

CAD/CAM

international magazine of digital dentistry

2²⁰¹⁰

| **case report**

The treatment of toothless jaws

| **research**

CBCT applications in dental practice

| **meetings**

Touchdown for digital dentistry:
CADapalooza '10 scores!

dti Dental
Tribune
International



Scan Click Mill

**CEREC® 3D Software powered by Biogeneric:
Predicts perfect proposals with a single click.**

Natural form and function is now as easy as scan, click, mill.

CEREC Biogeneric Software effectively reads the morphology of the patient's own dentition to predict the right form and function for all restorations. Based on comprehensive morphological analysis of thousands of actual teeth instead of arbitrary "tooth libraries," CEREC Biogeneric Software allows you to create inlays, onlays, crowns, veneers and temporary bridges with just a single click. Ideal form, function and occlusion—CEREC 3D Software powered by Biogeneric does it with ease. Simply scan, click, mill and admire.

- Clinically and functionally valid proposals every time
- Automatic process: a single click produces the natural restoration
- Unrivaled ease-of-use lets you focus on your practice and not complex software manipulation

To experience the power and simplicity firsthand,
contact your Patterson representative:

800-873-7683
www.CERECOnline.com

CAD/CAM FOR EVERYONE

sirona.
The Dental Company

Dear Reader,

_Dentistry is on the move! Today's patients expect to be treated with the latest technology and materials to maximise their dental experience. As clinicians, we owe it to our profession and to our patients to utilise the newest technologies according to best practices that will elevate our care without compromise. I have adopted this approach to dentistry by integrating chairside CAD/CAM dentistry (E4D Dentist System, D4D Technologies) and in-office CBCT (i-CAT, Imaging Sciences International) into my practice.

With the E4D system, I am able to control my indirect restorative dentistry, without having to eliminate the laboratory or the technician. I am able to more appropriately coordinate single tooth treatment chairside with IPS Empress CAD and IPS e.max CAD materials (Ivoclar Vivadent), as well as provide more comprehensive options to meet my patients' needs. In today's world, CAD/CAM dentistry has given us the ability to offer reliable, in-office, same-day and high quality indirect restorations to our patients. With the laser scanning capability of E4D, I can scan in the mouth, off an impression or off a model, providing total flexibility in patient treatment. In addition, the ease of use of the software and flow of production make it easy to delegate procedures to properly trained dental assistants for beautiful and functional results.

Generally, the same applies to the benefits of utilising my i-CAT. I can offer my patients the latest in cone-beam technology for diagnosis and treatment planning without having to go elsewhere or make additional appointments. The future combined use of technologies utilising intra-oral scans and CBCT data provides a unique view of a virtual patient prior to completing any treatment. This will provide the clinician, office team, dental laboratories and especially the patient with a unique view of the treatment plan, eliminate surprises in implant placement and harmonise anticipated results when all have the same 'view' of the entire case, from start to finish. The goal is to experience true restorative-driven implant therapy.

D4D Technologies and the Imaging Sciences group, with the groups from Gendex (CB500) and Instrumentarium (Scanora), are developing a software solution that combines digital data from intra-oral scans with 3-D surgical data (CBCT) to provide complete control and make restorative-driven implant therapy a reality. Through the dynamic collaboration of these dental technology leaders, future dentistry will use these technologies in harmony. For the general dentist, the collaborative efforts of leading digital scanning companies and cone-beam manufacturers will enable the expansion of same-day restorative care to same-day surgical placement of implants using cone-beam guidance and the immediate placement of an in-office and CAD/CAM restoration.

My patients are 3-D and I believe my treatment should be as well. Practising in this manner offers great advantages in treatment options and predictability. Dentistry is on the move, so our patients don't have to! Get on board with the latest in modern dentistry—you, your team, your practice and your patients deserve it.

Yours faithfully,



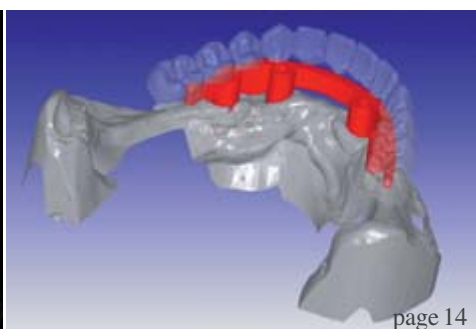
Dr Sharnell Muir
Kelowna Dental Centre
Kelowna, BC, Canada



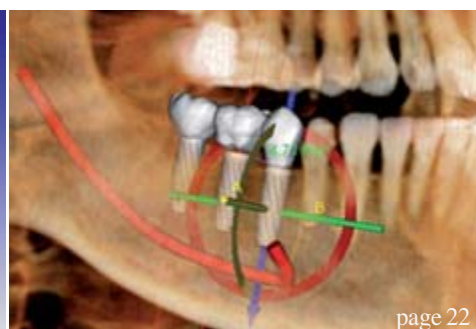
Dr Sharnell Muir



page 10



page 14



page 22

editorial

- 03 **Dear Reader**
I Dr Shamell Muir, Guest Editor

special

- 06 **Case acceptance** in complex-care dentistry
I Dr Paul Homoly

case report

- 10 Use of an X-ray phantom in **dental 3-D diagnostics** in digital volume tomographs
I Dr Georg Bach *et al.*
- 14 The treatment of **toothless jaws** — A case for CAD/CAM
I Dr Sven Rinke
- 18 **Three-unit, full-contour ceramic bridge** in one sitting
I Chris Leinweber

clinical report

- 20 **Real-virtual modelling** of CEREC temporary crowns: **A new approach**
I Dr Mikhail Antonik *et al.*

feature

- 22 An interview with **Dr Steven Guttenberg, i-CAT & Dr John Flucke, GXCB-500 HD**

research

- 24 **CBCT applications in dental practice: A literature review**
I Dr Mohammed A. Alshehri *et al.*

industry report

- 30 **Combination of digital and analogue techniques**
I Dr Gunpei Koike
- 34 **Step-by-step restoration with Tizian CAD/CAM**
I Eliza Ivanova
- 38 **Haptic input improves** digital dental restoration design
I Bob Steingart

industry news

- 41 **White Peaks** Dental Systems
I White Peaks

events

- 42 **Congress on 3-D dentistry again exceeds goals in education**
I Imaging Sciences International & Gendex Dental Systems
- 43 **CEREC 25th Anniversary Celebration** — A milestone event in dentistry
I Sirona Dental Systems, Inc.
- 44 **Touchdown for digital dentistry: CADapalooza '10 scores!**
I D4D Technologies LLC
- 46 **The new challenge** in dentistry
I Dr Dobrina Mollova
- 48 **International Events**

about the publisher

- 49 I submission guidelines
50 I imprint

Cover image:
NobelProcera optical scanner,
courtesy of Nobel Biocare.



page 24



page 30



page 34



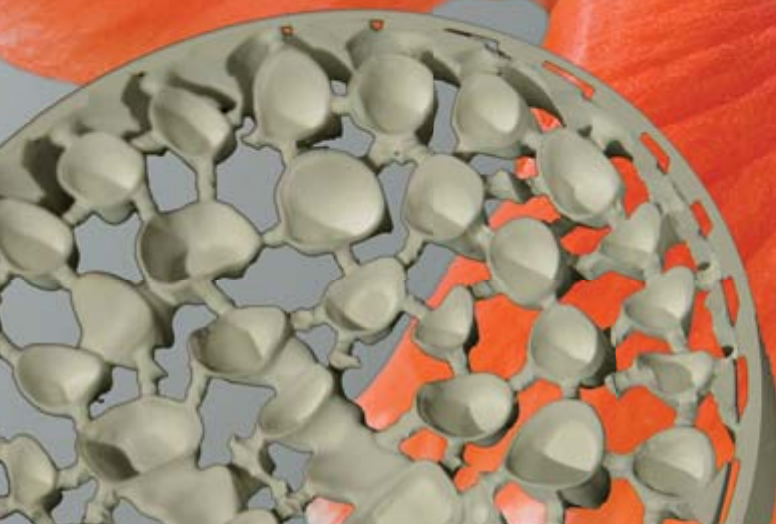
WHITE PEAKS DENTAL SYSTEMS

White Peaks Dental Systems

your specialist for zirconium blanks – Made in Germany – exclusively made from raw materials of Tosoh – Japan.

Zirconium colouring liquids in 16 classic shades, chrome-cobalt, titanium, CEC-certified PMMA blanks, PMMA and wax blanks, Calidia CAD/CAM milling systems, free CAM software and scanners.

We are certified to the highest standards of CEC, US-FDA and DIN ISO 13485



White Peaks Dental Systems GmbH & Co. KG,
Langeheide 9, D-45239 Essen, Germany
www.white-peaks-dental.com
info@white-peaks-dental.com



Case acceptance in complex-care dentistry

Author_ Dr Paul Homoly, USA

_I enjoy seeing the articles in **CAD/CAM** in which clinicians recount their creation of magnificent works of art through digital restorative dentistry. In most of the case studies I've read, I am sure the patient fees reach well over US\$15,000 or more.

Let me ask you this: what percentage of your patients whose fee is US\$15,000 or more are ready to start care immediately after you present their treatment plan? I have directed this question to thousands of my dentist audience members over the last decade and the overwhelming response is "fewer than 5 per cent". Is this because patients do not understand dentists' treatment recommendations? Or is it that the fee does not fit into their budgets? Chances are that both these apply.

As dentists we are pretty good at helping patients understand us and our treatment recommendations. What we are not good at is understanding our patients and the manner in which our treatment recommendations must fit into their lives. If you have heard it once, you have heard it a thousand times: the key to case acceptance is patient education. Go to dental seminars, read journals, listen to consultants; most of it sounds the same—educate, educate, educate. Now let me ask you this: is it true? Is patient education the solution to case acceptance?

If it is, then why do many new patients who have been thoroughly examined, educated and offered comprehensive treatment plans leave your practice and never return for care? Is it that you did not educate them sufficiently? Or is it that in the challenge of case acceptance, patient education is not the only answer?

Let's consider the new patient process and case presentation and learn when patient education works for us and when it chases patients out the door.

_Inside-out versus outside-in

How do we get patient education to work for us? Let's first make the distinction between an inside-out versus outside-in new patient process. The traditional new patient process is inside-out. It begins by studying the inside of the patient's mouth—the examination, diagnosis and treatment plan. It is after this inside look that we educate the patient with regard to all his/her problems—how he/she got them and what we can do about them, for example case presentation. After case presentation, we quote our fees and discuss financial arrangements. It is only once we have gone through our inside process that we discover what is happening outside the patient's mouth—his/her budget, work schedule, time and significant life issues.

The flow of conversation starts with inside-the-mouth conditions and ends with outside-the-mouth issues. I label this traditional way of managing the new patient the inside-out process (Fig. 1).

For patients with uncomplicated dental needs—fees of US\$3,500 or less—the inside-out approach with appropriate patient education works well. Here's why:

First, patients with minimal clinical needs are often unaware of them. Patients with conditions such as periodontal disease, asymptomatic periapical abscesses and incipient carious lesions must be made aware of them and educated regarding their consequences. Patient education is the driver of case acceptance when patients are unaware of their conditions.

Next, the inside-out process works well for patients with fees of US\$3,500 or less because the outside-the-mouth issues—fees, time in treatment and life issues—are such that most patients can proceed with your treatment without undue hardships or inconvenience. Dental insurance reimbursements, patient payment plans such as

CareCredit and credit cards usually sooth the sting of fees for US\$3,500 or less. Fees at this level are not insurmountable and usually do not anger or embarrass patients out of your office. But what if you present complex dentistry for more than US\$3,500?

Let's suppose your fee is US\$10,000 and it involves multiple, long appointments and your patient would lose time from work? Do outside-the-mouth issues get in the way of case acceptance now? Yes, they do. Does patient education make the unaffordable affordable? No, it does not. How do I know? You have proven it, have you not?

It is with the patient whose fee is greater than US\$3,500 that I recommend an outside-in approach. Employing an outside-in approach involves initiating your new patient procedures with conversations—telephone and the in-office new patient interview—that focus on understanding what is happening outside the patient's mouth, such as significant life issues, budget and work obligations. Later in this article, I'll show you how.

After we have an understanding of outside-the-mouth issues, we do our examination. Then, during the post-examination conversation and case presentation, we link our treatment recommendations to the realities of their outside-the-mouth issues. Let me show you how.

The flow of conversation starts with outside-the-mouth issues and ends with inside-the-mouth treatment recommendations. I label this an outside-in process (Fig. 2). An excellent example of an outside-in process is the purchase of a home. Imagine you and your spouse decide to buy a new house. You go to a real estate agent and, just a few minutes into the conversation, you talk about price range, neighbourhood, schools, proximity to work, financing and down payment. These are all big picture, outside-the-home issues. Once you settled on the broad outside-the-home issues then, and only then, does it make sense to begin discussing the detailed inside-the-home issues, such as room size, carpet and tile selection, lighting, etc. Good estate agents discover what the suitability factors of home buying are (price, down payment, monthly payments, location, etc.) before they get into the inside details. In other words, the flow of conversation is outside-in.

Now imagine you and your spouse go to the estate agent, but this time she is a former dentist and uses the traditional inside-out process she used as a dentist. As soon as you sit down she begins educating you on the inside-the-house issues—the difference between cement slabs versus crawl space foundations and vinyl siding versus brick exteriors.

She goes as far to recommend another appointment with her so she can show you how to keep your house clean before you buy one. She does all this before she has any idea of what you can afford and where you want to live. What would you think? You would think about finding another estate agent, would you not?

How many of your complex-care patients, after experiencing your inside-out process, find another dentist for the most likely reason that you spent a bunch of time educating them on inside-the-mouth details before you had any idea what was suitable for them? You educated them right out your door.

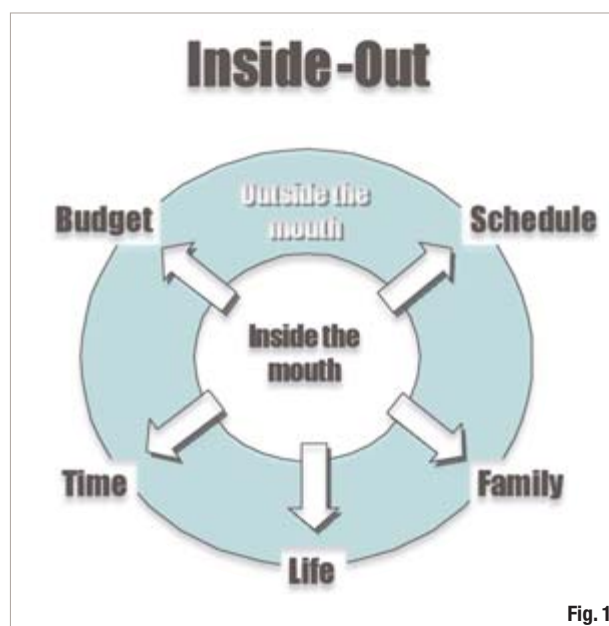


Fig. 1

An outside-in process works best for complex-care patients. Here patient education is not the driver of case acceptance. This is why: first, patients with complex needs often come into your office with a specific complaint—embarrassment about their appearance, aggravation by their dentures or fear of losing their teeth. They do not need to be educated about their chief complaint. They may not be aware of all their conditions, but it is most likely that they have lived with the complaint that brought them into your office for a long time.

Next, many complex-care patients have heard the patient education lecture about plaque, pockets and sugar many times before. It's old news and thus not a subject that distinguishes you. For many patients, patient education efforts bounce off like BB's fired at icebergs. Expecting to influence them into a US\$10,000 treatment plan that does not fit into their budget by showing them how to floss well is naïveté.

Let me be clear at this point: we are going to spend some time on the patient education process with complex-care patients, it is just not one of the first conversations we will have.

The first conversations we will have with complex-care patients are about discovering outside-the-mouth issues—just like the suitability conversation with the estate agent. The outside-the-mouth issues of budget, time, work schedule, health issues are what I call fit issues. These are the issues into which your treatment plan must fit. Become good at discussing fit issues and you will save an incredible amount of time, you will sell much more dentistry and you will no longer blow patients out of the water—and out of your practice.

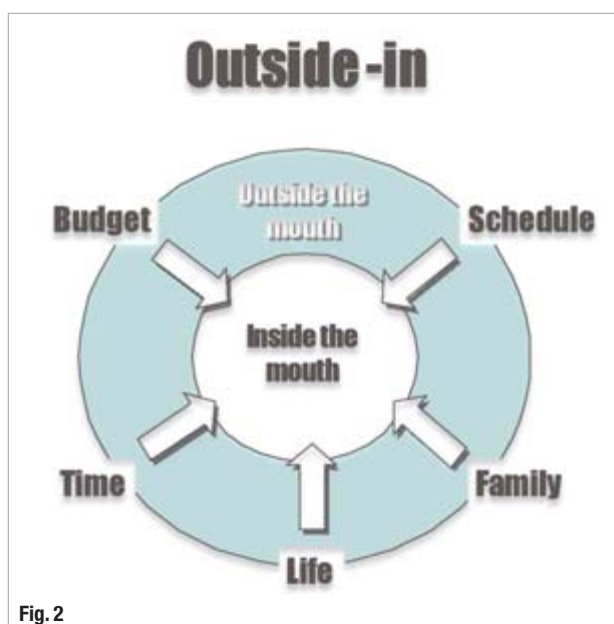


Fig. 2

_Fit versus change

The earlier influencers in my dental career emphasised that a significant part of being a good dentist is to get patients to change. Change the way they clean their teeth, change what they eat and change the priorities in their life and put dental health at the top. It took me ten years and thousands of patients to realise that patients change when they are ready, not when I tell them to.

I learned to replace the concept of *change* with the concept of *fit*. Instead of telling patients they need to change to accommodate my treatment plan, I learned to accommodate my treatment plan to fit their life situation. Patients, especially the more mature, complex-care patients, have complex fit issues. These include finances, family hassles, work schedules, special current events, travel, stressors, health factors, significant emotional issues; in

short, any issues dominating the patient's energy and attention. When you present complex-care dentistry, it has to fit into the patient's life.

Think about it. If you offer most patients a US\$10,000 treatment plan, something in their life has to happen. People need to wait to receive their tax refund, wait for a child to graduate from college, become more settled in their new job, or take a much-needed vacation. Knowing the manner in which your complex-care treatment plans fit into the current or foreseeable circumstances of your patient's life is a mandatory skill for practising complex-care dentistry. Without fit, there is no case acceptance, regardless of the level of dental IQ or your zeal for patient education.

_Discovering fit issues

Your team often knows what is going on in the patient's life. How do they know? They talk—they chit-chat with the patients and they make friends. Another purpose of chit-chat is to learn about those fit issues in your patient's life impacting their treatment decision. When chit-chat is intentional, I call it fit-chat—an indirect way of discovering patient fit issues.

When you fit-chat, be curious and listen more than talk. Listen to the manner in which patients spend their time and what's creating stress in their life—health, money and/or family issues. If they mention something you believe may influence a treatment decision, be curious, listen attentively and encourage them to talk more about it. Through indirect fit-chat, you're going to discover what's going on in patients' lives.

Some patients do not fit-chat well. They are simply not talkers. I am that way. When I get my hair cut, the last thing I want is a chatty experience. When you have a complex-care patient who will not fit-chat, you can try a more direct approach to discovering fit issues.

Here is an example of a direct approach: "Kevin, I know from the line of work you are in that you are busy and travel quite a bit. I also know you are aggravated by food trapping around your lower partial denture. Let's talk about your choices and how we can best fit your dentistry into what is going on in your life. Is now a good time to talk about this?"

Here is another example of a direct approach: "Kevin, most people like you are busy, on-the-go and have lots of irons in the fire. I need to know if any of these irons are affecting the amount of stress you are under, the amount of time you can spend

here with us, or if there are financial issues I need to consider when planning your care. I want to reassure you that I am very good at helping patients fit their dentistry into what is going on in their life."

Whether you are using an indirect fit-chat or a direct approach to discovering fit issues, an absolute prerequisite to a comfortable conversation is for you to have a connected communication style. This means you hold good eye contact, listen carefully and patiently; you maintain a conversational tone of voice and your speaking rate is relaxed. Be sure to pause long enough to let what you are saying sink in.

If you attempt to use a direct approach to fit issues but have a disconnected style (do not look the patient in the eye, speak too quickly, do not listen attentively), your conversation may be perceived as being inappropriate, unprofessional and seeking to diagnose their pocketbook sneakily.

Advocacy

Advocacy is the experience of patients when they realise that you are guiding them towards and not selling them into dental health. To be an advocate is to be a guide. To guide patients into complex care effectively you need to take the fit circumstances of their life into account and help them find a way to fix their teeth in light of those circumstances. This may mean fixing their teeth now, later, or over time.

Here is something you say that propels the advocacy experience. It occurs after the examination, but before any detailed conversation about clinical findings. Here is where you link the fit issues you discovered to your clinical findings.

"Kevin, now that I have looked at your teeth, I know I can help you. We treat many patients like you with partial dentures that do not work well. I know I can help. What I do not know is whether this is the right time for you. You mentioned you travel a lot and your company is in the middle of a big reorganisation. Do you go ahead with your treatment now? Do we wait until later? Or do we do it over time? Help me understand how I can best fit your treatment into everything that is going on in your life."

This advocacy statement leads to a conversation about the patient's fit issues. This conversation reveals what treatment fits and what does not. You will find that this approach results in many complex-care patients doing their treatment over time, allowing them to stay within the limitations of their fit issues. This is a good thing. I would rather treat two patients for US\$5,000 each than no patients

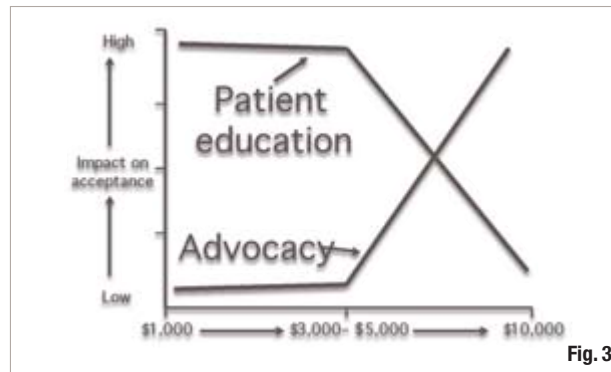


Fig. 3

for US\$10,000. It also yields lifetime patients for you. Patients will exhibit fierce loyalty to you when they experience advocacy.

The decision to educate

The decision when to educate and when to advocate is situational. Figure 3 demonstrates that the impact of patient education on case acceptance is highest when the complexity of the care (and its associated fee) is minimal. Patient education is the driver of case acceptance when a patient's conditions and fees are minimal. However, when the complexity of care increases, the role of advocacy takes over. Advocacy is the driver of case acceptance when the patient's conditions are complex and fees are high. Copy Figure 3 and keep it in area where you will see it often. Then, right before you go into case presentation, look at it and ask yourself: does this patient need education or advocacy? Let the situation guide you. When you do, you will discover how to keep from educating your patients out the door.

about the author

CAD/CAM



Dr Paul Homoly is a world-class leader in dental education.

As a comprehensive, restorative dentist and acclaimed educator for over 25 years, he is known for his innovative and practical approach to dentistry. Dr Homoly is now offering *YES! On-Line* as the solution for dentists and

their teams to excel at case acceptance. This on-line, seven-module curriculum, which is supported by a matching set of DVDs, takes your dental team step-by-step through the essential dental team-patient conversations, and has proven successful for over 30 years.

Distinguished by his focus on outcomes, Dr Homoly is legendary for his ability to teach and lead in a practical and engaging manner. For more information, visit www.paulhomoly.com or call Homoly Communications at +1 800 294 9370.