Welcome to the “Block Party”

Restorative clinicians have been spoiled in the past regarding materials for direct and indirect restorations. We’ve had the great luxury of seeing an ad in a journal, getting an offer in the mail or online, or attending a CE course about a new product, technique or service, and then immediately or the next day, we could take action. If we saw a new restorative material for fabricating restorations, we would simply write the request on a lab slip for the new material and expect to get it back in a couple weeks.

Think of the poor laboratory technician on the other end, reading perhaps for the first time, the method you want used to fabricate your restoration or a specific new material or a mix of materials and techniques. Remember, a laboratory slip or prescription is a work authorization, and if you write one, the laboratory technician has to comply. If we change our minds for the next restoration, we simply prescribe something else. I’m sure technicians sometimes feel as if they’re chasing their tails with all the new materials, techniques and requests. Consider the investment in materials, systems, training and the learning curve they have to endure every time a new material is prescribed.

To the relief of patients, dentists, team members and technicians comes CAD/CAM dentistry and a little bit of sense and sensibility regarding dental materials. Dental material manufacturers need to invest in the technology, methodology and product design, as well as the material evolution to the restoration (blocks, mandrels, discs), in order to introduce a new material for CAD/CAM dentistry. Then, in collaboration, dental CAD (computer-aided design) and dental CAM (computer-aided manufacturing) developers must work with that material to produce consistent optimized results. This takes time and effort. Only those materials proven through economic evaluation, clinical validity and proven demand will make it to the final stages and into the software of the CAD systems and into the mills of the CAM systems and ultimately into our patients mouths.

CAD/CAM also requires the dentist to take more control of all facets of patient care; it requires more thought than a whim and a handwritten prescription to choose the right material. CAD/CAM requires thinking through the restorative and aesthetic process before proceeding with a restoration, all better things for the dental professional as a whole. As more and more laboratories and dentists invest in digital dentistry, everyone gains.

I’m “all in” for ‘daily digital dentistry’ I have digital impression-

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Figure 1: Chairside CAD/CAM System. (Photos/Provided by Dr Curtis Jansen)
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Interview: ‘Referred patients are the best patients’

Dentistry is still largely a profession focused on treatment rather than prevention of oral diseases like caries or periodontal disease. A preventive approach in dentistry is needed more than ever, according to FDI Continuing Education programme director for the Asia-Pacific region and FDI AWDC presenter Dr William Cheung.

Dental Tribune Online sat down with him on Tuesday morning to discuss the philosophy briefly, and its benefits for both the patient and dentist.

Dental Tribune Online: Dr Cheung, could you please summarise the key aspects of the preventive philosophy for us and why it is important?

Dr William Cheung: I think in the mind of most dental practitioners, prevention means primarily brushing, flossing and regular cleaning. There is no question that these measures are important but there is a lot more to this, like all the developments in the area of fluoride, for example. Many dentists are not aware of that.

There is also carries management by risk assessment, where we sit down with the patient and go through a certain process step by step. With the outcome of this, we can identify certain areas that need special attention. Then we formulate a protocol for this particular patient, for managing his or her risk, or minimising it. This is not necessary for every single patient but if we expect the patient to be highly susceptible to caries then we would go through that exercise and perform a risk assessment.

Such a model clearly benefits the patient. What is in it for the dentist? Patients sense that you have a preventive approach at your practice and actually notice that you are going through all these exercises for them. This creates a positive image for the practice.

As dentists, we gain greater satisfaction because we can see the result of introducing this type of approach to patients that will subsequently be of benefit to them. By having patients come in regularly, you can identify something and can offer choices rather than expecting patients to come in only once they have a problem. When you start to build this kind of positive image and patients are happy, they are going to refer patients to you. Referred patients are the best patients in my opinion.

Considering all the prevention-focused initiatives that organisations like the FDI are running, where do we stand with the preventive model? Unfortunately, at a congress like the FDI AWDC here in Istanbul, most dentists want primarily to attend presentations in fields like cosmetic dentistry and implants. Those are the major topics that they are interested in, and I do not blame them because implants can generate a lot of revenue. As dental professionals, however, I think we owe it to our patients to adopt a preventive philosophy. If we do the right thing, it can be rewarding as well financially. So, if you ask me when we are going to reverse this trend, I do not have an answer for you but as a dental association it is our responsibility to teach prevention and ensure that dentists understand what that means.

Thank you very much for the interview.

Oral infections lead to more hospitalizations

BOSTON, USA: A new study has suggested that the number of hospitalizations due to preventable oral infections may be on the rise. Reviewing national patient data, the researchers found that the number of people hospitalized for dental abscesses, an infection surrounding the root of a tooth and a common consequence of untreated tooth decay, has increased significantly over the last decade.

In the study, researchers from Tufts University School of Medicine and the Harvard School of Dental Medicine analyzed the data of patients hospitalized between 2000 and 2008. They found that overall almost 61,500 hospitalizations were primarily attributed to periapical abscesses in the U.S. over the nine-year period.

As reported by The New York Times online, the annual number of hospitalizations increased by more than 40 percent from 5,757 in 2000 to 8,141 in 2008.

According to the scientists, 89 % of all the hospitalizations occurred on an emergency basis. The mean length of stay was 2.96 days. The average age of patients admitted for reasons related to a dental abscess was 37. More than 18 percent of the patients had no insurance. In addition, the numbers revealed that 66 patients cited in hospitals because of such oral infections.

The study, titled “Outcomes of Hospitalizations Attributed to Periapical Abscess from 2000 to 2008: A Longitudinal Trend Analysis,” was published in the September issue of the Journal of Endodontics.

AWDC attendees receive invitation to India

ISTANBUL, Turkey: With Indian Dental Association President Dr Pramod Gurav addressing friends, long-term partners and guests of the FDI World Dental Federation today at the Istanbul Congress Center during an official lunch, the eyes of the international dental community are slowly turning away from Istanbul to New Delhi, where the next Annual World Dental Congress will be held next year from 11 to 14 September at the India Expo Centre in Greater Noida.

It will be the second congress held by the organisation in the Asian country after the one in 2004. Gurav said that his country has become a land of opportunity for dentistry, with oral health care awareness and access to oral health care constantly increasing. He remarked that the congress, which will be held under the theme “A billion smiles welcome the world of dentistry”, is in line with its and the government of India’s ambitious goal to achieve optimum oral health for all.

“We are delighted that the FDI has once again chosen India for its landmark event—it is a wise choice,” Gurav said.

The decision to host the next congress in India was made back in May. Exactly ten years after the congress took place in New Delhi, the event will be hosted by the FDI in collaboration with the Indian Dental Association. The association currently has over 50,000 members and operates through 28 state branches, more than 350 local branches and 1 defence branch. It aims to achieve optimal oral health for every Indian by 2020.

India currently boasts the largest dental workforce in the world. In addition, an estimated 20,000 dental students graduate from the country’s 301 dental schools every year. The market there, worth around US$50 million according to industry experts, offers huge growth opportunities for dental manufacturers, especially for producers of dental implants and prostheses.

Besides an impressive scientific programme, the congress in New Delhi will feature early breakfast meetings and Meet the Experts sessions aimed at bringing together the experts in a specific subject and a small group of dentists in an interactive setting, the Indian Dental Association said.

Hand-on courses supplementing the lectures will provide a more intimate and constructive learning environment designed to develop clinical skills and practices relevant to modern dental practice and today’s cutting-edge dentistry.

The Year in Review meetings, introduced at the centenary congress in Hong Kong last year will provide additional focused learning opportunities. Interactive discussions on practical cases will deal with specific cases discussed directly with prominent speakers.

Periapical abscesses are often successfully treated with root-canal therapy. (Photo: Robert Kneschke/Shutterstock)

There will be a specific emphasis on presentations, workshops and discussions related to prevention of oral diseases, including caries and periodontal disease. During an official lunch, the eyes of the international dental community were on India.

“I am happy to announce that the FDI has once again chosen India for its landmark event—the world of dentistry”, is in line with its and the government of India’s ambitious goal to achieve optimum oral health for all.”
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It spreads should be a patient’s smile
only systems and a chairside CAD/CAM System, E4D Dentist (Fig. 1). There still isn’t just one system that can complete all of the restorative indications we have in dentistry. It is my preference to select the techniques and materials that excel in a particular area, rather than compromise to have one system that says it does a little of everything. For me and my practice (a prosthodontics practice located in Monterey, CA), all of my single-unit restorations are fabricated using the E4D Dentist system. In addition, with the opening of E4D SkyTM Network and the newest version of the E4D’s Dentalogic software, more and more of my total restorative care will be touched by digital technologies on a daily basis.

When you are first introduced to CAD/CAM chairside dentistry, you have the opportunity to refine your thinking on restorative care. You’ll no doubt become a better diagnostician and clinician—because of looking at your preoperative conditions and preparations on a large monitor— but also a better and more confident provider of when to do what in different clinical situations. Given the number of restorative materials available at your fingertips, you’ll make bettered decisions with each particular patient situation. Using the E4D Dentist system, you have access to a number of proven materials (blocks), each with either an IvoCAD Vivadent or 3M ESPE logo on it, so you know exactly what you are getting. The abundance of material options allows you to select the best one for the given clinical situation. A quick review of what is available follows.

Block Party attendees

Resin

In the category of resin, you have the option to select the Paradigm MZ100 block from 3M ESPE. Complementing the success of the direct restorative Filtek Z100, this block contains ceramic particles with an average size of 0.6 microns with cross-linked monomers that provide the ideal wear resistance, strength and radiopacity necessary for posterior use. 1 Use it primarily for partial coverage restorations as well as some full coverage restorations on implants. The use of this resin for indirect restorations requires placement using an adhesive cementation protocol.

I personally have an onlay restored with MZ100 in my own mouth, tooth #8.

When compared to conventional feldspathic porcelain restorations fabricated with chairside CAD/CAM, the Paradigm MZ100 restorations showed better colour match through ten years. This same study also showed no difference in margin finish, surface finish, anatomical form, caries or sensitivity. The authors actually concluded that “the composite inlays performed as well as the porcelain inlays with less bulk inlay fatigue.” In an in vitro fatigue study on occlusal veneer restorations, Paradigm MZ100 had significantly higher fatigue resistance (100% survival at 185,000 cycles up to 1,000 N loads) compared to CAD/CAM feldspathic porcelain (0% survival).

Resin nano ceramic

A new category for chairside CAD/CAM dentistry is the resin nano ceramic created with the introduction of the new Lava Ultimate block. This material defines a new category, resin nano ceramic, which provides some unique and beneficial characteristics for us to have for chairside. We know that 3M ESPE and a number of other companies (especially 3Dentis) have Lava brand have become synonymous with zirconia restorations and they’ve expanded this technology to additional digital applications. Lava Ultimate material contains a blend of three fillers: zirconia and silica nanoparticles agglomerated into clusters, individually bonded silica nanoparticles and individually bonded zirconia nanoparticles.1 Lava Ultimate contains approximately 79% (by weight) of this filler blend that reinforces a highly cross-linked polymeric matrix cured using a proprietary manufacturing process. The result is a unique block with indications for chairside fabrication (blocks and use. It’s indicated for a full range of permanent, adhesive, single-unit restorations including crowns, onlays, inlays and veneers. The material is ideally suited for implant supported restorations (Figs. 2 & 3) because of its high 200 MPa flexural strength (higher than conventional feldspathic blocks and layering ceramic used in metalceramics) and relatively low modulus (compared to ceramics).

From a time management standpoint, IPS e.max CAD blocks have the unique characteristic of being distributed in a partially crystallized stage, ie, pre-fused. This means that after milling, the IPS e.max CAD blocks need to be fully crystallized in a two-stage ceramic oven (e.g., Programat CS) prior to final delivery. This provides a major benefit to the entire procedure, with the advantages that the IPS e.max CAD milled surface can be tried in the mouth and contacts verified before final firing and characterization. This makes the final delivery of the restoration more predictable and consistent.

The introduction of Dentalogic software version 2.0 coincides with the availability of additional shades of IPS e.max for chairside use. IPS e.max Impulse introduces five new shades, three Value and two Opal shades. Because of the different brightness values of the three Value blocks, restorations can be optimally integrated into the surrounding tooth structure in terms of their shade. The two Opal blocks allow clinicians to imitate the life-like opalescent effect, which is desired in anterior restorations. The Opal blocks are ideally suited for the fabrication of veneers and thin veneers.

IPS e.max CAD blocks can also be seated with adhesive or conventional protocol depending on the restorative indications of the fabrication following approved guidelines (Table 1).

Acrylic

Even though the price of gold has reached all-time high, in some cases, the clinical concern for adequate clearance, margin design or material preference steer you toward metal-based restorations. You can take advantage of the latest digitally designed restorations by designing benefits while providing the best combination of strength and esthetics, including the ability to design restorations provided only 45% reduced fracture and more durable results.3

It’s all about the preparation

It should be noted that the proper and successful utilization of any of the metal-free types of materials (resin, resin ceramic, glass ceramic) require following approved preparation guidelines; they are simply providing proper clearance for the particular material—typically 1.5-2 mm occlusally (2 mm for implant restorations) and 1 mm axially; heavy chamfer or shoulder; rounded internal angles and butt joint margins—which need to be visible.

All digital capture systems today can only capture what you see and if you clinically can’t see the margins, don’t try and capture them digitally. First visual examination through proper soft tissue management. With all these materials, the preparation is of the utmost importance!

Concern has been raised by those without firsthand experience about the restorative limitations when choosing the correct shade and translucency, quickly relieves any hesitation about aesthetics and reinforces the benefit of doing more and more chairside restorative treatment.

The BOB (Burn Out Block) block from 3Dentis Technologies can be selected for any preparation style and then scanned and milled for presentation to a laboratory for investment, burnout and casting (or pressing), thus providing you with consistency in design, contacts and contour for your skilled design applications (Figs. 7 & 8).

Conclusion

Chairside CAD/CAM systems have provided clinicians with a new level of control in the practice of dentistry. From diagnosis through preparation and material selection, clinicians now have the capability of selecting from a variety of materials with proven clinical performance and to deliver restorations with unmatched efficiency and productivity. The categories of resin, resin ceramic and glass ceramic give today’s modern practitioners the ability to offer solutions for the majority of crown and bridge indications right in the office.

Editorial note: A complete list of references is available from the publisher.

Contact Info

Dr Curtis Jansen completed his DDS and his Master of Prosthodontics education at the University of Southern California (USC) School of Dentistry. He taught full time at USC and was director of implant dentistry in the Department of Restorative Dentistry. Currently, he has a full-time practice limited to prosthodontics and a dental laboratory in Monterey, California.

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