Holding the Keys to the Future

by Thomas Giacobbi, DDS, FAGD, Editorial Director, *Dentaltown Magazine*

IMTEC Corporation is well known throughout dentistry for designing and manufacturing a wide variety of dental specialty products such as mini-dental implants, root-form endosseous dental implants, drills, prosthetics, lab components and more. Dentaltown Magazine *recently spoke with IMTEC Co-founder and Chairman of the Board Dr. Ronald A. Bulard and President & CEO Tim Thompson about new advancements in implant dentistry, making implant dentistry more accessible to general dentists and technologies the company has developed outside of dentistry.*

Mr. Thompson, give us a brief history of your involvement with HYTEC and IMTEC.

Thompson: Over the last eight years HYTEC has developed various digital imaging technologies. Our first dental-related product was to create accurate high-speed impression scanning for Align Technology. Two years ago HYTEC collaborated with IMTEC and formed a joint venture called IMTEC Imaging with a mission to create a full cone beam CT system for the dental market. For the 25 years prior to that I was actively engaged in imaging technology and precision engineering.

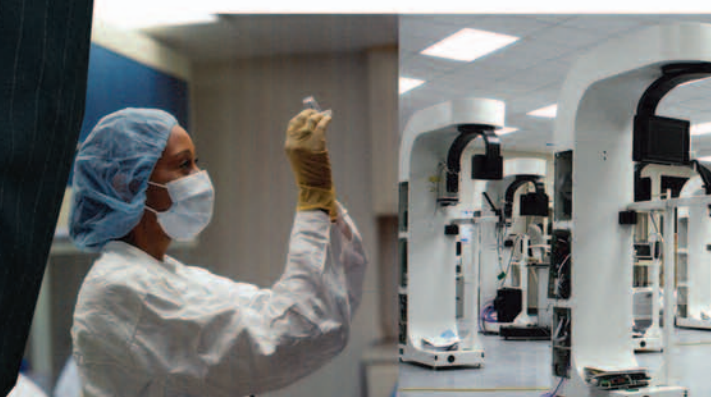
Dr. Bulard?

Bulard: With a mission to provide the highest quality implants at an accessible price – I designed and manufactured my first implant system in 1986 and formed IMTEC Corporation in 1990. I have served as Chairman of the Board of IMTEC since 1990 and have an active role in managing the company. I also serve as a product manager for our implant products.

How did the idea of mini implants come about?

Bulard: I started a practice in New York City in 1996 and Dr. Victor I. Sendax happened to have a clinic in the same building. Dr. Sendax is well known in the dental implant field and is a past president of

Ronald A. Bulard, DDS
Chairman of the Board, IMTEC Corporation



# of Digital Dentistry

AAID so I decided to visit with him. I noticed on the front door of his clinic a sign that read "Mini-dental Implant Center." Victor was doing one-stage implants where he was placing implants without drilling an osteotomy then affix a final prosthesis or crown immediately. I was quite skeptical of what he was doing, but it intrigued me enough to go back and have more meetings with him. We began some collaborative studies, concentrated on Victor's insertion protocol, came up with an idea for the O-ball mini-implant and the rest is history. I'm pleased that the MDI has opened the implant market for general dentists.

What does HYTEC have to offer that made this marriage make so much sense?

Thompson: We're imaging technology specialists, so we know how to build equipment that will be used in the 3D digital dentistry arena. We are interested in building imaging tools that will be used to provide solutions for specialists and general practitioners alike. An example of our efforts would be Align Technology, a progressive orthodontic company that has utilized our scanning technology over the last seven years.

You have reported that your engineering supports scanning of more than 600,000 dental impressions annually. Where is this done?

Thompson: There are two companies using our scanning equipment: Align Technology, and OrthoProof. Ortho-Proof has three primary venues, Europe, the U.S. and Australia. All total we scan about 600,000 impressions yearly.

What are some of the ways you're hoping to make implant dentistry easier for the general dentist?

Bulard: Primarily through cone beam CT scanning. This innovation will allow a dentist to create a 3D

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Tim Thompson
Chief Executive Officer, IMTEC Corporation

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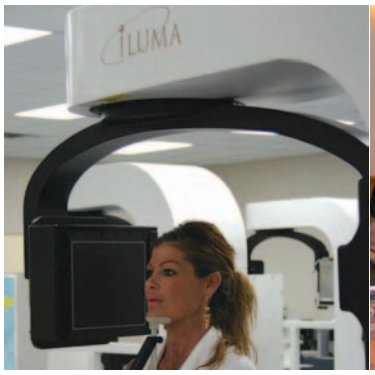
image of the patient's jaw. From that 3D image, a surgical guide can be fabricated that will allow the doctor to know exactly the angle and depth to place mini implants in the bone without the fear of impinging on nerves or perforating a cortical plate of bone. For the company OrthoProof, Tim and I worked to develop bonding stents that will allow general dentists and orthodontists to place brackets on teeth in a manner that wouldn't have been feasible to do in the past. We've developed state-of-the-art technology that allows dentists to scan their patients' heads and be able to then scan an impression that's taken of the patient's mouth. The clinician then fuses that impression with the CT scan. Through software the doctor can then straighten teeth virtually on a computer, place all of the brackets virtually in precisely the correct position, and then reset the patient's teeth to their previous, misaligned position. Then IMTEC creates a guide stent that shows the doctor precisely where to place the bracket on each tooth. This offers the general dentist an opportunity and ability to venture into more complicated orthodontic cases. What we're really doing is creating a workable method to allow the general dental profession to successfully compete and be more involved in new specialty procedures. It's an exciting concept.



At IMTEC's corporate headquarters, alignment tests are carried out on the CT manufacturing floor (left), while Dr. Bulard leads an MDI mini-residency at the company's on-site training facility (right).

So the dentist would send you an impression, you would scan it, create a digital model of the "before" and then what happens?

Thompson: We scan either the impression or the plaster. Obviously if you scan the impression you save yourself the burden of creating the plaster model. We then create a virtual 3D model, which has a standard ABO base. Those files and software for visualizing, measuring and obtaining accurate measurements of the arch are available at the dentist's office chairside. G.P.s can download a file from the factory and visualize that model just like they were holding it in their hands. The dentist can spin it, cut it, slice it...literally dissect the model with 3D CAD-like tools that are a part of the package. Of critical importance to the clinician is the chairside availability of the scanned impression.

Bulard: I might add that cone beam data of a patient's head is not required for producing a CT scanned digital impression. It's necessary, however, if you want to consider positioning and angulation of the root of a tooth relative to the anatomical crown. When you utilize the Invisalign technique, you create a treatment plan from a lateral ceph or a panoramic. Combining positioning and angulation with cone beam patient data, you visualize in 3D. The result is a doctor doesn't have to rely on ceph tracing, because he or she can just visualize it and can tell by simply rotating it and looking at the roots of the teeth. This reflects exactly where the teeth are, so there's no required calculation.

There are many companies out there now that have jumped on this trail and they've copy-catted and manufactured their own version of a mini implant. How do you continue to differentiate in this area?

Bulard: IMTEC owns the intellectual property for the insertion protocol. That's a very critical part of the procedure and vital to the success of an MDI application. Unlike placing a conventional implant where you drill a full-depth osteotomy and then screw the screw or implant into the bone, our technique is entirely different. We make a very small starter or pilot hole, then the implant is auto advanced into the bone resulting in bone compression. What we've found is that anywhere from 1.8 to 2.3mm compression of bone is the optimum compression to still allow adequate blood supply around the implant and prevent necrosis during the healing phase. IMTEC Corporation holds the patents on the insertion protocol and the one-piece O-ball implant. There are many other implants on the market but they cannot legally market this insertion protocol, nor can they market the advantages of using a one piece O-Ball design. Those are two key elements that protect us and give us market share, and of course the third is we've been in this business much longer than anyone else. The MDI system has FDA approval for MDI long-term applications and we're the only O-Ball mini-dental implant on the market that has long-term approval. That is a critical distinction. Plus we have an industry-leading dentist training model. I think those facts give us a distinct marketing advantage. In addition, we've actively entered the orthodontic arena with mini implants in the form of Orthodontic T.A.D.s. Orthodontic T.A.D.s are Temporary Anchorage Devices used for molar uprighting intrusion, extrusion, distillization...the possibilities are endless. Basically, T.A.D.s are designed to replace appliances like head gear and provide immediate anchorage without dependency on patient compliance.

In this last year, IMTEC has really progressed. We've aligned with three Fortune 100 companies, 3M, Kodak (now Carestream), and General Electric, to create product offerings that I think will enhance the industry. I would venture to say that there is no other implant/imaging company in the world that can cite that kind of industry endorsement. It's a validation of what we've been striving for over the past 17 years.

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How would you rank the specialties in order of best opportunity for market penetration with ILUMA?

Bulard: When you look at any cone beam CT scanner your first impression is, "This is going to help me diagnose a lot of problems." The reality is that's not the main application in dentistry. Most dentists use CT technology to create surgical guides to verify precisely where to place implants or brackets. More and more orthodontists are using this technology to guide them and help to better predict and plan tooth movement.

We are very proud of the fact that we've built scanning technology for NASA, the Dept. of Defense, the Dept. of Energy, the National Institute for Standards & Technology, and the FBI.

Aseptic assembly and packaging of implants and components takes place in Cleanrooms at IMTEC's Oklahoma headquarters.

How will the recent acquisition of Kodak's dental unit affect your distribution agreement?

Thompson: It will make the distribution channel stronger. Kodak, which is now Carestream, is focused on driving their products into the dental arena and they're very anxious to go forward and build that market for ILUMA. With the IMTEC/HYTEC merger complete, we will see a lot better traction in terms of Carestream's support and commitment to that market space.

Dr. Bulard, I'm interested in your perspective, since you're a board certified implantologist. What's your advice to dentists who want to get involved in placing implants in their offices?

Bulard: One of the very best places in the United States to get training in dental implants is the University Of Oklahoma College of Dentistry in Oklahoma City. The college has a two-day course through its Oral Surgery/Implant and Prosthodontic Department that's offered quarterly. Attendees learn the A-to-Zs on placement of dental implants and mini-implants. In my view, mini-dental-implants are the safest and the best place to start in implantology. After proper training, practitioners should focus on completing at least five to 10 MDI denture cases in the mandible. Then after a dentist has developed a confidence level with mini-dental implants, he or she should progress on to the ENDURE, which is a simple, internal hex implant system that allows a doctor to start placing conventional type crown and bridge work on top of implants. Obviously there's a learning curve involved, but the Oklahoma University course will give a registrant a jump-start on implant training.

How would you describe IMTEC Corporation to a dentist meeting you for the first time?

Thompson: IMTEC pioneered the mini-dental implant market, and we are the world's leader in that product offering. We invented that technology and we have the IP to go after new products that are associated with mini-dental implants and we are focused on the general practitioner market.

Bulard: Just like Tim says, IMTEC is recognized as number one, a global leader in mini-dental implant technology. I also believe IMTEC holds the keys to the future of digital dentistry.

I'd like you to speak to the organization of your implant systems in general. What's your take on the complexity of these systems?

Bulard: The MDI is the easiest implant to place, period. There's no lab phase to it. You take a patient's existing denture and adapt it to fit over the top of the mini-implant. As for the ENDURE implant line, the late Charles E. English made contributions to the design and concept. As we all know, Charlie was a noted implantologist and prosthodontist and more importantly, a close friend. He and I had a primary goal to develop ENDURE around the concept of simplicity. The goal is to offer a system based on what applies to the general practice.

The problem I see with other implant systems on the market is they're quite complicated. It's a task to figure out how to use them. They're complex and there are a lot of different abutments and angles and torques and all of those things that really complicate the process and I think that complexity has discouraged a lot of dentists from entering the field. The MDI, on the other hand, is simple and a stepping stone, and I predict we're going to see a trend in the next few years where MDI doctors are going to start using our ENDURE line more frequently.

Are there any other topics that you wanted to talk about that I haven't addressed?

Bulard: For the most part we've discussed the dental side of IMTEC, but this company also has an industrial side. We've had government contracts with several agencies including NASA. That agency chose IMTEC to create a scanning system that scans the space shuttle's tiles. That demonstrates the breadth of our offerings. Tim can more adequately address that topic.

Thompson: We are very proud of the fact that we've built scanning technology for NASA, the Department of Defense, the Department of Energy, the National Institute for Standards and Technology, and the FBI. The reason we're more accurate than other scanning systems is our experience with such demanding agencies. That accuracy ensures that ILUMA has the best technical solution for the dental market. I don't say that lightly. It's the reason we've done so well in the dental and medical markets. We've had the chance to develop imaging technology in the industrial arena first and bring that expertise to the dental industry. ■