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IMPLANT Q&A:

An Interview with **Dr. Timothy Kosinski**

Interview of **Timothy F. Kosinski, DDS, MAGD**
by **Managing Editor David Casper**



Dr. Timothy Kosinski is a general dentist who maintains a thriving practice in Detroit, Michigan, despite the city's rough economy. He is also an adjunct clinical professor at the University of Detroit Mercy School of Dentistry and immediate past president of the Michigan Academy of General Dentistry. Here, Dr. Kosinski discusses the evolution of prosthetically driven implant dentistry, the management of patient expectations, the importance of teaching more general dentists to place implants, and the vital role that mentoring plays in the dental community.

DC: *Let's start with a macro view of your general practice. You have placed over 9,000 dental implants in your last 25 years of private practice and did nearly 1,000 implants last year alone. Tell us, what's the magic? How do you sustain this productivity and grow your practice year after year in Detroit?*

TK: Detroit has been hit hard, so I'm very proud of the accomplishments that my team and I have achieved this past year. Implant dentistry has always been a very important part of my practice. It has always made intuitive sense to me. But things have changed in implant dentistry over the last 25 years, and implants are no longer surgically driven. They're prosthetically driven.

Through the use of the Internet, patients have become very conscious of what implants are about. They know they have a problem when they're missing teeth. They want something done and realize implants are a solution, but it becomes a budget issue. Fortunately, I think the industry is changing so that, without shortchanging the quality of materials, we're able to give a quality result at a very fair and reasonable price.

The time that we spend on surgical procedures has decreased immensely. What used to take me two hours may now take me half an hour instead. I don't think it's fair to charge patients an excessive amount. I'm a big believer in giving back to the community. I think that's where the reputation of my practice has grown, and people hunt us out.

DC: *So you adjusted your surgical fees based on the decrease in overhead due to reduced treatment time?*

TK: Absolutely. That's important. The chair time you're spending with a patient is important. We're not sedating nearly as many patients as we used to. That took a lot of time. Reduced costs and the Inclusive[®] Tooth Replacement System (Glidewell Laboratories; Newport Beach, Calif.) have allowed me to provide a tremendous, high-quality service at a very fair and reasonable price, and patients are aware of that. If you provide high-quality services at a fair price, you're going to be busy.

DC: *With transparency of information when it comes to dental implant treatment plans and the general fees associated with*

them, do patients come into your office with set expectations or assumptions about what the plans are and what they cost?

TK: That's an important question because a lot of dentists don't know how to present implants to patients, or open the door, so to speak, and a patient won't walk through if you don't open the door for them. They have to understand your credentials and your confidence and competence in providing a service like dental implants.

Dental students at the University of Detroit Mercy are learning implant dentistry in their second year. They're much more tuned in to the benefits. I'm of the generation where we were told: "Implants don't work. Implants are experimental." Obviously, that's not the case anymore. Understanding anatomy and the surgical applications is important, but once you master that, patients are going to hunt you out.

DC: *There still has to be a case acceptance secret that allows you to do that many implants year in and year out in the environment that you're practicing in. How are you getting that many patients to say, "Yes," consistently?*

TK: That's a great question. My dad told me: "Do a great job at a fair price, and you'll always be busy. Have empathy toward your patients. Don't nickel-and-dime." Working with a quality team like Glidewell Laboratories that provides an outstanding service at a fair price allows me to do those things for our patients.

It's important to walk patients through the procedures without overwhelming them with details. They want to know the end result.

Implant surgery doesn't typically hurt anymore. Though we now do some big cases that are relatively invasive, our standard implant case does not involve a difficult surgery, and patients are amazed! They don't experience adverse effects from the procedure, and simply take a Tylenol or Advil at night. They don't have bleeding, sutures or swelling. They're amazed. They tell their family and friends, and that's how we build our practice.

I think the most important part of implant dentistry is education: making patients aware of what can and can't be done and then being able to match it. That's the secret.

DC: *Whatever you're doing, it's working really well. Let's talk about the use of cone-beam computed tomography (CBCT) scanning. What types of cases are you going into thinking that you must have, or are probably going to need, a CBCT scan?*

TK: Oftentimes, we can use our traditional digital X-rays to diagnose simpler cases, but there are cases that are indicated for the use of CBCT. CBCT is simply a tool that makes us better. Visualizing the completed case before you begin treatment is an art, but with CBCT, it becomes a science. It

allows us to visualize the quantity, and oftentimes the quality, of bone. It also allows us to virtually place the implant before we even start, and that makes it an important diagnostic tool.

Now we can even take it one step further and design surgical guides that can be placed inside the patient's mouth. We're simply infiltrating, numbing and penetrating the tissue. We're doing flapless procedures and using that guide in a precise method. I have a lot of confidence in my surgical guides.

CBCT has changed the way we're practicing. It doesn't have to be used all of the time, but we probably do 125 cases a year that are CBCT-scan guided, where I just want to make sure that we're in the correct position.

Patients are very responsive to CBCT scans. I think they understand that we need to do this extra step sometimes so I can virtually place the implants before surgery. It takes the guesswork out of placing implants. It takes the expertise that I have developed over 25 years of placing implants, and it just makes me a better surgeon. It's a remarkable tool.

DC: *How do you balance the cost though? If you're trying to sell that value to the patient, how do you balance that message to keep them from saying, "Maybe I can go somewhere else and have this done where they're not going to charge for this service."*

TK: Well, not charging for it is the wrong approach to take because you can't give it away. I'm a big believer that, as dentists, we are diagnosticians. We're not clinicians or technicians. We are diagnosticians, and we have to hone our skills in diagnosing. That, again, is an art.

The computer, radiography, all the tools that make us better diagnosticians have actual costs, but we don't have to be





excessive in recovering those costs. We don't have to charge patients three or four times the cost of the crown, because the profit margin is made on the surgical and prosthetic aspects of treatment. The profit margin doesn't necessarily have to be made on the diagnostic part. Proper diagnosis and design makes my surgery more effective, and I can do it in half or a quarter of the time, so my chair time is reduced dramatically. There are a lot of savings in that.

DC: *What do you think is holding back more widespread utilization of surgical guides right now?*

TK: Well, I'm not a computer genius. I want to rely on someone who has done 1,000 guided surgeries to help me with computerized diagnosis. The manipulation of the computer scares us dentists.

I think we're just afraid of new technology. We're afraid we just don't have time to spend learning it. In our practice, we have a set protocol. So, once you have that protocol, performing guided surgery isn't mysterious anymore.

DC: *It's just too bad it's so expensive.*

TK: Well, costs are coming down. Look at all technology. It's all becoming more realistic. The price of CBCT scanners has come down dramatically. It's probably a third of the cost it used to be. In Michigan, there are regulations on who can have a CBCT scanner in their office and who can't, so we're in a unique situation, but there certainly are a lot of facilities where it's convenient.

DC: *You've said that you do about 80 percent of your cases flapless. Is that still the case? Tell us about that process.*

TK: Flapless surgery has become an important part of my practice. In the past, we didn't do digital radiography because it just took too long, but now we're able to determine precise position and angulation. There are some clinical skills and a lot of experience involved, but also being able to use the tools — the digital radiography, CBCT scan diagnosis — if that's what we elect to do. It's very helpful.

DC: *In your practice, do you predominantly do one or two units per patient? How many of the big cases are you still doing?*

TK: We do a lot of big cases. We do a lot of All-on-4, All-on-6, hybrids and full bridgework. A lot of patients come in with endodontically failed teeth that need to be extracted, and implants need to be placed.

Again, as the public becomes more educated, they'll come in and specifically want an implant. So we do a lot of one- and two-implant cases. Absolutely.

DC: *You've talked about the same-day implant philosophy, where a single-unit implant patient comes in just for the consult, and you're able to convert the consult into doing that case right then and there.*

TK: Yeah, we do that quite a bit. I'd rather do an implant than a composite on tooth #3 any day of the week.

DC: *Implants are probably faster.*

TK: Absolutely. We just need to help patients get over that initial fear. It becomes routine for us, but it's not routine for a patient who's never had it done before, so we try to explain the procedure to them.

Implants are extremely successful most of the time. "I only use high-quality products," I tell them. "We don't use off-brands and things like that." I have always warranted my work. If something doesn't work, it's my responsibility to make them whole again because I've accepted that person as a patient. Patients become very comfortable with that. They see that it's a fairly routine procedure and they ask, "Can we do it now?" I'll look at my watch and say, "Absolutely!"

Implants are just hot. People understand it. It's not like when I started, back when they were a mystery. They are now a viable, living part of every practice, and I challenge general dentists across the board to learn these techniques because it is something very special.



DC: *Communication is critical. What do you have to have in terms of the philosophy or culture of your office so the entire team is set up for the doctor when he or she wants to do an implant routine right away?*

TK: That's a great question. You have to surround yourself with quality people. My team makes me successful. I'm not great. My team is great, and they have to believe in what I'm doing, and they can because they've seen it work so many times. They know that when the doctor leaves the room, the patient is going to say to the staff: "Hey, what do you think? Would you do this?" So everybody has to understand that it's about being prepared and putting the patient at ease. Again, the patients know they need something like a bridge, a partial or whatever it is. They know they want something, and they've investigated the implant. They wouldn't be in my office if they weren't considering an implant. What's holding them back is the budget. It's probably a budget issue for everyone in the country, but there is a price point out there that patients respond to positively, and I think the practitioners out there owe it to themselves to find out what that magic number is.

This concept is no different than buying a flat-panel TV or an automobile. There's a number that you look for, whether it's a lease, payment in full, or zero-percent financing. Every situation is absolutely different. It's about what's important to you at the time. That's why leasing cars is so important. The real issue is, "How much do I owe every month?" People don't usually care what the car costs. If you can find what that number is for the patient, then it's easy for them to accept.

I have a treatment coordinator named Lorry. I tell my patients: "You're going to meet with Lorry. My job is to give you the best-quality dentistry possible. Her job is to make it affordable. So I need you to be honest and open and tell her how you feel, and she will, to the best of her ability, find

a way to make this happen.” I think people appreciate that, especially in the kind of economy we have today.

Implants are just hot. People understand it. It’s not like when I started, back when they were a mystery. They are now a viable, living part of every practice, and I challenge general dentists across the board to learn these techniques because it is something very special.

DC: *Going back to the clinical side for a second, let’s talk about immediate provisionalization, specifically for the one- or two-unit dental implant cases. What’s your criteria for choosing to immediately provisionalize those cases versus utilizing a standard healing abutment?*

TK: I like to immediately place implants in extraction sites as long as there’s no purulence or excessive bone loss. I do a lot of bone grafting. I believe that when we extract a tooth, we should be grafting it with something to hold the site, even if it’s for future implant use.

When we’re placing an implant, everything that we do is very scientific. The implant has to be placed at a certain torque. We need initial stability with all our dental implants. Everybody wants a tooth right away, but that doesn’t mean that they’re going to have it. I may not know whether a patient can have it until we do the surgery, so I don’t promise people that they’re going to have a tooth right away.

We have to follow rules. If you’re doing two implants, they have to be a certain distance apart. An implant has to be at least two millimeters apart from the adjacent tooth. The implant has to be placed in the correct buccal-lingual or facial-palatal aspect and should be approximately three millimeters apical to the adjacent cemento-enamel junction (CEJ). Those are all physiologic principles, and if we can follow them — keeping in mind that you can’t always follow them — we’re going to get an outstanding esthetic re-



“For the first time, it’s not about surgical placement of the implant and selling the implant. It’s about designing the prosthetics before we ever start. The implants are going to work. The engineering and science behind it is done.”

sult. It’s extremely important that we have attached gingiva around our dental implant. The implant has to torque to a minimum of 35 Ncm for me to consider immediately placing some kind of transitional, temporary appliance.

Those are basically my criteria. If I don’t get 35 Ncm, it’s nice having the ability to place a custom healing abutment in the implant, which immediately starts to train the tissue. And it can all be done virtually! We’re seeing it before we even start, and that’s just amazing technology.

What I love about the Inclusive Tooth Replacement System — where I have a custom healing abutment, custom temporary abutment and a transitional crown, all in one package — is that it gives me a lot of flexibility on where I want to go, and I know that I have a product that is training the tissue to grow a certain way.

DC: *You’re kind enough to mention the Inclusive Tooth Replacement System, which ties directly into the care philosophy we have as a company and that you have as a practitioner: The dental implant treatment protocol should be as restoratively driven as possible.*

TK: I’ve seen the good and the bad. The old days when you just put in an implant has changed, and it’s no longer surgically driven. We can grow bone and make every case absolutely ideal, if that’s what we want to do.

For the first time, it’s not about surgical placement of the implant and selling the implant. It’s about designing the prosthetics before we ever start. The implants are going to work. The engineering and science behind it is done.

Clinicians can do a great job at a fair price. The ones that do are going to be busy. The idea was pretty smart.



DC: *We agree 100 percent! Let's switch gears and talk about mini implants. Are there types of cases where you're going into the treatment plan thinking mini implants all along, or is it something you choose based on cost or availability of bone?*

TK: That's an important concept. Implantologists have to be prepared for cases to take a lot of different directions. They have to be prepared with both conventional- and small-diameter implants. They have to have both in their armamentarium.

There are situations where small-diameter implants are a viable tool. Unfortunately, I've seen my friends take a one-day course on mini implants and think that small-diameter implants fit everywhere, and I don't agree with that.

I would use small-diameter implants when bone quality is minimal, when we're converting their existing denture or because of costs. Not every case has to be an \$8,000 CAD/CAM-prepared bar. Sometimes just giving that patient a little more stability is a godsend to them and can improve their quality of life. And I say that a lot, "improve their quality

of life," because I really believe in it. Mini implants have changed the quality of life for these patients immensely. I can't even imagine having a denture that floats around. They can't chew properly or enjoy dinner out with their friends and family. They're embarrassed, and it hurts.

Having small-diameter implants is an important part of my armamentarium. I diagnose it ahead of time, and cost may be a factor. Due to the reduced cost, small-diameter implants are more accessible. However, it's important to recognize that just because you're using a small-diameter implant, it doesn't mean that the procedure is easier. That's a perception that I encounter.

DC: *Right. Earlier you mentioned that dental students at the University of Detroit Mercy School of Dentistry are introduced to implants in their second year. Does that involve placing the implant, restoring the implant or treatment planning?*

TK: Second-year students in the university's simulation lab work on models, diagnose, make a surgical guide, place the implant in the model, and then temporize it. When they get to the clinic floor and have the opportunity to work with

the periodontal or oral surgery departments, they may be able to place implants themselves.

They are being introduced to implants, but it's not the end-all. They're not experts on it. There are postgraduate courses that need to be completed that will make them more competent and confident in their abilities, but at least they are aware of implants and can discuss them with the patient. The days of saying, "Implants don't work; they're experimental," are gone.

DC: *You mentioned postgraduate studies. Dentists need more exposure to implants in order to gain more skills or to determine that they want to place implants. I know you work with another great educator, Dr. Todd Engel, who founded the Engel Institute™, formerly Ladera Ranch Implant Institute. Can you tell us about that program and how it gets dentists more involved?*

TK: That's a wonderful program. Dr. Engel started it in 2006 in Southern California. It has since expanded to have six centers around the country. Dr. Engel and I happen to be the mentor dentists for the program in Detroit. General dentists are taught how to place implants under a very strict protocol and direct supervision.

The program entails two days of very intense lecturing. It's hands-on, like most typical implant programs. But the third day is unique because doctors come to my practice, and they're actually able to place an implant in one of my patients under supervision of Dr. Engel and myself. It is the most spiritual, life-changing program for many dentists. I've seen grown men crying at the end of the program. They're so appreciative of what they've learned, and they take that knowledge — limited knowledge albeit — and under a very strict protocol, they can be very comfortable placing a fair number of implants in their practice.

But it doesn't mean they've stopped referring patients to surgeons, periodontists or other general dentists. There are a certain number of cases that need to be referred. We like them to do 20 posterior cases before they move to the anterior.

The courses have expanded. Mentoring II teaches more advanced periodontal procedures and grafting. Mentoring III, which is really incredible, is a four-day program where we are actually placing implants using the All-on-4 and All-on-6 concept in Charlotte, North Carolina, where we have 18 doctors on hand. We'll place 108 implants in one day. It's just an amazingly important clinical experience and a wonderful time for the doctors to learn. It teaches dentists protocols so they feel comfortable diagnosing with and without CBCT, locating the nerve and the sinus, placing the implant or aborting the case, and deciding when to refer and when to fix problems themselves. It's very important that general dentists out there learn these protocols. Young

guys are learning it in dental school. We need to get more dentists involved.

DC: *You mentioned being a "mentor dentist" for the program. Does that mean you're still available to dentists who complete the program, even after it's over?*

TK: We are always there for the doctors. I get a lot of phone calls, emails and visits. Doctors are always invited to my office to come and observe. If they don't feel comfortable with a certain case, they can even bring their patient to my practice, and I will supervise them and just hold their hand for a case or two until they feel more comfortable in their own practices. It's really special.

DC: *What does the Michigan Academy of General Dentistry have in store for this year?*

TK: The academy is important for dentists to belong to. It's the only organization that has advocacy for the general dentist. That's who we're looking for.

We offer a lot of programs. We have a great continuing education group with Drs. Sam Shamoan, Dennis Charnesky and Thomas Faiver, who just do wonderful programs and a lot of hands-on participation programs. We try to give back to the community and educate the young dentists as much as possible. It's very important to me that we try very hard to educate, and mentoring is going to come back. It was gone for a long time, but it's coming back. It's invaluable to have somebody with experience to come to and say: "Hey, I don't know what to do. What do you think?" That's what we should be doing, sharing our knowledge with the next generation.

DC: *Without competition.*

TK: It's not a competition. There's a lot of dentistry to be done, but it has to be good quality, and it has to be done for the right reasons. **IM**



Implant Therapy: Then and Now



by **Timothy F. Kosinski, DDS, MAGD**

Implant dentistry has come a long way since blade and subperiosteal implants were widely used. Improvements in implant design and site preparation methodology have made surgical procedures simpler and more consistent. Modern grafting techniques have improved our ability to “grow bone,” facilitating placement of implants in cases where such treatment would have previously been impossible. The use of CAD/CAM technology in abutment and crown fabrication allows the practitioner to examine and evaluate the final contours prior to laboratory production of the restoration.¹ Collectively, these advancements facilitate predictable restorative outcomes, lifelike esthetics and treatment protocols that are both clinically efficient and convenient for the patient.

The case presentation that follows demonstrates the stark contrast between the implant therapy available decades ago and the predictable, minimally invasive treatment of today. Modern implant dentistry and materials provide everything needed to replace outmoded implants that were successfully used to treat patients in the distant past, but have since reached the end of their useful function. The patient presented with a blade implant that was placed over 30 years prior. The implant, along with the restoration it retained,

had become unstable and needed to be replaced. She did not want her other teeth to be disturbed in the process. In fact, the reason she elected to have the original implant placed, back when the procedure was relatively new, was because she did not want to have her other anterior teeth prepared.

The 30-year-old blade-type implant was a flat, rectangular piece of metal. The one-piece implant was affixed to an abutment, which penetrated the soft tissue and was used to retain a conventional porcelain-fused-to-metal crown. The implant was fabricated from Vitallium® (DENTSPLY Austenal; York, Pa.) and designed to integrate with the hard tissue through a fibro-osseous process, which means that rather than bone integrating directly onto the surface of the implant, fibers from the bone attach to the implant body, forming a layer of connective tissue that holds the implant in place. In the past, this implant design was frequently used when the edentulous ridge was rather thin.² Immediate loading of the implant was the norm. Obviously, the blade-form design of the implant and the subsequent final crown served the patient well for several decades. It was only after the implant and attached restoration became mobile that the patient sought consultation for another restoration.



CASE REPORT

The patient is a 65-year-old female with no significant medical compromises other than controlled high blood pressure. She presented with an implant-retained maxillary left central incisor crown that had become mobile. Oral and radiographic evaluation revealed that the crown was being retained by a blade implant that was, according to the patient's recollection, placed over 30 years ago. There were actually two blade implants in the site. The head of one implant had fractured, requiring placement of an additional blade implant positioned facial to the first.

After discussing treatment options with the patient, it was determined that the blade implants needed to be removed and replaced with a root-form dental implant. Following sufficient healing and osseointegration, a new custom abutment and crown would be placed, esthetically restoring function for the patient.

Modern implant dentistry, rather than being entirely surgically driven, is much more focused on the prosthetic outcome. When treatment planning implant placement and prosthetic reconstruction, it is crucial that the dental practitioner carefully plans the case to maximize the esthetics of the final result in order to meet patient expectations. Because this particular restoration was in the esthetic zone, it was especially important to create a natural-looking emergence. Proper contouring helps to ensure excellent gingival health and a beautiful final restoration.

Anatomic considerations, along with any potential complications, must be anticipated and addressed. In this case, two old blade implants were to be removed. The subsequent bone damage had to be treated and any granulation tissue had to be thoroughly removed. The final thickness and angulation of bone as well as the integrity of the facial and palatal plates were evaluated. There was some slight bone loss around the adjacent natural abutments.

The surgical removal of the blade implants was actually quite simple and atraumatic to the patient. The defect created by the loss of these blade implants was a trough shape. The residual site was prepared with vertical excisions flaring away from the crest of the ridge, maintaining the position of the attached gingiva. This allowed the flap to be easily controlled. Any granulation tissue at the site was vigorously curetted out. After thoroughly cleaning the bone site, it was determined that there was indeed enough palatal and apical bone to immediately accept a dental implant. The Inclusive® Tapered Implant (Glidewell Direct; Irvine, Calif.) was chosen because of its excellent initial stability and design.

Because the vertical incision made on the facial flap was maintained in the attached gingiva, it was a simple effort to place a

bioresorbable barrier, engaging 2 mm onto the healthy facial plate of bone. The barrier was positioned after the osteotomy was created to accept a 3.7 mm x 13 mm implant.

Prior to placing the implant, the facial aspect of the defect was grafted with an allograft to allow for bone growth, and to provide increased width and tissue support. The implant needed to be situated into as much of the available bone as possible, and was thus placed approximately 3 mm subgingival to the crest of bone. A 3-mm-tall healing abutment was placed and the site was sutured closed. Four months were allowed for hard- and soft-tissue healing, as well as integration of the new dental implant. Some semblance of interdental papillae was maintained between tooth #9 and the adjacent teeth.

Following completion of the healing phase, an open-tray impression technique was used to ensure an accurate impression. An Inclusive® open-tray impression coping (Glidewell Direct) was used, which includes a long plastic sleeve that prevents impression material from impregnating the screw access hole. After taking the open-tray impression, a lab analog was threaded into the impression coping. The case was submitted to the laboratory for design and fabrication of the final custom abutment and crown.

Because this was a particularly demanding anterior case, it was crucial to maximize esthetics and create a natural-looking emergence profile out of the soft tissue. The patient was adamantly opposed to having the adjacent teeth prepared for any type of restoration like a veneer, so it was necessary to work within the existing edentulous space, presenting a challenge for the doctor and laboratory alike.

An all-zirconia custom implant abutment was selected, which would offer durability while accommodating patient expectations by eliminating the gray color that can otherwise show through the gingiva when a titanium abutment is used. After scanning the model, the lab technicians designed the final all-zirconia abutment utilizing CAD/CAM software, carefully controlling the contours of the abutment to adhere to the patient's gingival architecture captured in the final impression.³ Instruction was provided to the lab for abutment margins that were slightly subgingival, yet, following proper physiologic construction, placed about 3 mm apical to the adjacent cemento-enamel junction. Adhering to this simple principle facilitated an ideal emergence profile.

After the final abutment design was approved, the lab prepared and sent the crown design for clinical review. The goal was to mirror the esthetics of the maxillary right central incisor, but because there was some tissue loss around that tooth, and the root structure was a bit deformed, the decision was made to widen the crown slightly. This would

minimize any dark triangles between the teeth and maximize the use of the remaining interdental papillae. The flexibility and precision offered by CAD software streamlined the implementation of these custom design parameters.⁴ Although not perfectly symmetrical with the shape of the adjacent central incisor, the final crown was acceptable to the patient. Its monolithic zirconia construction promises long-lasting functionality.

With careful surgical and prosthetic planning, modern implants are effective at replacing implants of earlier designs in cases where their viability has become compromised. Clinical design innovations and restorative-driven treatment planning make the use of contemporary dental implants extremely predictable. CAD/CAM technology allows us to visualize the completed case prior to fabrication and delivery of the final prosthesis. Dental implantology has many quality practitioners who have brought implant dentistry into the mainstream. Patients are seeking out and demanding this choice of therapy and we are now able to provide them predictable, quality dentistry at a very reasonable fee.



Figure 1: The patient presented with a 30-year-old maxillary left central incisor crown over a blade implant. After decades of function, the blade implant had become mobile.



Figure 2: Digital periapical radiograph of the blade implants. The second implant was placed alongside the first after the original fractured subgingivally.



Figures 3a, 3b: Using simple elevation, the implant-retained crown and blade implant were removed without complication.



Figure 4: Vertical incisions were made in the attached gingiva to expose the defect created by the removal of the blade implants.



Figure 5: A bioresorbable barrier was positioned so that 2 mm of healthy bone engaged with the facial and palatal aspects of the defect.



Figure 6: After creating the osteotomy for a 3.7 mm x 13 mm Inclusive Tapered Implant, bone grafting material was placed in the facial defect.



Figure 7: After threading the implant into place and achieving initial stability at a torque of 35 Ncm, a 3-mm-tall healing abutment was placed.



Figure 8: Following approximately four months of integration, the soft tissue and interdental papillae had healed well.



Figure 9: An open-tray technique was used to take a final impression of the implant site. After placing the impression coping, a radiograph was taken to ensure complete seating.



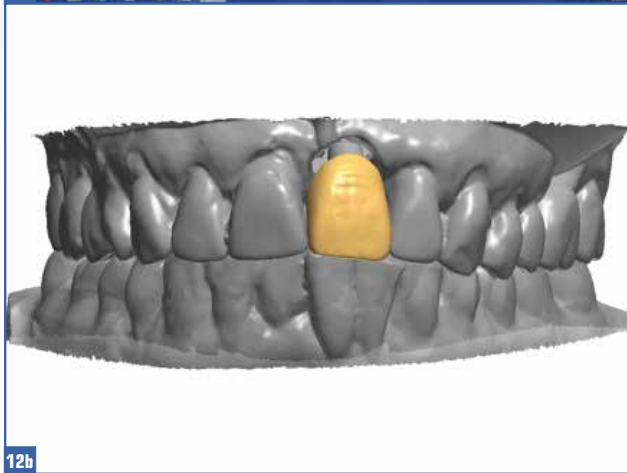
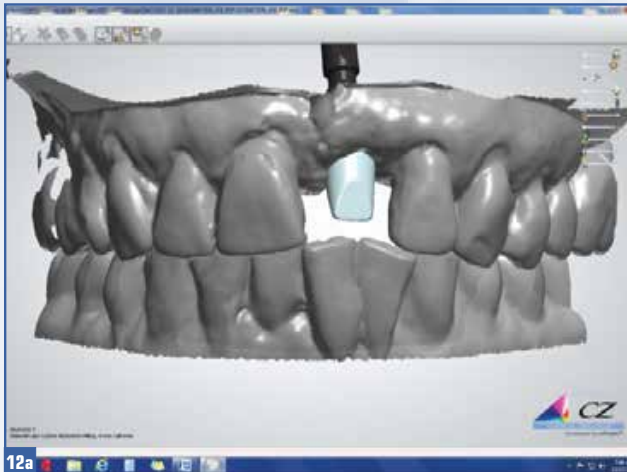
Figure 10: The Inclusive® open-tray impression coping has a long plastic sleeve that protects the impression coping screw access hole from the impression material when making an open-tray impression.



Figure 11: Light- and heavy-body vinyl polysiloxane material was used to make an accurate final impression, and a lab analog was placed to represent the intraoral position of the implant.



Figure 13: An all-zirconia abutment was created with margins set 3 mm apical to the cemento-enamel junction of the adjacent teeth. This helped achieve an ideal emergence profile for the final implant-retained crown.



Figures 12a, 12b: The laboratory created a digital design of the abutment and final implant-retained crown for doctor review and approval prior to fabrication.



Figures 14a, 14b: The abutment was torqued into position, exhibiting a precise fit and esthetic margins.



Figure 15: A radiograph was taken to verify complete seating of the prepared abutment.



Figures 16a–16c: The final implant-retained crown was cemented into place, creating a nice smile line and a final restoration that was satisfying to the patient. **IM**

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