores surfaces for this purpose. The post-core system was placed in the root canal. The disclosing agent around the post and core surfaces were evaluated for any pressure spot contacts upon removing from the root canal. Necessary adjustments on the internal surface of the zirconia post surfaces were performed using rubber tips (Astropol F, Ivaclar Vivadent) until the post-core fitted accurately to the root canal space. Figure 2C displays the final post-core assembly before the cementation.

The cementation procedure of the post-core system was performed with dual-polymerizing resin cement following the manufacturer's instructions (Multilink Automix, Ivoclar Vivadent). The internal surface of the pressed ceramic core was treated with 5% hydrofluoric acid (IPS Ceramic Etching Gel; Ivoclar Vivadent) for 20 seconds, then thoroughly rinsed and dried. A layer of silane was applied with a brush (Monobond Plus; Ivoclar Vivadent) and was allowed to react for 60 seconds and then dried prior to cementation. Primer (Multilink Primer A&B; Ivoclar Vivadent) was mixed in a 1:1 mixing ratio and applied to the root dentin surfaces. The resin cement was released from the syringe using the mixing tip and applied directly to the post, and the post and core assembly was seated on the root with finger pressure. Excess cement was removed using microbrushes followed by light polymerization for 20 seconds on each surface (Bluephase LED curing unit, Ivoclar Vivadent, Schaan, Liechtenstein) (Figure 2D). Following the cementation of the post-core assembly a final impression of the arches were taken for the final all-ceramic crown. A heat-pressed ceramic crown (IPS Empress, Ivoclar Vivadent) was fabricated for this purpose. The crown was checked in the mouth for colour, occlusion and contours. The internal surface of the pressed ceramic crown was treated with 5% hydrofluoric acid for 60 seconds, then thoroughly rinsed and dried. The crown was cemented on to the root-post-core assembly with dual-polymerizing resin cement following the same stages described above for post-core cementation (Figure 1C & D). The final treatment provided a satisfactory result, meeting the functional and esthetic demands of the patient.

Case 2: One-piece zirconia based ceramic post-core

Dental examination and treatment plan

A 49-year-old female patient was referred for treatment at the Department of Prosthodontics, Faculty of Dentistry, Istanbul University. The intraoral examination revealed that the upper left second premolar tooth had fractured (Figures 3A & B) and the patient already had a recent all-ceramic crown of 2 years. Probing depths around the tooth were within physiological range and there was no pathological mobility. According to radiographic evaluation, root-canal treatment was found to be successful. The fabrication of a custom made, one-piece, zirconia based ceramic post-core system was chosen as a treatment option to support the existing crown restoration and to provide functional and esthetic requirements.

PARTNERING WITH DENTAL PROFESSIONALS

Working with you to understand and develop state-of-the-art dental solutions for over 20 years.

Our experienced dental lab assists professionals in navigating today's complex dental products and restoration procedures.

We consult, recommend and fabricate quality dental solutions with consistent results.

bioesthetic™
DENTAL DESIGN

KOIS CENTER
ADVANCING DENTISTRY THROUGH EXCELLENCE

GRADUATE

Find out how we can help.
905 265-9665 | bddinc.ca

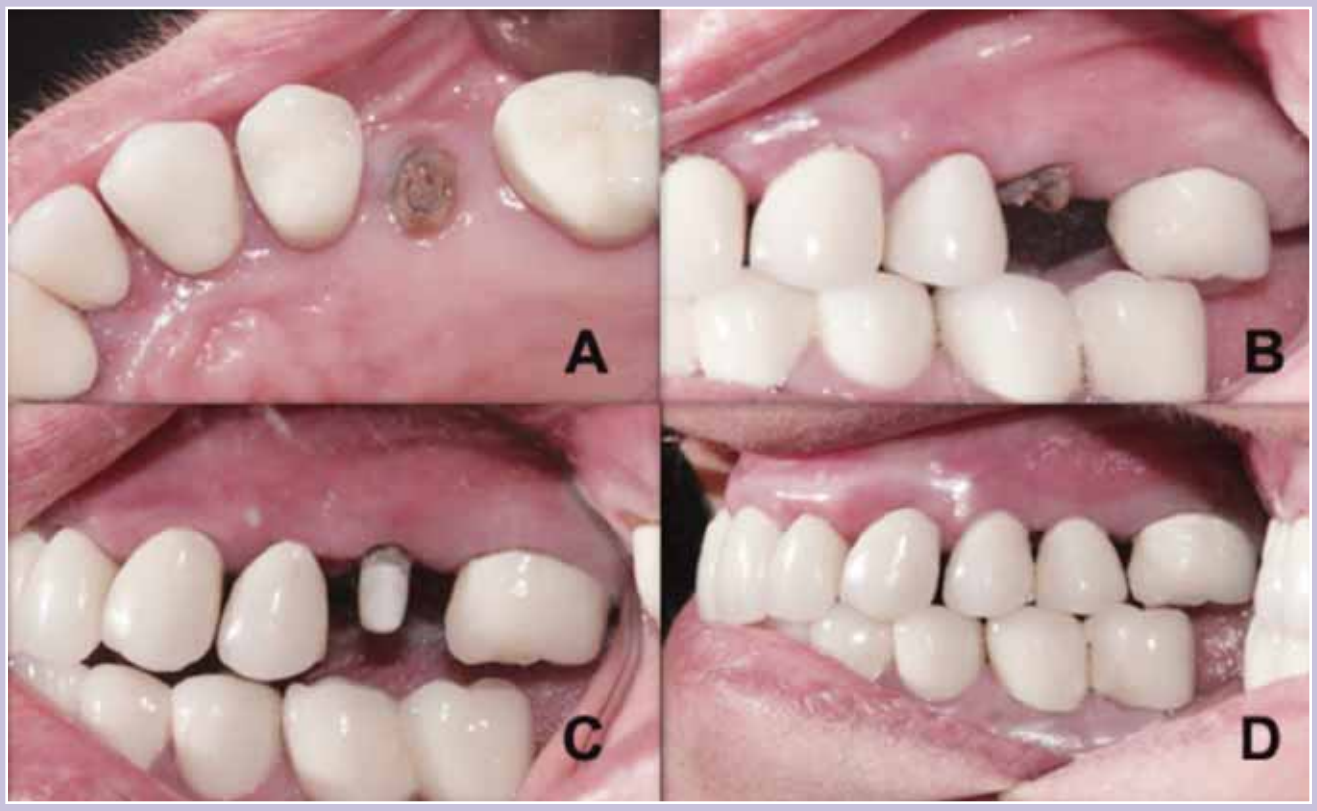


Figure 3. Patients pre and post treatment photographs (A & B) Fractured upper left second premolar tooth (C) Cemented one-piece zirconia post core system (D) Patient's existing crown cemented onto the post-core system.

Clinical procedures

The post space was prepared using Gates Glidden and Peeso reamers leaving 4 mm of root-canal filling material as apical seal. A post length of 13 mm was planned; 9 mm inside the root canal and 4 mm as extending to the core part of the post-core assembly. The canal walls were checked for the elimination of undercuts and the prepared post space cleaned with normal saline and dried with absorbent paper points. Separator liquid was applied on the internal surfaces of the canal walls. An autopolymerizing acrylic resin rod (Pattern Resin LS, GC, IL, USA) was prepared and placed in the post space to check the adequacy of the length of the post. Subsequently an acrylic resin mixture was applied to the surface of the acrylic rod and placed into the root canal. This procedure is repeated until the post resin pattern fits passively and has a good adaptation. The post pattern is then placed inside the canal and the core portion is built using the patient's existing all-ceramic crown. Following the lubrification of the internal surfaces of the crown, the acrylic resin mixture is applied to the core portion of the rod and the crown is placed on the corresponding tooth in the patient's mouth. The occlusion was checked by directing the patient to bring her teeth to the intercuspal position. The crown was removed from the tooth prior to complete polymerization of the resin. After essential refinements, the final core built up was generated. Figure 4A displays the final fit of the resin pattern on the root. Great care must be taken not to alter the tooth's marginal preparation in order to re-use the patient's existing crown. Using this technique a direct impression of the root canal has been made and a one-piece post-core resin pattern fabricated (Figure 4B). The completed resin pattern was sent to the laboratory for the fabrication of a zirconia post-core.

Laboratory procedures

Titanium dioxide (IPS Contrast Spray, Ivoclar Vivadent, Schaan, Liechtenstein) was sprayed on the surfaces of the resin pattern as a contrast media for optimal imaging, ensuring uniform optical properties and facilitating an accurate scan. The acrylic resin pattern was then scanned (3D Scanner 7 Series, Dental Wings Inc, Montreal, Canada) and a 3 dimensional image of the resin pattern was constructed (Figure 4C). Scanning datas were transferred to the milling unit (Yena D40

Your one stop solution for all your implant needs

Implant Solutions

- Bone Grafting Instruments
- Handpieces & Bone Saws
- Rongeurs
- Bone Grafting Material
- Measuring Devices
- Sinus Lift Instruments
- Extraction Elevators & Forceps
- Periosteal Elevators
- Surgical Sundries
- Infection Control & Draping
- Periotomes
- Torque Wrenches & Drivers
- Irrigation & Tubing
- Retractors
- And more...

www.implant-solutions.com

1.877.857.8333

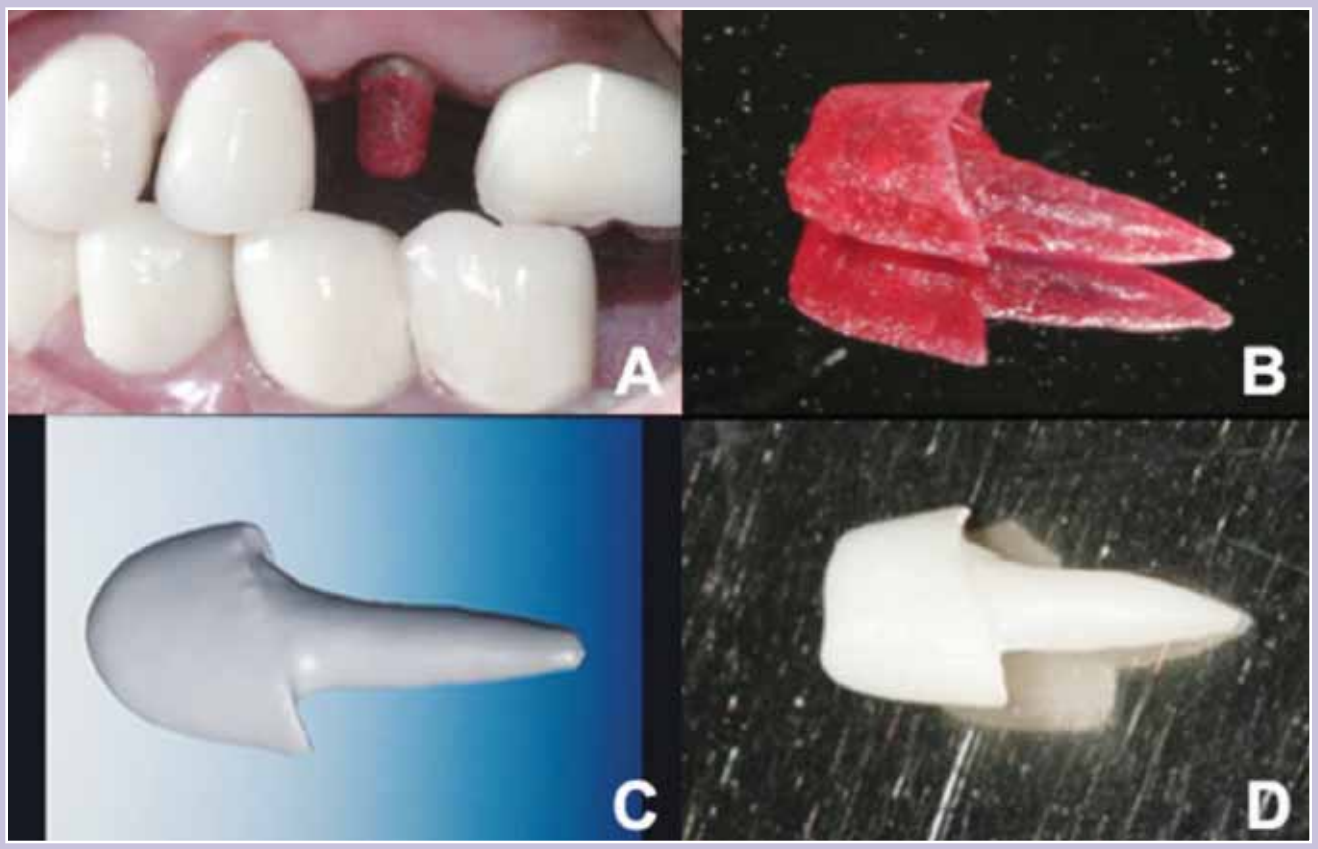


Figure 4. Stages of fabricating a one-piece zirconia post-core (A) Try-in of the resin pattern post-core (B) Finalized one-piece resin pattern of the post-core (C) 3D image of the resin pattern constructed using CAD (D) One-piece zirconia post-core milled using CAM.

Milling Machine, Yenadent, Istanbul, Turkey). One piece post and core was milled from the partially sintered zirconia blank (Vita In-Ceram YZ Disc, Vita Zahnfabrik, Bad Sackingen, Germany) (Figure 4D). Once the milling has been completed the post-core was adjusted to eliminate the connection sprues. The Zirconia post-core was then sintered at 1500°C for 8 hours and airborne particle abrasion with Al2O3 applied to the post-core surfaces for treatment.

Cementation

The base and catalyst of a silicone disclosing agent (Fit Checker, GC, USA) was mixed and applied to the post and cores surfaces in order to evaluate the proper fit of the one-piece post core system into the post space. The post-core system was placed in the root canal. The disclosing agent around the post and core surfaces were evaluated for any pressure spot contacts upon removal from the root canal. No adjustments were needed. It was assured that the post was fully seated in the mouth and the occlusion was verified by placing the existing crown on the core. Then the cementation procedure of the post-core system was performed with a dual-polymerizing resin cement following the manufacturer's instructions (Panavia F2.0, Kuraray, Osaka-Japan). A primer (Metal/zirconia Primer, Kuraray, Osaka-Japan) was applied to the post-core surfaces of the zirconia before cementation. Then a self-etching and autopolymerizing dentin primer was mixed in a 1:1 mixing ratio and applied to the root dentin surfaces. The cement was mixed and applied to the post surface with a brush and to the root with the aid of a lentulo. The post-core was cemented using finger pressure and excess cement was removed using microbrushes followed by light polymerization applied for 20 seconds on each surface (Bluephase LED curing unit; Ivoclar Vivadent, Schaan-Liechtenstein) (Figure 3C). The existing crown restoration was then cemented onto the post (Figure 3D). The treatment provided a satisfactory result to meet the functional and esthetic requirements of the patient.

Discussion

The amount of remaining coronal dentin has utmost importance on the choice of an appropriate reconstruction procedure for endodontically treated teeth.[7,8] If less than one-half of the coronal tooth structure is remaining on a pulpless tooth, it is usually advisable to place a post and core, thereby providing adequate connection of the root structure to the coronal core. With such a wide variety of materials and post designs available for the restoration of endodontically treated teeth, the clinician should be selective in choosing the post-core system that best fits the individual needs of each case.

Sorensen and Engelman[9] reported that the key factor in the failure threshold is coronal extension of the tooth structure above the crown margin. Researchers concluded that a ferrule height of at least 1.5 mm is required to ensure a favorable restoration prognosis.[2,9,10] If the coronal tooth structure is severely damaged and not enough for the ferrule preparation or that leaves no coronal tooth structure then a weak root-post-core system will result. For such challenging cases, better predictable custom post and core systems treatment alternatives will result by preserving the maximum remaining sound tooth structure.

The most common failure of endodontically treated teeth restored with post and core system is the post loosening.[11] Deciding for the most appropriate post and core alternative has an important impact on this failure rate. Srividya et al.[6] reported that the root canal morphology of the tooth being restored should also be considered. In the case of narrow canals with adequate dentinal wall thickness, a prefabricated post provides the necessary retention and adaptation. However in some cases the root canals could anatomically be oval shaped rather than circular or the preparation of the canal during endodontic treatment may result in an oval form.[6,12,13] If a prefabricated post is used in such cases, it will have to depend on the increased thickness of the cement for its retention. Grandini et al.[14] and Valandro et al.[15] reported that the polymerization stress, developing within a relatively thin film of cement, would be minimal and the formation of bubbles or voids, representing areas of weakness within the material, is less likely to occur in a thin layer of cement. It has been reported in former studies that an excessively thick layer of resin cement around a fiber post was an unfavorable factor for long-term success of post supported restorations and this might have some correlation to higher frequencies of post debonding.[12,16,17] It is also another well established concept that a close canal adaptation with minimal tooth structure removal provides a conservative and long-lasting treatment for the restoration of endodontically treated teeth.[9]

The restoration of endodontically treated teeth with metal-free, physiochemically homogeneous materials has become a major objective in dentistry. Christel et al.[18] observed that prefabricated zirconia posts, introduced in the late 1980s, exhibited high flexural strength and fracture toughness; Kwiatkowski and Geller[19] reported the ability of such posts to be silanated and bonded with a resin cement. Prefabricated zirconia posts have been used with pressed ceramics or adhesively luted composite resin as core materials. The first case report presented in this article decribes a treatment procedure where a prefabricated zirconia post and heat pressed core is constructed for the patient taking into account the adequate sound tooth structure present and the need for the esthetic requirements in the anterior region. Prefabricated post-core systems have good mechanical and biocompatibility properties. They save time and they display ease of manipulation. However, their diameters cannot be customized to adapt to individual post space preparations. Furthermore, prefabricated post systems need a separate core, and the weak interface between the core and post may cause a higher restoration failure rate. Therefore, it is desirable to unify the post and core in one material for long-term stability. By decreasing the number of interfaces between components, the single unit restoration helps to achieve a monobloc effect. Alternatively, a one-piece post and core can provide good adaptation in the post space, as well as provide a structure that lacks a post-and-core interface.[20-22]

The gold standard for custom made post-cores was the casting of the precious metal alloys in the past years. However, in contemporary prosthodontics, all ceramic crowns are progressivily replacing the metal ceramic crowns in the anterior region. In this respect, while restoring an endodontically treated tooth with an all ceramic crown, it is also required to use an esthetic post system. Bitter et al[23] reported that one-piece zirconia posts and cores can be an alternative to cast gold posts and cores when a custom-fabricated post and core is necessary. The currently available CAD/CAM systems can use alumina or partially sintered zirconia, nano-ceramic and fiber reinforced blocks to mill metal-free, one-piece post-cores.

A custom made one-piece zirconia post-core has been used as a treatment alternative in the second case report of the present article. Another important aspect of this option is that the post and core has been designed to match the patient's existing crown. This method affords

the patient and clinician another treatment alternative in such challenging situations. The milled ceramic post and core is strong due to its one-piece construction and the milling of the resin pattern, that has been formed intraorally, using the CAD/CAM technology produces a restoration with an accurate fit.

Conclusion

Empirical evidence accumulated by experienced restorative and prosthodontic practitioners and judging from previous dental literature, a tentative clinical conclusion can be made considering the residual intact tooth structure and root configuration for the restoration of endodontically treated teeth. In most cases the use of prefabricated zirconia posts and one-piece post and cores have their own indications, as presented in detail in the two case reports of this article. The one-piece milled metal-free post-core assembly can serve as a viable option when a custom post and core is necessary to restore the tooth.

Conflict of interests

There is no conflict of interests.

References

1. Clarisse CH, Herman BD, Al-Bayat MI, et al. Influence of remaining coronal tooth structure location on the fracture resistance of restored endodontically treated teeth. J Prosthet Dent 2006; 95: 290–96.
2. Akkayan B. An in vitro study evaluating the effect of ferrule length on fracture resistance of endodontically treated teeth restored with fiber-reinforced and zirconia dowel systems. J Prosthet Dent 2004; 92: 155–62.
3. Meyenberg KH, Lüthy H, Schärer P. Zirconia posts: a new all-ceramic concept for nonvital abutment teeth. J Esthet Dent. 1995;7: 73-80.
4. Awad MA, Marghalani TY. Fabrication of a custom made ceramic post and core using CAD-CAM technology. J Prosthet Dent 2007; 98: 161-2.
5. Streacker AB, Geissberger M. The milled ceramic post and core: A functional and esthetic alternative. J Prosthet Dent 2007; 98: 486-7.
6. Srividya S, Chandrasekharan NK, Jayakar S, Shivshankar. Fabricating ceramic posts using CAD/CAM technology. Trend Prost Dent Imp 2010; 11-13.
7. Christensen GJ. Posts and cores: State of the art. JADA 1998;129: 96–7.
8. Forberer N, Göhring TN. Influence of the type of post and core on in vitro marginal continuity, fracture resistance, and fracture mode of lithiadisilicatebased all-ceramic crowns. J Prosthet Dent 2008; 100: 264–73.
9. Sorensen JA, Engelman MJ. Effect of post adaptation on fracture resistance of endodontically treated teeth. J Prosthet Dent 1990; 64: 419-24.
10. Libman WJ, Nicholls JI. Load fatigue of teeth restored with cast posts and cores and complete crowns. Int J Prosthodont 1995; 8: 155-61.
11. Goodacre CJ, Spolnik KJ. The prosthodontic management of endododntically treated teeth; a literature review. Part I. Success and failure data, treatment concept. J Prosthodont 1994; 3: 243-250.
12. Akkayan B, Atalay S, Gaucher H, Alkumru H. Effect of post geometry on the resistance to fracture of endodontically treated teeth with oval-shaped root canals. Canadian Journal of Restorative Dentistry and Prosthondontics 2010; 3: 20-26.
13. Plasmans OJ, Visseren LG, Vrijhoef MM, Kayser AF. In vitro comparison of dowel and core techniques for endodontically treated molars. J Endod 1986; 12: 382-7.
14. Grandini S, Goracci C, Monticelli F, et al. SEM evaluation of the cement layer thickness after luting two different posts. J Adhes Dent 2005; 7: 235-240.
15. Valandro LF, Filho OD, Valera MC, et al. The effect of adhesive systems on the pullout strength of a fiberglass-reinforced composite post system in bovine teeth. J Adhes Dent 2005; 7:331-336.
16. Alkumru H, AkkayanB, Gaucher H, Atalay S. Fracture strength of teeth in oval-shaped root canals restored with posts and accessory post systems. Canadian Journal of Restorative Dentistry and Prosthondontics 2012; 6: 24-37.
17. D'Arcangelo C, Cinelli M, de Angelis F, D'Amario M. The effect of resin cement film thickness on the pullout strength of a fiber-reinforced post system. J Prosthet Dent 2007; 98:193-198.
18. Christel P, Meunier A, Heller M, Torre JP, Peille CN. Mechanical properties and short-term in-vivo evaluation of yttrium-oxide-partially-stabilizedzirconia. J Biomed Mater Res 1989;23:45-61.
19. Kwiatkowski S, Geller W. A preliminary consideration of the glassceramic dowel post and core. Int J Prosthodont 1989;2:51-5.
20. Khaled AL-Omiri M, Mahmoud AA, Rayyan MR, Abu-Hammad O. Fracture resistance of teeth restored with post-retained restorations: An overview. J Endodont 2010; 36: 1439-49.
21. Cheung W. A review of the management of endodontically treated teeth: post, core and the final restoration. J Am Dent Assoc 2005;136:611–9.
22. Fokkinga WA, Kreulen CM, Vallittu PK, et al. A structured analysis of in vitro failure loads and failure modes of fiber, metal, and ceramic post-and-core systems. Int J Prosthodont 2004;17:476–82.
23. Bitter N, Hill T, Randi A. Evaluation of a one-piece milled zirconia post and core with different post-and-core systems: An in vitro study. J Prosthet Dent 2010; 103: 369-79.

About the authors

Begüm Akkayan, DDS, PhD, is professor, Department of Prosthodontics, Faculty of Dentistry, Istanbul University,Istanbul, Turkey. Her fields of interest are esthetic post systems, adhesives, and all-ceramic systems. She can be reached at:bakkayan@yahoo.com.

Dr. Zehra Çekirdek, DDS
PhD Student, Department of Prosthodontics, Faculty of Dentistry, Istanbul University, Istanbul, Turkey

Dr. Hubert Gaucher, DDS, MScD
Scientific Director, Canadian Dental Research Institute (CDRI), Québec, Canada

Comments/Commentaires

Knowledge is Power

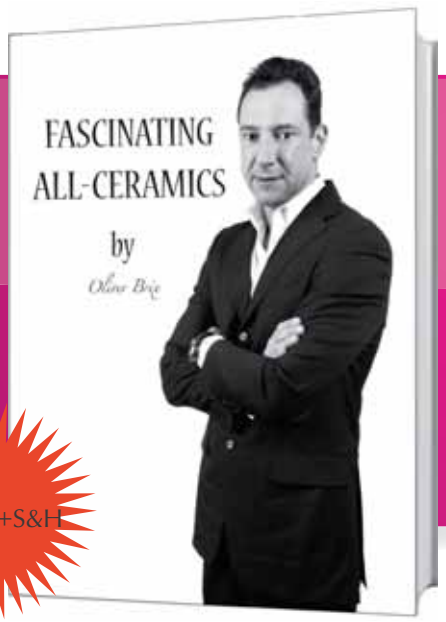
Get it for your dental library today

Oliver Brix

Fascinating All – Ceramics

Hardcover: 291 pages
Illustrations: 1,211
Dimensions: 9.25” x 11.6875”
Publication Date: 2013

In 11 chapters and 1200 images, of the highest quality and resolution, featuring special 3d printing, the author describes in minute details how to use lithium disilicate by presenting clinical cases that he has worked on in co–operation with other world renown clinicians.



$199+S&H

The book Veneers by Attilio Sommella and Guerino Paolantoni introduces, thanks to beautifully depicted techno–clinical cases, the restoration of a single tooth or of more extensive rehabilitation cases. These restorations show the placement of one or more veneers with a high level of predictability that give the ambitious dental technician the ability to provide the aesthetic and functional needs that patients request.

To achieve success, when working with Veneers the techno–clinical team requires an extremely accurate execution that can be obtained thanks to a standardized system described in the book. By carefully following the procedural algorithm outlined, the dental team will be able to perform minimally invasive restorations easily and free from risk.

$199+S&H

Attilio Sommella & Guerino Paolantoni

Veneers – Mini–invasive Reconstructions

Hardcover: 240 pages
Illustrations: 1,336
excellent quality of silk–screen printing
Publication Date: 2014

Aldo Zilio

Zirconia – The Power of Light

Softcover: 272 pages
Illustrations: 1,250
Dimensions: 9.25” x 11.6875”
Publication Date: 2013

This highly requested international speaker and author, offers the reader multiple solutions for achieving success in working with Zirconia. Thanks to his vast experience with Zirconia, the author describes, in his 11 chapters text and 1200 outstanding images, his step–by–step approach to creating zirconia solutions for many different types of cases.

$199+S&H

PPI

Mail orders to: Palmeri Publishing Inc.,
35-145 Royal Crest Court, Markham, ON Canada L3R 9Z4
Phone Orders: 905. 489.1970 Fax Orders: 905. 489.1971
or order online at www.spectrumdialogue.com

Snoring and sleep apnea: what is the dentist's role in the clinical practice process? Part II

Dr. David Côté, DMD

(Part I, CJRDP's Archives: www.cardp.ca - Vol.7-1, Spring, 2014)

Abstract

Since the publication of the first article related to snoring and sleep apnea in this paper, certain legislative changes emerged and significantly modified the interventions used to manage patients suffering from these health problems. In Quebec, amongst others, the Quebec College of Physicians published a practice guide for its members entitled: "Obstructive sleep apnea and other sleep related breathing disorders"[1]. There is no doubt that other governmental authority jurisdictions in Canada will publish guidelines along those lines, if they have not already done so. In Quebec, again, the Quebec Order of Dentists plans to strictly supervise the treatment of sleep apnea by its members, but at the time this article was written, the impact of these future guidelines remained unknown.

The following article will briefly comment the changes made in the legislative framework by highlighting the impact they have in everyday clinical practice. Moreover, we will take a more detailed look at the different types of dental appliances available and used by dentists as well as their side effects and the principles underlying the management of complications that may arise.

The Quebec College of Physicians practice guide (QCP)

Over the last few years, the number of patients diagnosed and treated for sleep apnea substantially increased. Patient management standards, from one region to another, are irregular, and often, the way healthcare is organized gives us reason to suspect a potential conflict of interests. Consequently, from now on, there must be complete independence between the entity that makes the diagnosis and the entity that provides the treatment. A dentist can no longer conduct ambulatory sleep apnea treatments in his office, as with past practice. Similarly, a firm that sells CPAP appliances can no longer offer sleeping testing options to its clientele. Furthermore, it is no longer possible to have these tests interpreted outside of the province. The interpreting physician must meet certain qualifications, be licensed and have a valid practice address to see patients within the province of Quebec. In view of the short time that has elapsed since the publication of these guidelines, they might not fully be implemented. The dentist who wants to take part in treating sleep apnea and snoring must ensure that the sleep laboratory where he wants to refer his patients complies with QCP requirements.

The QCP also fairly accurately defined the dentist's role: we have the power to identify patients suffering from sleep apnea and refer them to their family physician or a sleep laboratory. However, we cannot specify which tests are required to establish the diagnosis: this is the physician's role, who must see the patient for consultation. We can also, upon a medical reference, treat the patient with a dental orthesis. An important thing to note: the dentist is the only professional recognized as qualified for this type of treatment. The document does not mention the denturists' role. Discussions I have had with QCP representatives confirmed that this is not an omission: even if taking dental impressions and putting a dental orthesis intraorally is relatively easy, the follow-up, the potential dental complications and their management require knowledge that go beyond the denturists' expertise.

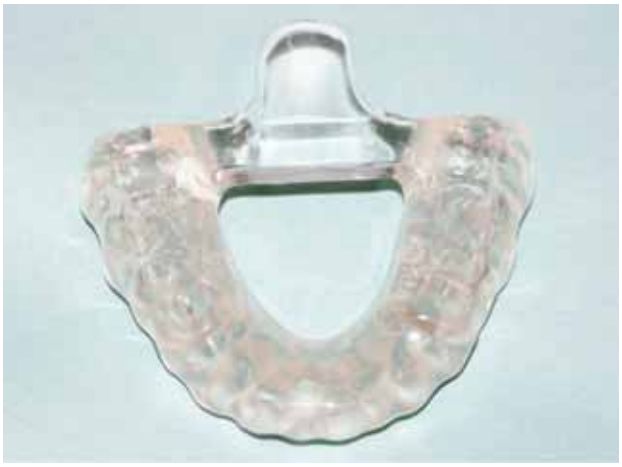


Figure 1 — Full Breath appliance [2]

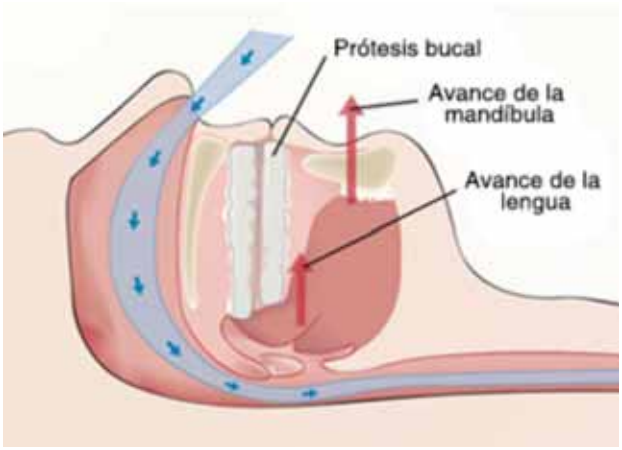


Figure 3 — Mandibular advancement appliances' action mechanism[6]

The different types of dental appliances

There are currently more than a hundred appliances on the market to treat sleep apnea and snoring disorders. The intent of this article is not to inventory them, but present certain ranges of appliances and concepts that will allow the practitioner to select the most appropriate orthesis for an individual patient.

Dental orthesis operate under 3 action mechanisms:

Some will raise the soft palate and displace the tongue anteriorly. The Full Breath appliance, created by Dr Bryan Keriopian, is a prime example. (Figure 1)

This type of orthesis is rarely used, and no scientific literature demonstrates its efficiency, to my knowledge.[3]

Some will stabilize the tongue in an advanced position, with a suction mechanism. Many of these appliances are prefabricated and may be customized.[4] These appliances are exclusively for complete denture wearers, people with a certain macroglossia and patients whose dental condition is too precarious for their teeth to serve as anchors for a more conventional appliance.[5] (Figure 2)

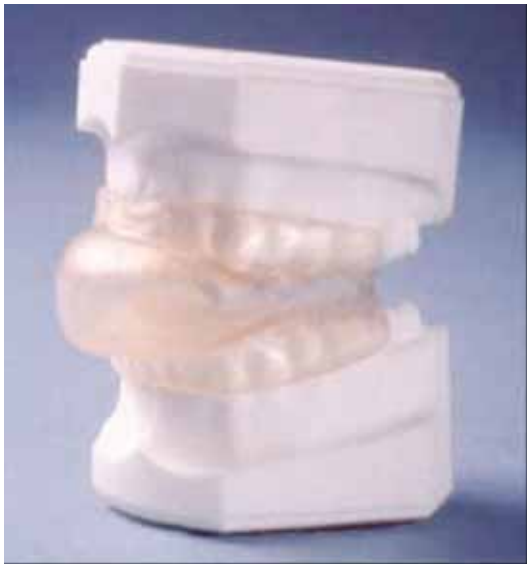


Figure 2 — Tongue retaining appliance for denture wearers (TRD)[5]

This is without a doubt the most popular category of mandibular advancement orthesis. The action mechanism is quite simple: by maintaining the mandible in an advanced position, we create traction on the tongue and the soft tissues in the back of the mouth. We therefore open airways, which allows normal breathing.[6] (Figure 3)

Personally, I classify mandibular advancement appliances in 3 sub-categories, according to the stabilization rigidity between the maxilla and the mandible. You will notice that I will not mention non-adjustable appliances: the efficiency of dental appliances will vary over time, according to different factors, such as the weight of the patient, his fatigue level, etc. Using a non-adjustable appliance greatly reduces his chance of success.

Some appliances offer a rigid link between the mandible and the maxilla: Silencer[7] (Figure 4), TAP[8] (Figure 5) and Kleerway[9] (Figure 6) are excellent examples of this type of appliances.

According to my clinical experience, these appliances efficiently control sleep apnea disorders. However, the comfort level of the patient is the lowest. A recent study conducted by Gauthier et al.[10] seems to reach the same conclusions. Intuitively, one could suspect that these appliances also generate more side effects. They are appropriate for severe cases and/or cases presenting excellent bone structures to anchor the orthesis.

The second category represents appliances with a semi-rigid link between the maxilla and the mandible. The control of the vertical dimension is less firm, but can be modulated by the use of interach elastics. The efficiency of the appliance might be lessened, but the

Figure 4 — Silencer appliance [7]

Figure 5 — TAP 3 appliance [8]

Figure 6 — Klearway appliance [9]

Figure 7 — Narval appliance [11]

Figure 8 — SUAD appliance [12]

Figure 9 — Herbst appliance [13]

patient comfort level is increased, providing him greater freedom of movement. These appliances are appropriate for cases where the structural anchoring is compromised, for patients who have difficulty wearing a dental appliance as well as less severe cases. Narval CC[11] (Figure 7), SUAD[12] (Figure 8) and Herbst[13] (Figure 9) are examples of this type of appliances.

Finally, the last class of mandibular advancement appliances is the one where the link between the maxilla and the mandible is more flexible. The pressure forces on the supportive structures are low, the patient comfort level is increased, but the pure efficiency of the appliance is compromised. These appliances are appropriate in cases where the patient wears a complete upper denture, in claustrophobia cases, less severe cases and cases where the appliance is used in a complementary manner with extensive dental restorations (complete rehabilitation).

Somnodent[14] (Figure 10) and MicrO_2[15] (Figure 11) are excellent appliances in this class.

It is important to note that the global efficiency of the appliance is not always the most important factor. As explained in the following section, it depends on the initial diagnosis. For example, in a mild case, it is not always advisable, if we take into account patient comfort, to use the most efficient appliance available.

Selection criteria for dental appliances

With so many appliances at our disposal, how do we make a judicious choice?

We have to look at the characteristics of the case we want to treat according to the appliances that are available.

For example, for a patient presenting a severe apnea disorder, with excellent maxillary and mandibular bone structures, the cost of the therapy is a secondary factor. The selection you will make will differ from the appliance you would recommend to an elderly patient with arthritis (difficulty to adjust certain types of appliances), a complete upper denture and a severe apnea diagnosis.

Factors to be considered when selecting an appliance:

- Laboratory costs.
- Desirable life expectancy of the appliance: is it a try-out, a replacement for an existing appliance?
- Number and condition of teeth: is there sufficient dentition? (minimum 10 teeth per arch)
- Severity of the case: snoring only or severe apnea?
- Presence of comorbidity that could compromise the treatment fidelity: bruxism, restless legs syndrome, psychiatric troubles, arthritis.

By using an evaluation grid (Table 1), as the one proposed below (the name of the appliances is by way of indication only, the practitioner is free to use the appliances he wishes), we can easily offer our patient a

Orthodent®

Your Full Service Dental Laboratory

Providing Orthodontists & General Dentists with leading-edge custom appliances and expert technical support from start to finish.

Committed to Quality, Dedicated to Service!

Mouthguards

Our line-up includes: Playsafe® | Proform | Impack Performance | Bleaching Trays | PerioProtect®

Snoring & Sleep Apnea

Narval CC™ | SomnoDent® MAS | SILENT NITE® | TAP® | OASYS | SILENCER® | EMA®

Orthodontics

Twin Block | Series 2000® | Herbst | Schwartz | Sagittal | Mara | Super Screw | Habit Breakers
Splints | Orthotics | Positioners | Rapid Palatal Expanders | Invisible Aligners | A.L.F.

Call **1-800-267-8463** today! • www.orthodent.ca

Figure 10 — Somnodent appliance[14]

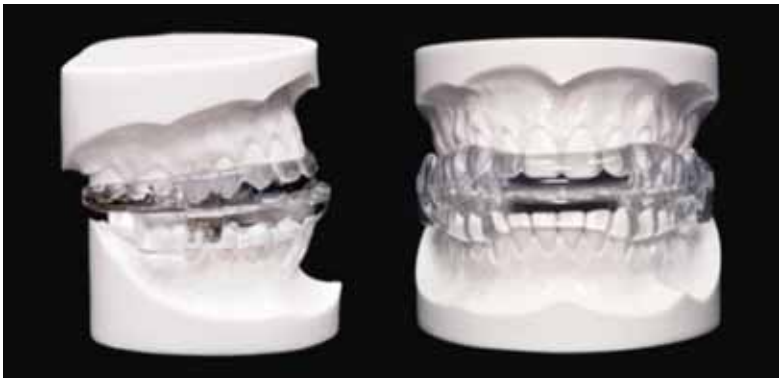


Figure 11 — Micro$_2$ [15]

selection of appliances that will suit his needs.[16]

To get maximum success with an appliance, the dentist who wants to take part in the treatment of snoring and sleep apnea disorders must be familiar with the particularities of several orthesis in order to offer the best solution possible to his patient.

Managing complications that may arise

Reference is often made to dental orthesis side effects. It is important to put the issue into proper perspective. Sleep apnea is a health issue that has significant impact on the patient's health. In most cases, the dental impact of this type of treatment is lesser than its health benefits. When we evaluate the risks of infarction, CVA, high blood pressure, on an untreated patient suffering from sleep apnea, there is rarely sufficient justification to withhold an efficient dental treatment. The patient's attending physician is the only one authorized to make this decision. A dentist who would suggests to his patient to stop using his appliance following dental complications (for example, a crown decimentation) would legally be held responsible, should the patient's health subsequently decline. We would never recommend to a patient taking antidepressants for a serious medical reason to stop his medication following an increase of his caries rate. The same reasoning should also apply to mandible orthesis wearers.

Table 1 : Product selection evaluation grid

Appliance	Somnodent	Narval	SUAD	Kleerway	TRD	Other
Cost						
Available Support						
Comfort						
Patient Dexterity						
Complexity of Case						
Lifespan						
Other						

Short term complications

Following the insertion of a mandible orthesis, the patient undergoes an acclimatisation period, which can cause: excess saliva or, inversely, excessive xerostomia during the night, muscular masticatory discomfort and tooth sensitivity. If these complications are diligently managed, we can minimize their extent.

On follow-up appointments, the practitioner must evaluate the tooth sensitivity level of the patient and reduce the strain on the supportive structures by adjusting the inside of the mandibular orthesis. The practitioner can also prescribe exercises to reduce muscular masticatory discomfort. These exercises consist of protrusion and retrusion movements using the handle of the denture toothbrush, for example, to guide the protrusive movement. The advantage of this technique is that the toothbrush used to clean the appliance also serves for the muscular relaxation exercises.

(Figures 12 & 13) (Figures 14 & 15)

To minimize dental movements, a technique recommended by Amisleep (TAP appliances) consists in using the AM Aligner. This is simply a thermoplastic product wafer, molded on the teeth in a maximum intercuspidation position, which the patient bites, in the morning, after wearing his appliance. The goal is to restore the initial mandibular position, and it takes approximately 30 seconds to do so. (Figures 16 & 17)

Long term complications

On the long term, the most common complication is the presence of occlusal changes. This can take different

Use Our Lists Today

Palmeri Media Group

Our lists are:
CASL compliant and
are **delivered directly** to **our readers** and
online visitors.
These are **your clients** and **potential buyers.**

The Spectrum Program gives you the analytical information in an easy to use spreadsheet so you can mine the data and you can research, prospect and target.

Reach thousands of top decision makers by using one or more of our targeted lists

- English Speaking Canadian Dentists
- French Speaking Canadian Dentists (in Quebec)
- English Speaking Dental Lab Technicians
- French Speaking Dental Lab Technicians
- English Speaking Denturists
- French Speaking Denturists

Simplify your digital marketing initiatives

Call Sheela today at 905-489-1970 Ext. 208

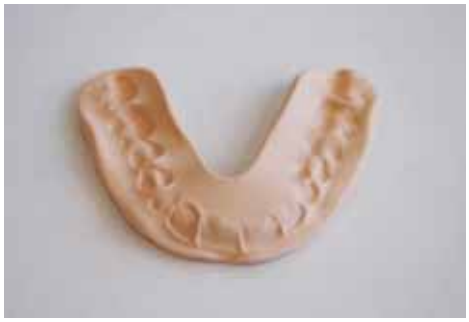
PMG Palmeri Media Group

Figure 12 — Orthesis adjustment

Figure 13 — Toothbrush used for morning exercises

Figures 14 & 15 — Back and forth anteroposterior movements in the morning, guided by the handle of the toothbrush

Figure 15



Figures 16 & 17 — The AM Aligner, in its packaging and once formed

forms: individual or massive teeth shifting, where the mandible will be considerably modified. These occlusal changes, which can appear over the course of several years, were arbitrarily classified as positive changes, such as the reduction of the horizontal overlap, neutral or negative changes, such as a vertical posterior open-bite or a unilateral cross-bite. The most recent published researches tend to demonstrate that these movements occur continuously, at different amplitudes, while the patient undergoes treatment.[17]

Interesting fact to know, dental appliances do not have monopoly on these dental movements. An article published a few years ago documents dental movements caused by the long term use of the CPAP[18].

An interesting aspect of long term complications of dental orthesis is the following: even if there are occlusal changes, sometimes major, the prevalence of temporomandibular articulation disorders is not higher than it is in the general population[19-20]. Without wanting to stir up any controversy, we can ask ourselves, in light of these conclusions, if certain widespread beliefs about the temporomandibular articulation should be reconsidered.

Clinical case 1 : Miss Amy (fictitious name)

A 31 year old patient, diagnosed with hypothyroïdism, numerous fatigue symptoms, (Epworth questionnaire, 12 on 24), morning headaches, important gain weight (15 kg over 2 years), mild sleep apnea (AHI to 4.6) and RDI (including awakenings) at 6.3. After using the evaluation grid (Table II), her options were the Narval or the Somnodent appliances, and she finally selected the latter.

When trying on her dental appliance, the patient received customary advice concerning its maintenance and morning exercises. Due to the severity of her symptoms, it was agreed to accelerate the activation process compared to the clinical protocol I usually follow. The patient must also meet with her physician to manage her hypothyroïdism disorder, which could partially cause her fatigue.

At the first checkup, the patient reports the almost complete disappearance of her sleep apnea symptoms, but has developed moderate masticatory muscle pain and a possible posterior open-bite.

In view of this, we revised the morning exercise protocol and created a «Morning Repositioner» for her. The mandibular orthesis was also completely deactivated in order to allow her to get used to the appliance.

(Figures 18-22)

One month later, the TMJ symptoms were resolved, the correction of the open-bite was underway, but the sleep apnea symptoms returned with renewed strength. With the patient's consent, we began the advancement process and revised the morning exercise protocol.

Palmeri Media Group

Let us help you develop, enhance and maintain a strong web presence.

WE PROVIDE ALL YOU NEED IN DIGITAL

As a leader in publishing, online media Palmeri Media Group can maximize the power of your online campaigns!

- ▶ Website creation
- ▶ Digital reprints
- ▶ Targeted Email marketing
- ▶ Digital editions
- ▶ Digital news letters delivery
- ▶ Digital data
- ▶ Email blast
- ▶ Website hosting

For more information Call:

Palmeri Media Group at 905.489.1970, 1.866.581.8949

Figure 18 — Somnodent appliance inserted

Figure 19 — Front view after 2 months

Figure 20 — Right side view after 2 months

Figure 21 — With the 'AM Aligner' appliance inserted

Figure 22 — Left side view after 2 months

Finally, at the last checkup, following the mandibular advancement, her fatigue disorders and headaches were diminishing, without any temporomandibular pain symptoms. The occlusion was improved, but the patient still had difficulty chewing certain foods. This situation is not painful. The patient prefers to live with a slightly altered occlusion, while being able to carry out her daily activities normally. It will be important in this case to rigorously follow her to ensure the occlusion doesn't undergo significant changes.

Table II – Clinical case evaluation grid, Miss Amy (fictitious name)

Appliance	Somnodent	Narval	SUAD	Kleerway	TRD	Other
Cost	NA	NA	NA	NA	NA	NA
Available Support	perfect	perfect	OK	OK	NA	NA
Comfort	perfect	OK	OK	Not specified	Not indicated	
Patient Dexterity	perfect	perfect	OK			
Complexity of Case	perfect	OK	OK	OK		
Lifespan	perfect	perfect	perfect	perfect	NA	
Other						

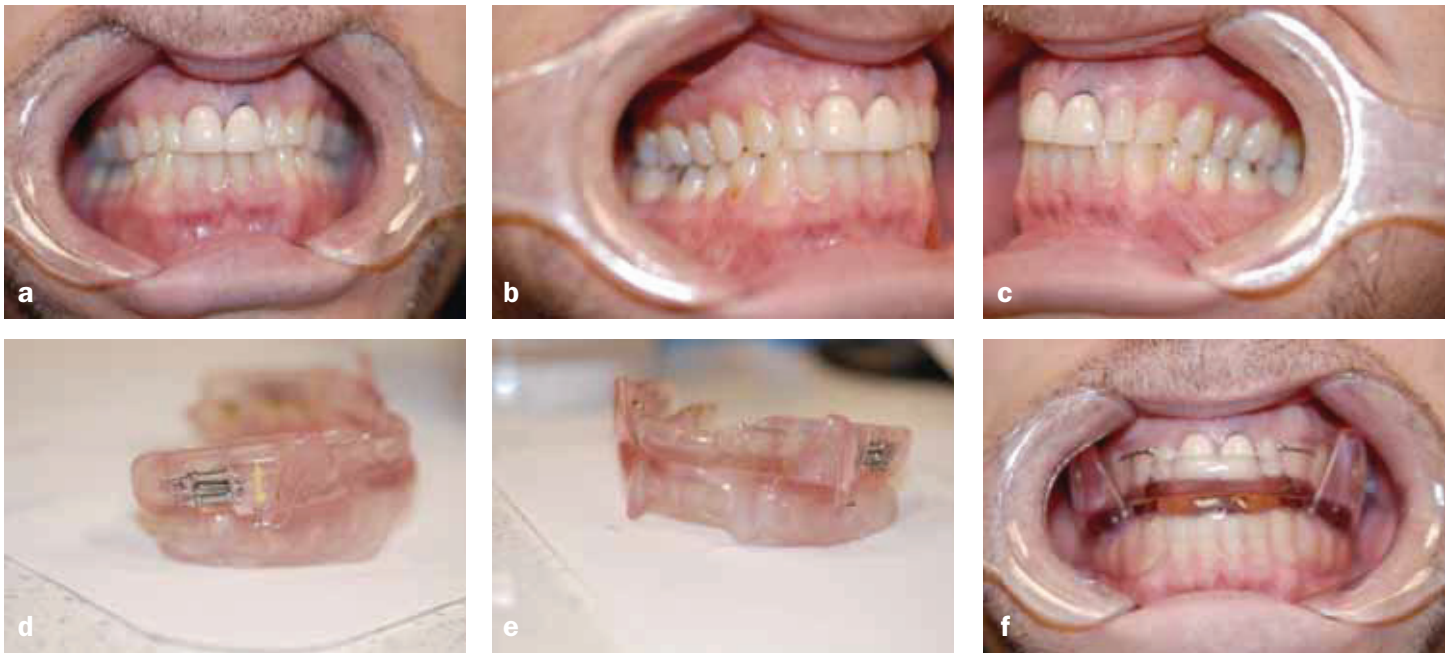
Clinical case 2 : M. JD

To conclude, I will present the case of M. JD and illustrate unexpected complications that we can encounter when treating a mild case of sleep apnea. This case will also highlight the limits that a dentist can reach in his field of practice.

A 44 year old patient, police officer for 20 years.

- Main complaint of snoring and daytime fatigue.
- Excellent physical condition.
- Excellent supportive bone structures for a dental appliance.
- Presence of a complete crown on tooth 11 for about 10 years. The patient is informed of the decimentation risks, and we will choose an appliance that offers a mild link between the mandible and the maxilla to prevent overloading of the crown.
- The polysomnography reveals a normal IAH (less than 5 events per hour), and the patient was referred by a sleep specialist.
- The case seems easy to treat, it is only a snoring case. (Figures 23 a-f)

During the treatment process, the patient reports the high efficiency of the appliance to eliminate his snoring disorders. The patient reports no pain nor occlusal changes. After a 3 month follow-up, the patient seems uneasy. He complains about having recurring nightmares and is now scared to wear his dental appliance.



Figures 23 a-f — Clinical case M. JD after 7 months of treatment with the Somnodent appliance : a) front view; b) right side view; c) left side view; d-e) Somnodent appliance; f) Somnodent advancement appliance inserted

Through questioning, we learned that during his career, this police officer was exposed to numerous dangerous situations with possible loss of human life. His nightmares could be related to his work.

As dentists, at this point, we have reached the limits in our field of practice. The patient (according to the sleep specialist) seems to be suffering from some kind of post-traumatic stress, and modifying his sleep architecture with a dental appliance now allows him to reach the REM sleep stages, where the nightmares occur. We improved the quality of his sleep architecture, but that lead to another condition affecting the patient, the presence of night terrors, unknowingly.

In view of this, the patient was re-evaluated and treated by the sleep specialist. It could be tempting for an ill-advised dentist to interrupt the dental therapy. However, the physician is the only one who can do the cost-benefit analysis before taking such a decision. From the patient's point of view, it is more likely preferable for him to be treated for his psychiatric complications: he will feel better on a long term basis. Legally, we can question ourselves on the potential repercussions resulting from a treatment without prior diagnosis by a physician. What would have happened if the patient or his surrounding circles suffered from detrimental consequences related to his newly emerged nightmares? In the event of a lawsuit, who would have been held responsible? Would the situation be covered by the practitioner's indemnity insurance, if the treatment process was not scrupulously followed?

While this type of case may seem rare, we frequently see a patient with mild sleep apnea or snoring suffer from other sleep disorders, explaining in part his symptomatology. The presence of a qualified medical team, working in collaboration, allows us to provide the best care possible.

As I attempted to demonstrate in these few lines, the dentist who wants to take part in treating sleep apnea and snoring disorders must first link up with sleep laboratories in his area and ensure that they comply with applicable requirements.

The collaboration of a high quality medical team is the most important success factor for this type of treatment. Taking dental impressions and putting a dental orthesis intraorally is relatively easy. With experience and the right training, learning to choose dental appliances, follow-up with patients and manage complications should go smoothly. Good luck.

Conflict of interests

There is no conflict of interests.

References for this article can be accessed on page 74

About the author

Dr. David Côté obtained his Doctorate in Dental Medicine from U de Montréal in 1996. He established a private practice in Gatineau. Ever since, Dr. Côté has been interested in the treatment of snoring and sleep apnea using dental devices. Dr. Côté is a member of the American Academy of Dental Sleep Medicine, a representative of the American Board of Dental Sleep Medicine and founding member of the dental section of the Canadian Sleep Society. He works, notably, in collaboration with the Outaouais Neuro Clinic and Ottawa Hospital, overseeing the treatment of sleep apnea.

Comments/Commentaires

Dr David Côté, DMD

Ronflement et Apnée du sommeil: quel est le rôle du dentiste généraliste dans le processus de prise en charge en pratique? Partie II

(Partie I, Archives JCDRP: www.cardp.ca - Vol.7-1, printemps, 2014)

Résumé

Depuis la publication du premier article traitant de ronflement et d'apnée du sommeil dans ce journal, certains changements législatifs sont survenus et ont modifié sensiblement la prise en charge des patients souffrant de ces troubles de santé. Au Québec entre autres, le Collège des Médecins du Québec a publié un guide d'exercice à l'attention de ses membres intitulé : «Apnée obstructive du sommeil et autres troubles respiratoires du sommeil»[1] Il ne fait aucun doute que les autorités d'autres jurisdictions au Canada publieront des directives allant dans la même direction, si ce n'est déjà fait. Au Québec toujours, l'Ordre des Dentistes du Québec envisage d'encadrer plus formellement le traitement de l'apnée du sommeil par ses membres, mais au moment d'écrire ces lignes, l'impact de ces futures lignes directrices demeure inconnu.

L'article qui suit commentera brièvement les changements au cadre législatif en faisant ressortir leur impact sur la pratique de tous les jours. Aussi, nous verrons plus en détail les différents types d'appareils dentaires disponibles et utilisés par les dentistes, leurs effets secondaires et les principes guidant la prise en charge des complications possibles.

Le Guide d'exercice du Collège des Médecins du Québec (CMQ)

Depuis quelques années, le nombre de patients diagnostiqués et traités pour des troubles d'apnée du sommeil a considérablement augmenté. Les standards de prise en charge des patients, d'une région à l'autre était très inégal et souvent l'organisation des soins laissait suspecter une situation de potentiel conflit d'intérêt. En conséquence, il doit désormais y avoir une indépendance complète entre l'entité qui fait le diagnostic et l'entité qui prodigue le traitement. Un dentiste ne peut plus faire passer des tests du sommeil ambulatoires dans son bureau, comme cela se faisait autrefois. De même, une firme qui vend des appareils CPAP ne peut plus offrir de tests de sommeil à sa clientèle. De plus, il n'est plus possible de faire interpréter ces tests hors de la province. Le médecin interprétant doit avoir certaines qualifications, détenir un permis d'exercice et une adresse de pratique valide pour recevoir les patients à l'intérieur de la province de Québec. Étant donné le peu de temps qui s'est écoulé depuis la publication de ces directives, il est possible qu'elles ne soient pas encore complètement mises en place. Le dentiste qui veut s'impliquer dans le traitement de l'apnée du sommeil et du ronflement a tout intérêt à s'assurer que le laboratoire du sommeil où il veut référer ses patient se conforme aux exigences du CMQ.

Le CMQ a aussi défini de façon assez précise le rôle du dentiste : nous avons le pouvoir de dépister les patients souffrant d'apnée du sommeil et pouvons les référer soit à leur médecin de famille ou à un laboratoire du sommeil, pour prise en charge. Toutefois, nous ne pouvons spécifier quels tests sont nécessaires pour établir le diagnostic : c'est le rôle du médecin qui verra,

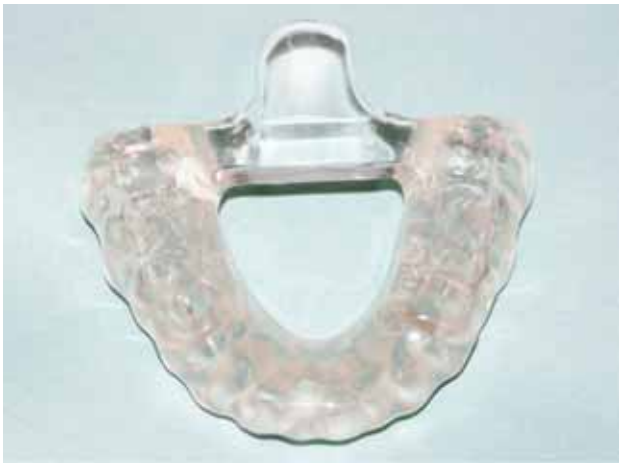


Figure 1 — Appareil Full Breath [2]

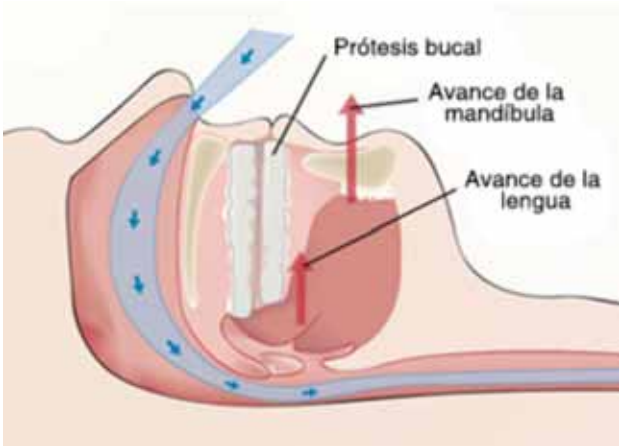


Figure 3 — Mécanisme d'action de l'appareil d'avancement mandibulaire[6]

obligatoirement, le patient en consultation. Nous pouvons aussi, suite à une référence médicale, traiter le patient à l'aide d'une orthèse dentaire. Fait important à noter : le dentiste est le seul professionnel dont les compétences sont reconnues pour ce type de traitement. Le document ne fait aucunement mention du rôle des denturologistes dans la prise en charge de patients souffrant de troubles de ronflement et d'apnée du sommeil. Les discussions que j'ai eues avec les représentants du CMQ m'ont confirmé que ce n'est pas un oubli : bien qu'il soit relativement facile de prendre des empreintes et de mettre en bouche une orthèse dentaire, le suivi, le potentiel de complication dentaire et leur gestion demande des connaissances qui sortent du champ de compétence des denturologistes.

Les différents types d'appareils dentaires :

Il existe à l'heure actuelle plus d'une centaine d'appareil mis sur le marché pour traiter l'apnée du sommeil et le ronflement. Le but de cet article n'est pas d'en faire l'inventaire, mais de présenter certaines familles

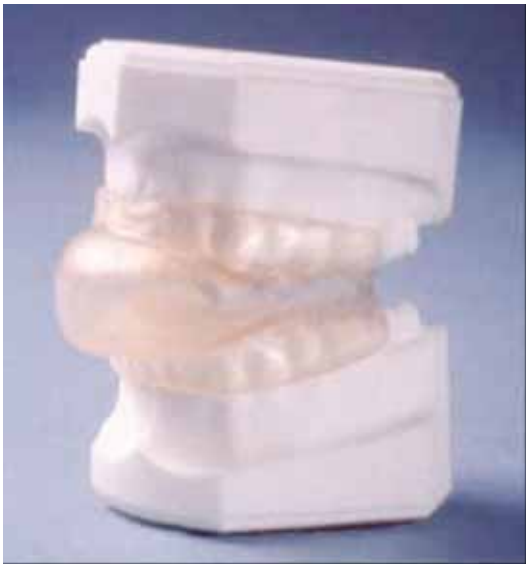


Figure 2 — Appareil d'avancement de la langue pour porteurs de prothèses (TRD)[5]

d'appareils et certains concepts qui permettront au praticien de sélectionner l'orthèse qui sera la plus appropriée pour un patient donné.

Les orthèses dentaires fonctionnent selon 3 mécanismes d'action :

Certains vont soulever le palais mou et forcer la langue dans une position antérieure. L'appareil Full Breath, inventé par le Dr Bryan Keriopian, en est un excellent exemple. (Figure 1)

Ce type d'orthèse est peu utilisé et il n'y a pas de littérature scientifique démontrant son efficacité, à ma connaissance.[3]

Certains vont stabiliser la langue dans une position avancée, par un mécanisme de succion. Il y a un bon nombre de ces appareils qui viennent sous une forme préfabriquée et il est aussi possible d'en faire confectionner sur mesure.[4] Ces appareils sont réservés aux porteurs de prothèse complète, aux gens présentant une certaine macroglossie et aux patients dont la condition dentaire est trop précaire pour que les dents puissent servir d'ancrage à un appareil plus conventionnel.[5] (Figure 2)

La catégorie d'appareil la plus populaire est sans contredit celle des appareils d'avancement mandibulaire. Leur mécanisme d'action est assez simple : en maintenant la mandibule en position avancée, on crée une traction sur la langue et sur les tissus mous du fond de la bouche. On dégage ainsi le passage de l'air, permettant le maintien d'une respiration normale.[6] (Figure 3)

Personnellement, je classe les appareils d'avancement mandibulaire dans 3 sous-catégories,

Figure 4 — Appareil Silencer [7]

Figure 5 — Appareil TAP 3 [8]

Figure 6 — Appareil Kleerway [9]

Figure 7 — Appareil Narval [11]

Figure 8 — Appareil SUAD [12]

Figure 9 — Appareil Herbst [13]

selon la rigidité du lien de stabilisation entre le maxillaire et la mandibule. Vous noterez que je ne ferai pas mention d'appareils non ajustables : l'efficacité des appareils dentaires varie dans le temps selon plusieurs facteurs, dont les changements de poids du patient, le niveau de fatigue, etc… En utilisant un appareil ne permettant pas d'ajustement, on limite grandement ses chances de succès.

Il y a les appareils offrant un lien rigide entre la mandibule et le maxillaire : le Silencer[7] (Figure 4), le TAP[8] (Figure 5), et Kleerway[9] (Figure 6) sont d'excellents exemples de ce type d'appareil.

Selon mon expérience clinique, ces appareils sont très efficaces pour contrôler les troubles d'apnée du sommeil. Toutefois, leur niveau de confort pour les patients est plus bas. Une étude récente de Gauthier et al.[10] semble arriver aux mêmes conclusions. Intuitivement, on peut suspecter que les appareils de cette classe génèrent aussi plus d'effets secondaires. Ces appareils sont tout indiqués pour traiter des cas plus sévères et/ou des cas présentant d'excellentes structures permettant l'ancrage de l'orthèse.

La seconde catégorie représente les appareils avec un lien semi rigide entre le maxillaire et la mandibule. Le contrôle de la dimension verticale est moins ferme, mais peut être modulé par l'utilisation d'élastiques inter-arches. L'efficacité de l'appareil pourrait s'en trouver diminuée mais le niveau de confort pour le patient est augmenté par la plus grande liberté de mouvement pour le patient. Ces appareils sont tout indiqués dans les cas où les structures d'ancrage sont compromises, pour les patients qui ont plus de misère à porter un appareil dentaire et aussi pour les cas un peu moins sévères. Le Narval CC[11] (Figure 7), l'appareil SUAD[12] (Figure 8), le Herbst[13] (Figure 9), sont des exemples d'appareil de ce type.

Finalement la dernière classe d'appareils d'avancement mandibulaire est celle où le lien entre le maxillaire et la mandibule est plus flexible. Les forces exercées sur les structures de support sont plus faibles, le confort est augmenté, mais l'efficacité pure de l'appareil est aussi compromise. Ces appareils sont indiqués dans les cas où le patient porte une prothèse complète supérieure, dans les cas de claustrophobie, dans les cas plus légers et dans les cas où on voudrait ménager des restaurations dentaires extensives (réhabilitation complète).

L'appareil Somnodent[14] (Figure 10), et le MicrO_2[15] (Figure 11) sont d'excellents appareils de cette classe.

Il est important de noter que l'efficacité globale de l'appareil n'est pas toujours le facteur le plus important. Comme il sera expliqué dans la section suivante, tout dépend du diagnostic de départ. Par exemple, dans un cas léger, il n'est pas toujours souhaitable, si on tient

Figure 10 — Appareil Somnodent [14]

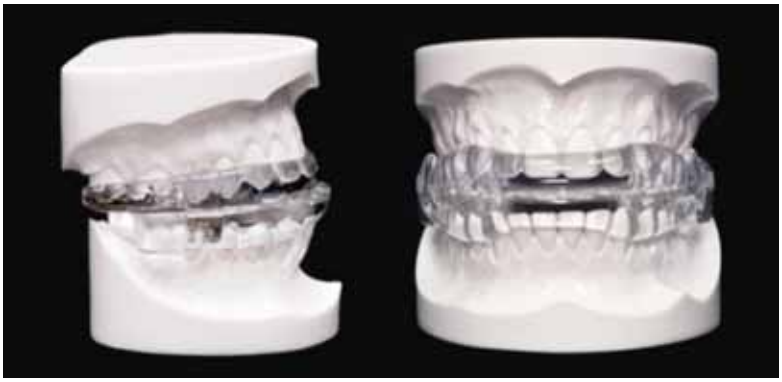


Figure 11 — Micro$_2$ [15]

compte du confort du patient, d'utiliser l'appareil le plus efficace disponible.

Principes de sélection des appareils dentaires

Avec tant d'appareils à notre disposition, comment procéder à une sélection judicieuse?

Il s'agit alors de regarder les caractéristiques du cas qu'on se propose de traiter en fonction des appareils qui nous sont disponibles.

Par exemple, vous recevez un patient présentant un cas d'apnée sévère, avec d'excellentes structures dentaires à la mandibule et au maxillaire, les coûts de la thérapie sont un facteur secondaire. La sélection d'appareil que vous ferez ne sera pas la même que pour un patient âgé, présentant des troubles d'arthrite (difficulté à ajuster certains types d'appareils), une prothèse dentaire complète du haut et un diagnostic d'apnée sévère.

Parmis les facteurs à considérer dans la sélection d'appareil :

- Coût des frais de laboratoires
- Durée de vie souhaitée de l'appareil : veut-on faire un essai, est-ce un remplacement d'appareil existant?
- Nombre et état des dents présentes : Avons-nous suffisamment de dents présentes? (minimum 10 dents par arcade)
- Sévérité du cas : ronflement seulement ou apnée sévère?
- Présence de co-morbidité pouvant compromettre la fidélité au traitement : bruxisme, Syndrome des jambes sans repos, troubles psychiatriques, présence d'arthrite

En utilisant une grille d'analyse (Table 1) telle que celle proposée ci bas, (le nom des appareils n'est présent qu'à titre indicatif, le praticien est libre d'utiliser les appareils qui lui semblent bon), on peut assez facilement proposer à son patient un choix d'appareil qui répondra à ses besoins.[16]

Afin d'atteindre un niveau de succès élevé avec l'utilisation de ce type d'appareils, le dentiste désirant s'impliquer dans le traitement du ronflement et de l'apnée du sommeil doit se familiariser avec les particularités de plusieurs orthèses pour être en mesure d'offrir à ses patients celle qui lui conviendra le mieux.

Prise en charge des complications

On entend souvent parler des effets secondaires causés par les orthèses dentaires. Il est important à ce point de remettre les choses en perspective. L'apnée du sommeil est un problème de santé aux conséquences très importantes sur la santé du patient. Dans la très grande majorité des cas, l'impact dentaire de ce type de traitement est beaucoup moindre que ses bénéfices sur la santé. Lorsqu'on regarde les risques d'infarctus, d'ACV, de haute pression, chez un patient non-traité souffrant d'apnée du sommeil, il y a rarement une justification suffisante pour interrompre un traitement par appareil dentaire qui est efficace. Seul le médecin traitant peut prendre une telle décision. Un dentiste qui conseillerait

Table 1 : Grille d'analyse pour le choix d'appareils

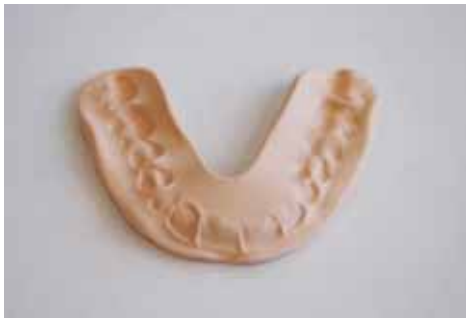
Appareil	Somnodent	Narval	SUAD	Kleerway	TRD	Autre
coût						
Support disponible						
confort						
Habileté du patient						
Sévérité du cas						
Durée de vie						
autre						

Figure 12 — Ajustement de l'orthèse

Figure 13 — Brosse utilisée pour les exercices matinaux

Figures 14 & 15 — Mouvement de va et viens antéro postérieur le matin, en se guidant avec le manche de la brosse

Figure 15



Figures 16 & 17 — Le AM Aligner, dans son emballage et une fois formé

à son patient de cesser d'utiliser son appareil suite à des complications dentaires (par exemple, une couronne qui se décimente,) serait tenu légalement responsable si l'état de santé dudit patient venait à se dégrader par la suite. Jamais on ne conseillerait à un patient prenant des antis dépresseurs pour une raison médicale sérieuse de cesser sa médication suite à l'augmentation de son taux de carie. Le même raisonnement doit s'appliquer pour les porteurs d'orthèse mandibulaire.

Complications à court terme :

Suite à l'insertion d'une orthèse mandibulaire, le patient passe par une phase d'acclimatation au traitement qui peut se traduire par : un excès marqué de salive ou à l'inverse une xérostomie plus marquée la nuit, de l'inconfort au niveau des muscles de la mastication et de la sensibilité au niveau de certaines dents. Si ces complications sont prises en charge de façon diligente, on peut en minimiser la portée.

Lors des rendez-vous de suivi, le praticien doit évaluer le niveau de sensibilité au niveau des dents et atténuer la pression sur les structures de support en ajustant l'intérieur de l'orthèse mandibulaire. Le praticien peut aussi prescrire des exercices pour permettre au patient de réduire l'inconfort des muscles de la mastication. Ces exercices consistent à faire des mouvements de protrusion et rétrusion en utilisant le manche d'une brosse à prothèse, par exemple, comme guide du mouvement protrusif. L'avantage de cette technique est que la brosse à dent utilisée pour nettoyer l'appareil sert aussi pour les exercices de relaxation musculaire. (Figures 12 & 13) (Figures 14 & 15)

Pour minimiser les mouvements dentaires, une technique pronée par le manufacturier Amisleep (appareils TAP) consiste à utiliser le AM Aligner. C'est simplement une gaufrette de produit thermo-plastique, moulée sur les dents en position d'inter-cuspidation maximale, sur laquelle le patient mord, le matin, après avoir porté son appareil. Le but est de ramener la mandibule à sa position initiale et le tout dure une trentaine de secondes tout au plus. (Figures 16 & 17)

Complications à long terme.

A long terme, la complication la plus courante est la présence de changements occlusaux. Cela peut cependant prendre plusieurs formes : certaines dents individuelles peuvent se déplacer mais il peut aussi y avoir des mouvements de masse, où la position mandibulaire sera considérablement modifiée. Ces changements occlusaux, qui apparaissent sur une période s'échelonnant sur plusieurs années, ont été arbitrairement classés en changements positifs, telle une réduction du surplomb horizontal, neutres ou négatifs, telle l'apparition d'une béance verticale

Figure 18 — Appareil Somnodent en bouche

Figure 19 — Vue frontale après 2 mois

Figure 20 — Vue latérale droite après 2 mois

Figure 21 — Avec le 'AM Aligner' en bouche

Figure 22 — Vue latérale gauche après 2 mois

postérieure ou l'apparition d'un articulé croisé. Les dernières recherches publiées tendent à démontrer que ces mouvements se produisent de façon continue, à différentes amplitudes, tant que le patient sera sous traitement.[17]

Fait intéressant à noter, les appareils dentaires n'ont pas le monopole de ces mouvements dentaires. Un article publié il y a quelques années documente les mouvements dentaires occasionnés par le port à long terme du CPAP[18].

Un aspect intéressant des complications à long terme des orthèses dentaires est le suivant : bien qu'on se retrouve en présence de changements occlusaux parfois majeurs, la prévalence de troubles de l'articulation temporo-mandibulaire n'est pas plus élevée chez les porteurs d'orthèse mandibulaire que dans la population en général[19-20]. Sans vouloir relancer dans ces pages une nouvelle polémique, on peut se demander, à la lumière de ces conclusions, si certaines des croyances répandues au sujet des troubles de l'articulation temporo-mandibulaire n'auraient pas besoin d'êtres reconsidérées.

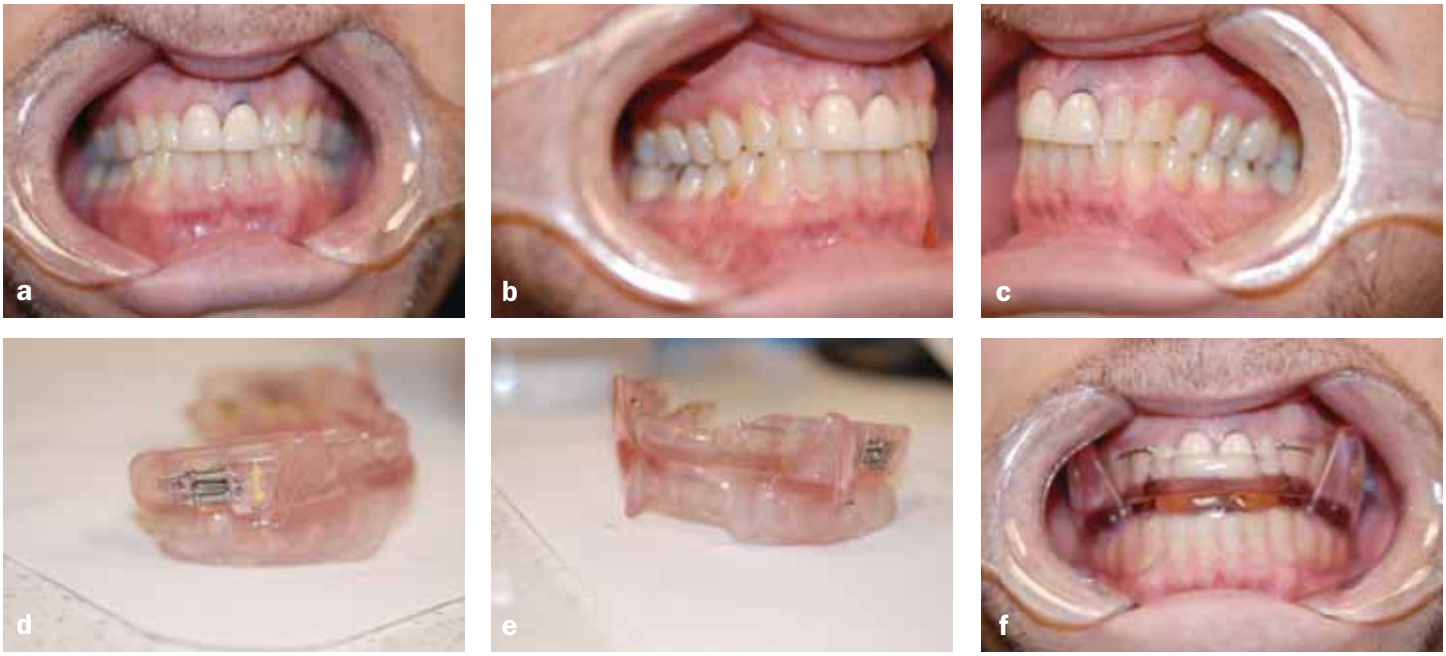
Cas clinique 1 Mlle Amy (nom fictif)

Patiente de 31 ans, diagnostic d'hypothyroïdie, beaucoup de symptômes de fatigue (questionnaire Epworth à 12 sur 24), céphalées matinales, prise de poids marquée (15kg sur 2 ans) et diagnostic d'apnée du sommeil léger (AHI à 4.6) et RDI (incluant les éveils) à 6.3. Suite à l'utilisation de la grille d'analyse (Table II), on arrive à offrir à la patiente le choix entre un appareil Narval ou Somnodent, qu'elle va finalement choisir.

Lors de la mise en bouche, les conseils d'usage liés à l'entretien de l'appareil et aux exercices matinaux ont été revus avec la patiente. Dû à la sévérité des symptômes, il a été convenu d'accélérer le processus d'activation par rapport au protocole clinique que je suis habituellement. La patiente doit aussi voir son médecin

Table II – Grille d'analyse pour le cas clinique, Mlle Amy (nom fictif)

Appareil	Somnodent	Narval	SUAD	Kleerway	TRD	Autre
coût	NA	NA	NA	NA	NA	NA
Support disponible	parfait	parfait	OK	OK	NA	NA
confort	parfait	OK	OK	Pas indiqué	Non indiqué	
Habileté du patient	parfait	parfait	OK			
Sévérité du cas	parfait	OK	OK	OK		
Durée de vie	parfait	parfait	parfait	parfait	NA	
autre						



Figures 23 a-f — Cas clinique M. JD après 7 mois de traitements avec l'Appareil Somnodent : a) vue frontale; b) vue latérale droite; c) vue latérale gauche; d-e) appareil Somnodent; f) Appareil d'avancement Somnodent en bouche

de famille pour prendre en charge ses troubles d'hypothyroïdie, qui pourraient être partiellement en cause pour les troubles de fatigue.

Au premier rendez-vous de contrôle, la patiente rapporte une résolution presque complète des symptômes liés à l'apnée du sommeil, mais elle a développé une douleur modérée aux muscles de mastication et une béance semble vouloir s'installer en région postérieure. Devant cette situation, nous avons revisé le protocole d'exercices matinaux et avons confectionné pour la patiente un «Morning Repositionner». L'orthèse mandibulaire a aussi été complètement désactivée pour laisser une chance à la patiente de s'acclimater à l'appareil. (Figures 18-22)

Au suivi 1 mois plus tard, les symptômes à l'ATM étaient résolus, la béance était en voie de se corriger, mais les symptomes liés à l'apnée étaient revenus en force. Avec le consentement de la patiente, nous avons repris le processus d'avancement et avons revu le protocole matinal d'exercices.

Finalement, au dernier rendez-vous de contrôle, suite à l'avancement, les troubles de fatigue et de céphalée étaient en voie de se résorber sans que les symptômes de douleur temporo mandibulaire soient présents. L'occlusion s'est améliorée, mais la patiente ressent toujours un peu de difficulté à mastiquer certains aliments. Cette situation n'est pas douloureuse. La patiente préfère vivre avec une occlusion légèrement altérée, mais pouvoir mener ses activités quotidiennes de façon normale. Il sera très important dans ce cas de suivre la patiente rigoureusement pour s'assurer que l'occlusion ne se modifie pas davantage.

Cas clinique 2 : M.JD

Pour terminer, le cas de M. JD sera présenté et illustrera les complications inattendues qu'il est possible de rencontrer lors du traitement d'un cas léger d'apnée du sommeil. Ce cas mettra aussi en relief les limites que le dentiste peut atteindre dans son champ de pratique.

Patient de 44 ans, policier depuis 20 ans,

- Plainte principale de ronflement et de fatigue diurne.
- Excellente condition physique.
- Excellentes structures de support pour un appareil dentaire.
- Présence sur la dent 11 d'une couronne complète datant d'environ 10 ans. Le patient est averti des risques de décimentation et la sélection d'un appareil ayant un lien faible entre la mandibule et le maxillaire sera faite pour éviter de surcharger la couronne.
- La polysmnographie révèle un IAH normal (moins de 5 évènements à l'heure) et le patient est référé au cabinet par un spécialiste du sommeil.
- Le cas semble bien facile à traiter, on a affaire à un cas de «ronflement seulement» .

(Figures 23 a-f)

Au cours du processus de traitement, le patient rapporte la très grande efficacité de l'appareil à régler ses troubles de ronflement. Le patient ne rapporte

CJRDP JCDRP

Canadian Journal of Restorative Dentistry & Prosthodontics
The official publication of the Canadian Academy of Restorative Dentistry and Prosthodontics

Journal canadien de dentisterie restauratrice et de prosthodontie
Publication officielle de l'Académie canadienne de dentisterie restauratrice et de prosthodontie

INTRA-ORAL 3D SCANNERS SURVEY

https://fr.surveymonkey.com/s/9RSBXB7

This anonymous, brief Survey for Dentists, is there for all readers to complete. You are encouraged to share your opinions and suggestions on the hottest topic in Clinical Dentistry.

Your input can benefit dental colleagues!

Visit : www.cardp.ca

SONDAGE SONDES INTRA-ORALES 3D

https://fr.surveymonkey.com/s/XZT3TRC

Ce bref sondage anonyme est disponible pour tous nos lecteurs dentistes. Vous êtes invités à transmettre vos opinions et suggestions sur ce sujet de pointe en Dentisterie.

Votre participation est bénéfique pour tous!

Visitez : www.cardp.ca

Editor's Note :

In order to access the extensive Bibliography of Dr. Dennis Nimchuk's recent article : *A New Paradigm For Creating Durable Occlusal Precision With Indirect Bondable Ceramic, CJRDP, Vol.7, No 3, Fall, 2014*, please visit www.cardp.ca, Journal Section, and download the online Digital version, page 61.

Note de l'éditeur :

Afin d'accéder la bibliographie extensive du récent article de Dr Dennis Nimchuk: *A New Paradigm For Creating Durable Occlusal Precision With Indirect Bondable Ceramic, CJRDP, Vol.7, No 3, Fall, 2014,* veuillez visiter www.cardp.ca, Section Journal, et consultez la version numérique en ligne, page 61.

aucune douleur ou de changements occlusaux. Après 3 mois de suivi, au rendez-vous de contrôle, le patient semble mal à l'aise. Le patient se plaint de cauchemars répétitifs et à maintenant peur de porter son appareil dentaire. Au fil du questionnement, nous apprenons que durant sa carrière, ce policier fut exposé à plusieurs situations périlleuses impliquant possiblement des pertes de vies. Les cauchemars qu'il vit pourraient être liés à son métier.

Comme dentiste, à ce point, nous avons atteint les limites de notre champ de pratique. Le patient (selon le spécialiste du sommeil) semble souffrir d'une certaine forme de stress post-traumatique et le fait de modifier l'architecture du sommeil par le port de l'appareil permet désormais au patient d'atteindre les stades de sommeil REM où se produisent ces cauchemards. Nous avons amélioré la qualité de l'architecture du sommeil du patient, mais cela a aussi fait ressortir une autre condition qui affligeait le patient, la présence de terreurs nocturnes, à son insu. Devant cette situation, le patient fut retourné au spécialiste du sommeil pour réévaluation et prise en charge. Il serait tentant pour un dentiste mal avisé d'interrompre la thérapie par appareil dentaire. Toutefois, seul le médecin traitant peut faire le calcul coût bénéfice qui s'impose avant de prendre une telle décision. Du point de vue du patient, il est probablement préférable que ses complications psychiatriques soient traitées : il s'en portera mieux à long terme. Au niveau légal, on peut se questionner sur les répercussions qui pourraient découler d'un traitement sans diagnostic préalable de la part d'un médecin. Que serait-il arrivé si le patient ou son entourage avaient subi des conséquences fâcheuses liées aux cauchemars nouvellement apparus? En cas de poursuite, qui aurait été responsable? L'assurance responsabilité du praticien aurait-elle couvert cette situation, si le processus de traitement n'était pas scrupuleusement suivi. Bien que ce type de cas puisse sembler rare, Il est très fréquent qu'un patient souffrant d'apnée légère ou de ronflement souffre aussi d'autres troubles du sommeil, expliquant en partie sa symptomatologie. La présence d'une équipe médicale qualifiée, travaillant en collaboration, permet alors d'offrir les meilleurs soins.

Comme j'ai tenté de le démontré dans ces quelques lignes, le dentiste désirant s'impliquer dans le traitement des troubles de ronflement et d'apnée du sommeil doit tout d'abord établir des liens avec les laboratoires du sommeil de sa région et s'assurer de leur conformité avec les règles les régissant. La collaboration avec une équipe médicale de qualité est le facteur de réussite le plus important pour ce type de traitement. La prise d'empreinte et la mise en place d'appareils dentaires est relativement simple. Avec l'expérience et une bonne formation, la sélection d'appareil, le suivi des patients et la prise en charge des complications devraient s'apprendre sans heurts. Bonne chance.

Bibliography

1 Apnée obstructive du sommeil et autres troubles respiratoires du sommeil, Guide d'exercice du Collège des Médecins du Québec. Publication du Collège des Médecins du Québec, ISBN 978-2-920548-96-1(PDF)
2 Appareil Full Breath : www.sleepguide.com.
3 Appareil Full Breath : www.cpapalternative.com
4 « A New Look At An Old Device»: http://www.tmjchicago.com/uploads/tongue-retaining.pdf
5 http://www.21stcenturydental.com/smith/sleepapnea_tapappliance.html
6 www.orthoapnea.com
7 Appareil Silencer : www.the-silencer-com
8 Appareil TAP : www.tapintosleep.com
9 Appareil Kleerway : www.greatlakesortho.com
10 Gauthier L, et al: Efficacy of two mandibular advancement appliances in the management of snoring and mild-moderate sleep apnea: a cross-over randomized study. Sleep Med. 2009 Mar;10(3):329-36. doi: 10.1016/j.sleep.2008.03.011. Epub 2008 Jun 25.
11 Appareil Narval : www.resmed.com
12 Appareil SUAD : www.strongdental.com
13 Appareil Herbst : www.sleepscholar.com
14 Appareil Somnodent : www.somnomed.com
15 Appareil Micr02 : www.microdental.com
16 Source : Présentation de Dr Jonathan Parker, congrès annuel de l'AADSM 2014, Minneapolis, Mn
17 Almeida FR, Lowe AA, Otsuka R, Fastlicht S, Farbood M, Tsuiki S : Long term sequellae of oral appliance therapy in obstructive sleep apnea patients : Part 2. Study model analysis Am J Orthod Dentofacial Orthop 2006; 129:205-213
18 Tsuda H, Almeida FR, Tsuda T, Moritsuchi Y, Lowe AA: Craniofacial changes after 2 years of nasal continuous positive airway pressure in patients with obstructive sleep apnea. Chest 2010 Oct;138(4):870-4. Doi: 10.1378/chest. 10-0678. Epub 2010 Jul 8.
19 Giannasi LC, Almeida FR, Magini M, Costa MS, de Oliveira CS, de Oliveira JC, Kalil Bussadori S, de Oliveira LV: Systemic assessment of the impact of oral appliance therapy on the temporomandibular joint during treatment of obstructive sleep apnea: long-term evaluation. Sleep Breath. 2009 Nov;13(4):375-81. Doi: 10. 1007/s11325-009-0257-3. Epub May 1.
20 Martinez-Gomis J, Willaert E, Nogues L, Pascual M, Somoza M, Monasterio C: Five years of sleep apnea treatment with a mandibular advancement device. Side effects and technical complications. Angle Orthod. 2010 Jan:80(1): 30-6. Doi: 10.2319/030309-122.1.

Aucun conflit d'intérêt rapporté

A propos de l'auteur

Dr David Côté a obtenu son doctorat en Médecine Dentaire de l'Université de Montréal en 1996. Il est établi en pratique privée à Gatineau depuis 1998. Dès sa graduation, Dr Côté s'est intéressé au traitement du ronflement et de l'apnée du sommeil à l'aide d'appareils dentaires. Dr Côté est membre de l'American Academy of Dental Sleep Medicine, il est Diplomate de l'American Board of Dental Sleep Medicine et membre fondateur de la section Dentaire de la Canadian Sleep Society. Il travaille notamment en collaboration avec la clinique Neuro Outaouais et avec l'hopital d'Ottawa dans le traitement de l'apnée du sommeil.

Comments/Commentaires

Post and Core - Where the Dental Community Meets!

Whether you are a:

- Dentist
- Dental Auxiliary
- Lab Technician
- Manufacturer
- Supplier
- Denturist

Visit www.postandcore.com

Thinking of placing a classified ad to buy or sell a dental practice or equipment? Looking for new dental staff or a new dental job? Make Post and Core your one stop destination to connect with your target market.

Sign up and Post your ad for FREE TODAY!

For information: www.postandcore.com/contact.php
info@postandcore.com

Welcome Our Incoming President

Bienvenue à notre nouveau Président, Dr. Ian Tester

Dr. Tester graduated from the University of Toronto with a DDS in 1982 and received a Master in Dental Sciences from Donau University in Krems Austria in 2004, with major emphasis on the treatment of the complicated patient using Orthodontics, Prosthetic Dentistry, physical therapy and medical intervention.

He now practices general dentistry in St. Catharines, Ontario with a focus on multidisciplinary treatment of the complex patient. He is a member of many professional and educational organizations in the United States and Canada and is a past President of the International Dental Study Club and a Fellow of the Canadian Academy of Restorative Dentistry and Prosthodontics, the American College of Dentists, the International College of Dentists, the Pierre Fouchard Society and the Academy of Dentistry International. He is a founding member of the International Academy of Advanced Definitive Dentistry (IAADD) and is section co-editor of the CJRDP in Occlusion and Temporomandibular Dysfunction.

Dr. Tester lectures in the U.S. and Canada on the topics of TMD, Function, Dysfunction, Esthetics and Occlusion in Restorative Dentistry. In addition, he is mentor to the Niagara Peninsula Dental Diagnostic Study Club.

He and his wife Nancy have six adult children and enjoy their time off relaxing at their cottage on Lake Huron, cycling and playing golf.

Dr. Tester fut promu avec un DDS de University of Toronto en 1982 et une Maîtrise en Sciences dentaires de l'Université de Donau à Krems en Autriche en 2004, avec concentration dans le traitement des cas complexes à l'aide de l'Orthodontie, la Dentisterie prothétique, la physiothérapie ainsi que les interventions médicales.

Il pratique aujourd'hui à St. Catharines en Ontario en dentisterie générale en mettant l'accent sur les traitements multidisciplinaires des cas compliqués. Il est membre de nombreux organismes professionnels et éducationnels aux États-Unis et au Canada et est ancien Président de International Dental Study Club et un Fellow de l'Académie canadienne de dentisterie restauratrice et de prosthodontie, American College of Dentists, International College of Dentists, la Société Pierre Fouchard, et Academy of Dentistry International. Il est membre fondateur de International Academy of Advanced Definitive Dentistry et co-éditeur du JCDRP en Occlusion et DTM.

Dr. Tester présente des conférences aux États-Unis et au Canada portant sur la DTM, la fonction, la dysfonction, l'esthétique et l'occlusion en Dentisterie restauratrice. De plus, il est mentor pour Niagara Peninsula Dental Diagnostic Study Club.

Son épouse Nancy et lui sont parents de six enfants adultes et ils se plaisent, à passer leur temps libre à leur maison de campagne sur le Lac Huron, à faire du vélo et jouer au golf.

CARDP – 2014 New Members

Dr. Majd Al Mardini – 883 Upper Wentworth Street, Ste 209, Hamilton, ON L9A 4Y6

Dr. Kevin Aminzadeh Kay-Wan – 1762 West Broadway, Vancouver, BC V6J 1Y1

Dr. Don Anderson – 5264 Parker Ave, Vancouver, BC V8Y 2M9

Dr. Kimberley Dobson – 50490 Phillips Rd., Wainfleet, ON L0S 1V0

Dr. Matt Francisco – 766 Micola Street, Kamloops, BC V2C 2R4

Dr. Patricia Hunter – 110-8211 Ackroyd Road, Richmond, BC V6X 3K8

Dr. Sarah Mancuso – 547 Thorold Road, Unit # 2, Welland, ON L3C 3W9

Dr. Dean Miller – 114 Woodlawn Rd, Dartmouth, NS B2T2S7

Dr. Oliver Pin Harry – 827 Saluda Court, Chapel Hill, NC 27514

Production Schedule 2015

CJRDP/JCDRP Publications 2015	Article Submissions Due Date	Advertisement Deadline
Spring issue	February 22, 2015	March 13, 2015
Summer issue	April 26, 2015	May 15, 2015
Fall issue (Conference issue)	July 26, 2015	August 10, 2015
Winter issue	October 15, 2015	October 15, 2015

Article submissions:

- Refer to the Author Guidelines www.cardp.ca
- e-mail article submission to: Dr. Hubert Gaucher, Editor-in-chief hgaucher@sympatico.ca

Advertisment submissions:

- All advertising must be submitted as electronic art in PDF-X1A 300-400dpi CMYK format.

Please forward your artwork by e-mail to: ettore@palmeripublishing.com, lobat@palmeripublishing.com, sales@palmeripublishing.com

or upload to the ftp site:
Server: ftp.palmeriftp.com – User: palmeri – Password: Publishing12@ (Case sensitive)

President's message / Message du président

The 23rd Annual Scientific Meeting of the Canadian Academy of Restorative Dentistry and Prosthodontics (CARDP) will be held at the Hotel Intercontinental (Front Street) in Toronto on October 1-3rd, 2015. As President, it is my pleasure to extend a personal invitation to you to attend and experience our unique blend of superb continuing education, camaraderie and social events.

As befits the preeminent Canadian Dental organization promoting excellence and education in Restorative Dentistry and Prosthodontics our organizing committee has designed an outstanding and diverse program that will include a hands-on component for members on Thursday, five world class speakers on Friday as well as fourteen leading clinicians addressing clinically relevant topics on Saturday. The educational program is well balanced with our social events ensuring a fantastic weekend.

CARDP is proud of our history and the continued dedication of our members to the art and science of Restorative Dentistry and Prosthodontics. It is our mission to promote excellence in all aspects of our personal and professional lives. We are committed to the highest standards of professional ethics and are leaders in promoting unbiased, outstanding continuing education. Our academy journal (The Canadian Journal of Re-storative Dentistry and Prosthodontics – CJRDP) is peer-reviewed and read nationwide. Conference information as well as digital back issues of our journal can be viewed on our website www.cardp.ca.

We look forward to seeing you in
Toronto October 1-3rd, 2015.

Sincerely,
Ian W. Tester DDS, MSc
CARDP President

Le 23e Congrès annuel de l'Académie canadienne de dentisterie restauratrice et de prosthodontie (ACDRP) aura lieu à l'Hôtel Intercontinental (rue Front), à Toronto, du 1er au 3 octobre 2015. À titre de président, j'ai l'honneur de vous inviter personnellement à vivre une expérience enrichissante et prendre part à une combinaison unique de superbes formations continues, dans un esprit de camaraderie, et d'événements sociaux.

À l'image de notre organisation dentaire, chef de file au Canada pour la promotion de l'excellence et de l'éducation dans le domaine de la dentisterie restauratrice et de prosthodontie, notre comité organisateur a conçu un programme exceptionnel et diversifié incluant un volet pratique pour les membres, le jeudi, cinq conférenciers de renommée internationale, le vendredi, et 14 cliniciens réputés qui aborderont des sujets cliniques dignes d'intérêt, le samedi. Le programme éducatif sera agrémenté d'événements sociaux, vous promettant ainsi un week-end fantastique.

L'ACDRP est fière de notre histoire et du dévouement continu de nos membres à l'art et à la science de la dentisterie restauratrice et de prosthodontie. Notre mission est de promouvoir l'excellence dans tous les aspects de nos vies personnelles et professionnelles. Nous avons pris l'engagement de mener nos activités en fonction des normes professionnelles et éthiques les plus rigoureuses et sommes leaders en matière de formation continue impartiale et d'exception. Le journal de l'académie (le journal canadien de dentisterie restauratrice et de prosthodontie – JCDRP) est révisé par des pairs et lu à l'échelle du pays. Vous pouvez obtenir plus d'information sur les conférences et consultez les éditions numériques précédentes de notre publication sur notre site Web, à l'adresse www.cardp.ca.

Au plaisir de vous rencontrer à
Toronto du 1er au 3 octobre, 2015.

Veuillez agréer mes salutations distinguées,
Ian W. Tester DDS, MSc
Président de l'ACDRP

CARDP Toronto 2015

Hotel Intercontinental (Front Street)

Annual Scientific Meeting October 1-3rd 2015

"Inspiring Excellence"

The organizing committee for CARDP Toronto 2015 is pleased to announce this preliminary program. The theme for the meeting is "Inspiring Excellence" and the program has been designed to provide a diverse number of topics relevant to Restorative/Prosthodontic Practice. The program format will include a Thursday "Hands On" program open to members. The Friday Essayists include world-class speakers and the revised Saturday Clinics will include a full day of leading clinicians speaking on a variety of clinically relevant topics.

THURSDAY—Hands-on all day

U of Toronto CE Teaching Facility, Don Mills

Basil Mizrahi, BDS, MSc, Med	**Diplomate, American Board of Prosthodontics** " Getting more out of your temporary crowns. Advanced techniques to allow you to enhance the function of temporary crowns and let them aid you in the treatment of complex cases."

FRIDAY Essay Program:

1. Terry Donovan, DDS	**Professor and Section Head for Biomaterials, Department of Operative Dentistry at the University of North Carolina School of Dentistry at Chapel Hill** " Clinical Analysis of Contemporary Ceramic Systems "
2. Glen Johnson, DDS, MS	**University of Washington, Dept. of Restorative Dentistry** " New Dental Adhesives and Crown Cements – What should you use and why? "
3. Carlo Ercoli, DDS	**University of Rochester Medical Centre** " Complex implant reconstructions: surgical and prosthetic perspectives. "
4. Basil Mizrahi, BDS, MSc, Med	**Diplomate American Board Prosthodontics** " Achieving Favourable Aesthetic and Biomechanical Outcomes in Fixed Prosthodontics. Challenges and Solutions."
5. Van B. Haywood, DMD	**Professor, Department of Oral Rehabilitation, College of Dental Medicine GC** " Tooth Bleaching Techniques: The pre-bleaching exam and single dark teeth."
6. Kim Kutsch, DDS	" Dental Caries: A Disease of Choice? "

SATURDAY 20 Minutes Presentations:

1. Uche Odiatu, DDS	" Exercise is Medicine: The right Rx for the dental professional "
2. Kristina Perschbacher BSc, DDS, MSc, (Oral Med. and Pathology), FRCD(C)	" White Lesions: Hyperkeratosis to Carcinoma "
3. Susanne Perschbacher DDS, MSc, (Oral Radiology),FRCD(C)	" Panoramic radiographic interpretation: Making sense of the shadows "
4. David Psutka, DDS, FRCD(C) (Oral Surgery)	" TMJ Surgery. State of the Art and Science."
5. Peter Fritz, B.Sc., DDS., FRCD(C) Ph.D. (Perio)	" Supportive Implant Therapy: A Step By Step Protocol To Maintaining Implants. "
6. Oliver Pin Harry, DDS, MS, (Prosth) FRCD(C)	" Short Implants: Scientific Rationale and Clinic Applications "
7. Michelle Lee, DMD, MSD, (Perio.) FRCD(C), FCDS (BC)	" Surgical Strategies to Manage the Labially Positioned Dental Implant. "
8. Izchak Barzilay, DDS, MS, (Prosth.) FRCD(C)	" Wide body implants – what are they good for? "
9. Nancy Dubois DDS, (Prosth.), FRCD(C)	" Treatment Planning for the Obstructive Sleep Apnea Patient: What you should know? "
10. Brent Winnett DDS, (Prosth.)	" Screw vs. Cement-retained Implant Prosthodontics: the Practical Reality "

FOR MORE INFORMATION AND REGISTRATION:

WWW.CARDP.CA

ACDRP Toronto 2015

Hôtel Intercontinental (rue Front)

Congrès annuel scientifique du 1er au 3 octobre 2015

« Inspirer l'excellence »

Le comité organisateur du Congrès annuel de l'ACDRP de Toronto 2015 est heureux de vous faire part de son programme préliminaire. Le thème du congrès est « Inspirer l'excellence », et le programme a été conçu de façon à vous proposer divers sujets cliniques dignes d'intérêt dans les domaines de la dentisterie restauratrice et de la prosthodontie. Celui-ci comprend un volet « Pratique », le jeudi, ouvert aux membres. Parmi les auteurs du vendredi se trouvent des conférenciers de renommée internationale, et les démonstrations cliniques révisées du samedi comprendront une journée complète de présentations offertes par des cliniciens réputés qui aborderont des sujets cliniques dignes d'intérêt.

JEUDI – Volet pratique toute la journée

(Université de Toronto, établissement d'éducation continue, Don Mills)

Basil Mizrahi, BDS, MSc, Méd.	**Diplomate agréé, American Board of Prosthodontics** « Tirez le meilleur parti de vos couronnes temporaires. Des techniques de pointe pour améliorer la fonction de vos couronnes temporaires dans le cadre de cas complexes. »

VENDREDI – Dissertations

1. Terry Donovan, DDS	**Professeur et Chef de la section des biomatériaux, Département de Dentisterie opératoire, Faculté de Médecine dentaire de l'Université de la Caroline du Nord, à Chapel Hill** « Analyse clinique des systèmes de céramique contemporains. »
2. Glen Johnson, DDS, MS	**Université de Washington, Département de dentisterie restauratrice** « Les nouveaux adhésifs et ciments pour couronnes dentaires – Ce que vous devriez utiliser et pourquoi? »
3. Carlo Ercoli, DDS	**Centre médical de l'Université de Rochester** « Les reconstructions d'implants complexes : perspectives chirurgicales et prothétiques. »
4. Basil Mizrahi, BDS, MSc, Med	**Diplomate agréé, American Board of Prosthodontics** « Obtenir de bons résultats esthétiques et biomécaniques avec des prothèses fixes. Défis et solutions. »
5. Van B. Haywood, DMD	**Professeur, Département de réhabilitation buccale, Collège de médecine dentaire GC** « Techniques de blanchiment dentaire : l'examen préblanchiment et les dents individuelles de couleur foncée. »
6. Kim Kutsch, DDS	« Caries dentaires : une maladie de choix? »

SAMEDI – Présentations de 20 minutes

1. Uche Odiatu, DDS	« L'exercice est la médecine : le bon Rx pour le professionnel dentaire. »
2. Kristina Perschbacher BSc, DDS, MSc, (Méd. orale et pathologie), FRCD(C)	« Lésions blanches : de l'hyperkératose au carcinome. »
3. Susanne Perschbacher DDS, MSc, (Radiologie orale), FRCD(C)	« L'interprétation d'une radiographie panoramique : comprendre les ombres. »
4. David Psutka, DDS, FRCD(C) (Chirurgie orale)	« Chirurgie de l'ATM. Technologies de pointe et science. »
5. Peter Fritz, B.Sc., DDS., FRCD(C) Ph.D. (Paro.)	« Thérapie implantaire : un protocole étape par étape pour maintenir des implants. »
6. Oliver Pin Harry, DDS, MS, (Prosth) FRCD(C)	« Mini-implants dentaires : justification scientifique et applications cliniques. »
7. Michelle Lee, DMD, MSD, (Paro.) FRCD(C), FCDS (BC)	« Stratégies chirurgicales pour gérer un implant dentaire positionné labialement. »
8. Izchak Barzilay, DDS, MS, (Prosth.) FRCD(C), Présidente de l' APC	« Implants à corps larges : à quoi servent-ils? »
9. Nancy Dubois DDS, (Prosth.), FRCD(C)	« Planification d'un traitement pour un patient souffrant d'apnée du sommeil obstructive : que devriez-vous savoir? »
10. Brent Winnett DDS, (Prosth.)	« Implants prosthodontiques vissés ou scellés : la réalité pratique. »

POUR PLUS D'INFORMATION ET POUR S'INSCRIRE:

WWW.CARDP.CA

CARDP Annual Meeting / Congrès annuel de l'ACDRP

Montréal – 2014 More photos – Plus de photos: www.cardp.ca

Delegates enjoying the Welcome Reception & Dinner
(Left to Right) Nathalie Fiset & CARDP Members
Dr. Alan Coopersmith, Dr. Donna Brode and Dr. Hubert Gaucher

Delegates enjoying the Trade Show

Dr. Jay McMullan, CARDP President
Opens the Conference

New Member Dr. Kimberly Dobson at the
Hands on Course

Enjoying the Opening Reception, Dinner (Left to Right)
Dr. Ashok Varma (CARDP Past President)
Dr. Brain Goldenberg, Tiki Goldenberg,
Dr. David Ellis and Frank Demarco

Dr. Emo Rajczak & Dr. Mark Sutherland

Hands on Course Participants (Back L-R)
Dr. Ken Rhodenizer & Dr. Kevin Walsh (Front)
Dr. Mark Sutherland & Dr. Maureen Andrea

Guests enjoying the Gala Dinner Reception

Incoming President – Dr. Ian Tester thanks
Dr. Jay McMullan – Outgoing President

In Memoriam – Paul Rotsaert (1958-2014)

Peacefully, from Pancreatic Cancer on Monday, September 22, 2014 our CARDP family lost a wonderful friend, and the dental community lost a keen supporter, that through his many efforts made our profession better. Paul Rotsaert followed the tradition of support of continuing dental education begun by his father Henri Rotsaert through Rotsaert Dental Laboratory. His passion for life and his ongoing curiosity will be missed by all of us that were privileged to call him a friend.

Born to Henri and Simone Rotsaert on November 20, 1958 Paul, along with his siblings Nicole, Mark, Eric and Peter shared fabulous family vacations in Oliphant, Ontario, trips to Belgium and many ski trips together. Paul learned to sail at an early age and was an active member of the Hamilton Golf and Country Club and The Royal Hamilton Yacht Club for many years. In 1984, he was an instrumental part of a team that built three Mazza II International 14 wooden sailboats on the ground floor of Rotsaert's Dental Lab (the Emerald Street Boatworks). The boat building team was awarded the Hudson's Bay trophy by the club that year. His love of water continued as his favourite passion (fishing) took him on many wonderful trips. As his pancreatic cancer gradually took its toll, fishing offered Paul peace and an opportunity to be outdoors which he dearly loved.

Paul graduated from the University of Guelph with an Honours B.Sc. in Microbiology (1982). He returned to Hamilton and began working as a researcher at McMaster studying cancer. In 1983 he joined Rotsaert Dental Laboratory Services, eventually assuming the role of President. Paul received his Registered Dental Technologist (RDT) designation in 1992. Subsequently, he continued his education with many world leaders of Dentistry including Dr. Terry Tanaka, Mr. Willi Geller, Dr. Rudolph Slavicek, Dr. Martin Mai, Mr. Herbert Fischer, Mr. Russell DeVrught and Dr. Peter Dawson. Paul became a lecturer at the University of Buffalo (SUNY) in fixed partial dentures (1996-1997) and was a well-respected speaker at many Academy meetings, study clubs and symposiums throughout his career. In addition, he was a long time director of Cal-Lab, an International Association of Dental Laboratories. His expertise was evident as an editorial board member of the CJRDP in Dental Technology. As president of Rotsaert Dental Laboratory his dedication to excellence in every aspect of Dental Technology ensured worldwide recognition of the quality of work produced. Paul acted as a kind, patient mentor to countless dentists and technicians.

Paul was always a source of information. He had an amazing ability to recall seemingly endless details that he somehow managed to coalesce into solutions. His library was large and he read insatiably. There was no shortage of inventions, ideas and discussions about how to improve everything from the simplest concept to the most complex problem. 3D printers, virtual imaging, digital technology etc. were part of Paul's everyday thoughts and future designs. In 1990 Paul spent two months in Lyon, France studying CAD/CAM systems with pioneer, Dr. Francois Duret. This education became a wonderful foundation for his desire to keep Rotsaert's at the leading edge of innovation in technology.

Paul and Judy Rotsaert were married in 1986. Subsequently, they moved to Ancaster, Ontario where they raised their two sons, Tyler and Michael. Paul and Judy where blessed with a special relationship that truly expressed their deep love for each other. It was a privilege to spend time with these two amazing people who complemented one another so completely. As a father, Paul imparted his love of outdoor sports and his passion for life to his two sons. He was a keen supporter of their individual dreams and nothing gave him more joy and pride than to share in their many accomplishments. Paul was a humble, kind and compassionate friend who will be remembered for having always been there for all of us.

In the words of Ralph Waldo Emerson:

> *Do not go where the path may lead,*
> *go instead where there is no path and leave a trail.*

Paul left a beautiful trail that has influenced all of us in so many positive ways. Thank you Paul for sharing your path. You have inspired much in all of us. May you rest in peace.

Ian W. Tester DDS, MSc - President CARDP 2014-2015

Canadian Journal of Restorative Dentistry & Prosthodontics
The official publication of the Canadian Academy of Restorative Dentistry and Prosthodontics
CJRDP
JCDRP
Journal canadien de dentisterie restauratrice et de prosthodontie
Publication officielle de l'Académie canadienne de dentisterie restauratrice et de prosthodontie

Call for Papers

CARDP's Executive Board has concluded a publishing agreement with Palmeri Publishing Inc. The Academy's Journal (**CJRDP**/**JCDRP**) is published four times a year since 2008 with a circulation of 7,000 up to 13,000. The 2015 Journal Production Schedule is accessible at http://www.cardp.ca/sitedocs/2015%20CJRDP%20Production%20Schedule.pdf
Scientific articles are Peer Reviewed. The Journal welcomes article contributions from its members, guest dentists and dental technologists as well as the dental Industry.

Editor-in-chief: Dr. Hubert Gaucher

Associate Editors: Drs. Maureen Andrea, Emo Rajczak and Dennis Nimchuk

Section Editors: Drs. Kim Parlett, Ian Tester, Ron Zokol, Yvan Fortin, Paresh Shah, Izchak Barzilay, Peter Walford, Allan Coopersmith and Mr. Paul Rotsaert

Academic Liaison: Dr. Peter Taylor

I – Scientific Articles: (Original Research Studies, Reviews, Case Reports): Please refer to these "Instructions to Authors" for details. www.cardp.ca/sitedocs/CJRDP-Guidelines-PPI-PR1.pdf%2002-12.pdf

For Case Reports please review this information: http://www.cardp.ca/sitedocs/CJRDP-Case-Report-Authors.pdf

II – Member News: Please forward any news of interest to the Profession.

III – Young Authors Awards Fund: Financial contributions to this fund will recognize a dentist with 5 years' experience or less or a graduate student in Canada, with a $1,000 award for the best published article of the year.

IV – Dental Student Award Fund: Financial contributions to this fund will recognize a dental student in Canada, who will receive a $500 award for the best published article of the year.

V – Industry News and Product Profile Articles: New dental products, technologies and Industry services are presented to readers using articles that originate from the Industry and that are identified as such. This information is contained in the above "Instructions to Authors" and in the following Journal Media Kit: http://www.cardp.ca/sitedocs/MediaKit-2015-email.pdf

If you have comments or suggestions about submissions or would like to become more involved with the Journal, please contact the Editor-in-Chief:

Dr. Hubert Gaucher
hgaucher@sympatico.ca
Tel: (418) 658-9210
Fax: (418) 658-5393

Demande de communications

L'ACDRP a conclu une entente de publication avec Palmeri Publishing Inc. Le journal de l'Académie (**CJRDP**/**JCDRP**) est publié depuis 2008 et a une circulation de 7 000 à 13 000 exemplaires. Il y a quatre parutions par année. La cédule de production 2015 du Journal est accessible à http://www.cardp.ca/sitedocs/2015%20CJRDP%20Production%20Schedule.pdf
Les articles scientifiques font l'objet d'une revue par des pairs. Le Journal accueille des articles de ses membres, de dentistes et prothésistes dentaires invités ainsi que de l'Industrie dentaire.

Rédacteur en chef: Dr Hubert Gaucher

Rédacteurs associés: Drs Maureen Andrea, Emo Rajczak et Dennis Nimchuk

Rédacteurs de sections: Drs Kim Parlett, Ron Zokol, Yvan Fortin, Paresh Shah, Izchak Barzilay, Peter Walford, Allan Coopersmith et M. Paul Rotsaert

Liaison académique: Dr. Peter Taylor

I – Articles scientifiques: (Recherches originales, revues, rapports de cas): Veuillez vous référer aux «Instructions aux auteurs» pour les détails. http://www.cardp.ca/sitedocs/CJRDP-Guidelines-PPI-PR1.pdf%2002-12.pdf

Pour le Rapport de cas, veuillez consulter le document suivant: http://www.cardp.ca/sitedocs/CJRDP-Case-Report-Authors.pdf

II – Nouvelles des membres: S.V.P. nous envoyer toute information pertinente à la profession.

III – Bourse pour les jeunes auteurs: Les contributions financières permettront de remettre une bourse de 1 000$ à un dentiste ayant moins de cinq ans de pratique et/ou à un(e) étudiant(e) diplômé(e) au Canada pour le meilleur article publié au cours de l'année.

IV – Bourses pour étudiant(e) en Médecine dentaire: Les contributions financières permettront de remettre une bourse de 500$ à un étudiant ou étudiante en Médecine dentaire au Canada pour le meilleur article publié au cours de l'année.

V – Nouvelles de l'Industrie et Articles publicitaires: Les nouveaux produits, technologies et services de l'Industrie sont présentés aux lecteurs utilisant des articles venant de l'Industrie et qui sont identifés comme tels. Cette information est contenue dans les «Instructions aux auteurs» ci-haut ainsi que dans la Trousse Média: http://www.cardp.ca/sitedocs/MediaKit-2015-email.pdf

Si vous avez des commentaires ou des suggestions ou si vous désirez vous impliquer davantage dans notre Journal, veuillez communiquer avec le Rédacteur en chef:

Dr Hubert Gaucher
hgaucher@sympatico.ca
tél: (418) 658-9210
télécopieur: (418) 658-5393

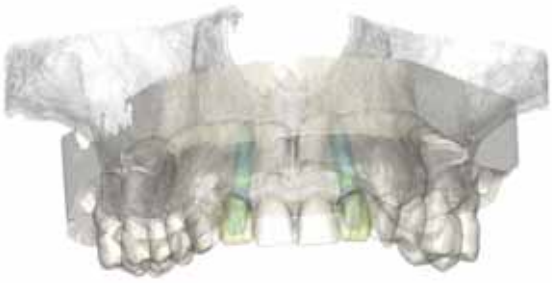
INNOVATIONS @ PRO-ART DENTAL LABORATORY LIMITED

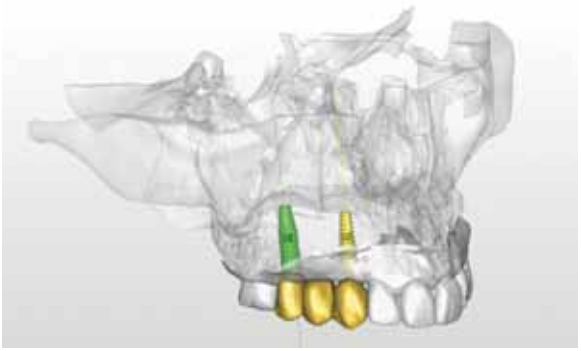
STHETIC

INSTITUTE OF DENTAL TECHNOLOGY ™

Implant Guided Surgery with SIMPLANT®

Case planning is done online with screen sharing. You will receive SurgiGuide, final abutments and temporaries at the time of surgery.





PRETTAU® ZIRCONIA For large bridges and implants

Prettau® Zirconia enables full zirconia restorations with high biocompatibility for large bridges and implants. The Prettau® Zirconia process includes a plastic prototype, increasing control and predictability as occlusion and esthetics can be tested on the patient before the final model is created.

As a digitally advanced, innovative dental laboratory, Pro-Art can provide dentists with the support, knowledge and experience they need to achieve success for any restoration with any implant system and with their choice of material.

Whether you are restoring a fixed case, a fixed detachable or an over-denture case, Pro-Art leads the way to success.

To find out more about Prettau® Zirconia and Implant Guided Surgery call Pro-Art today.

855 Broadview Avenue, Toronto ON M4K 3Z1
Phone: 416.469.4121 Toll Free: 800.268.6771
info@pro-artdentallab.com
www.pro-artdentallab.com

Images and content courtesy of Zirkonzahn Worldwide and DENTSPLY Implants