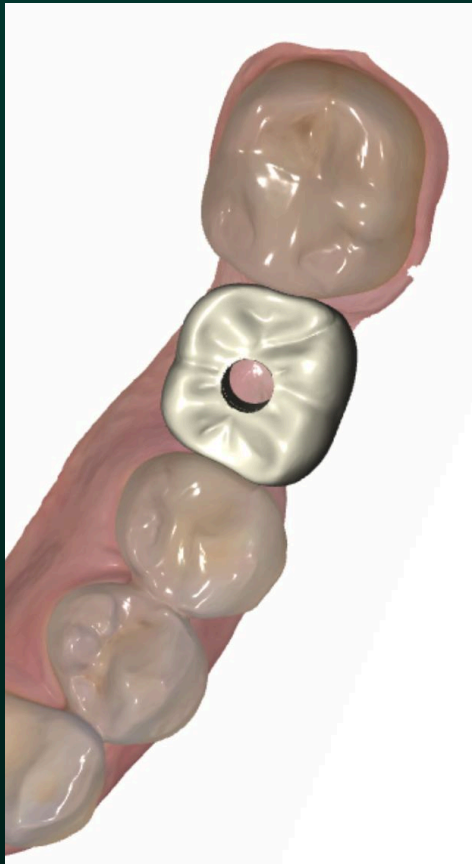


CASE STUDY

Implant Precision from Plan to Scan to Seat

Maggie Augustyn, DDS, FAGD, FICOI, FIADFE, FAAIP



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In my 23 years of practice, and in my own evolution as a clinician, I have seen implant dentistry come a really long way. When I first learned about implants in 2000 it was arguably the greatest innovation thus far in dentistry. And it still represents the most profound impact we can make as healers. However, 25 years later we understand much more about implant placement and integration. Perhaps even more importantly, we understand the limitations and complications of implants. Some of these are related to the physical action of their placement; some are related to restorative performance. Many have to do with the overall health of the patient.

We have entered into an era where more general dentists have added surgical placement to their practices. This is beneficial in part because general practitioners have a deeper understanding of restorative space. They can execute implant placement from a functional perspective as opposed to planning focused primarily on the viability of available bone.

Digital dentistry, specifically the integration of a CBCT scan with an intraoral scan to produce a surgical guide, has made it possible for clinicians to plan the exact positioning of the implant needed to support an ideal prosthetic outcome. We are no longer restoring implants that have been placed simply based on bone quality and availability.

A tremendous amount of care can be taken to plan implant placement, with unique control from the clinician acting in the best interest of the patient. It only makes sense that the restoration be planned with equal input from said clinician. And that final component of treatment needs to be kept front of mind in the restorative practice.

Traditionally, although general dentists can plan and control implant placement with precision, we have had little oversight of the restoration. In the past, we could only see the final restoration when it arrived in our office, ready for delivery. If any adjustments needed to be made, it would hinder both the doctor's relationship to the patient and the profitability of the practice.

The day of implant restoration is filled with anticipation built over the course of many months or even as long as a year. The patient has gone through the process of tooth removal, bone grafting, healing and implant placement, and when they return for that long-awaited delivery appointment, they really want to leave with a beautiful restoration in place.

If an implant restoration, however, needs to be remade, the patient is dismissed with a healing abutment or temporary, just as they presented. This is frustrating to everyone involved, and notes and calls are made to the laboratory in an effort to communicate the proposed changes. This is a loss of an appointment, a loss of further production (ergo, profitability), and a decrease in confidence from the patient. It also impacts the finances of the patient as they request additional time off for another final delivery appointment.

But what if we were to apply the same degree of digital planning and verification used in guided implant placement to the restorative phase of treatment? What if in the spirit of

collaboration we were to push the boundaries of what is available to us as clinicians before the restoration is produced and ask for more? What if there was an opportunity for us to evaluate a proposed restoration in 360 degrees as opposed to screenshots emailed by the lab (in cases where those are even available)?

That very technology is available—and it has spoiled me. Dandy dental lab has a revolutionary mission in their implant restoration workflow to collaborate with clinicians on the final restoration. It leads to less stress, reduced chair time, increased patient satisfaction and elevated celebration for the clinician and their team.

Case Description

In the following case study, we move from an edentulous space to a final implant restoration, with all points digitally designed under the restorative clinician's input and control. And because this is real life, we will encounter hiccups along the way—but they will be addressed in real time, without unnecessary stress, frustration, or additional appointments. This approach to restoring implants delivers a higher level of satisfaction for the patient, clinician, and team.

In this article you will learn to:

- Leverage digital tools like CBCT, intraoral scanners, and surgical guides for precision and efficiency.
- Gain control over implant restorations with collaborative design workflows, reducing errors and stress.
- Minimize chair time, avoid multiple appointments, and enhance patient satisfaction.
- Increase profitability by streamlining processes and avoiding costly adjustments and remakes.
- Stay ahead with innovative technology to attract patients and elevate your practice.

Patient Presentation

The patient is a male who initially presented for treatment at our practice in August of 2023. He is in good general health, with minor sinus issues, Zoloft listed as his current medication and an allergy to tree nuts. He was interested in fully restoring his oral health, including restoration of the edentulous space in his lower left jaw.

Since his initial visit, the patient needed some other restorative services, which were completed prior to receiving implant treatment. Periodontal treatment was finalized with full scalings on his lower jaw and localized scalings in his upper quads. Endodontic treatment was executed on teeth #12 and #3 at the specialist's office. Our office provided full crown coverage for #12 and #3 as well as Icon treatment on #29. Following this restorative care, the patient mentioned that he'd always wanted to straighten his teeth, and thus ortho via clear aligners was initiated and completed.

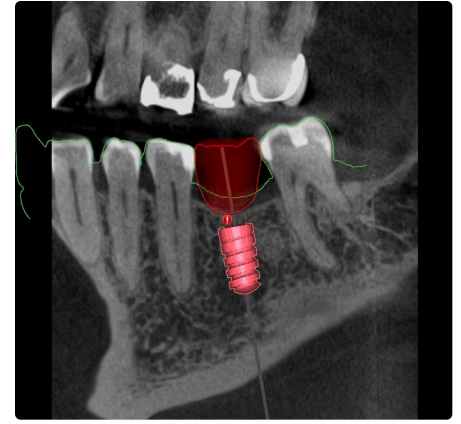
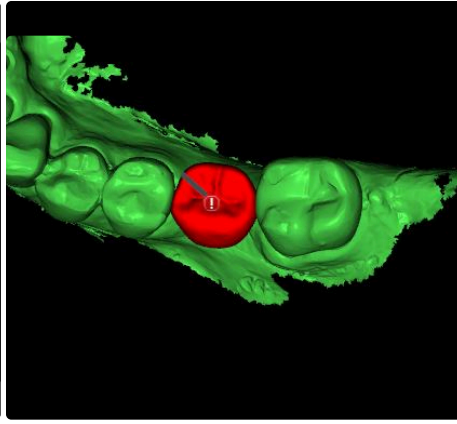
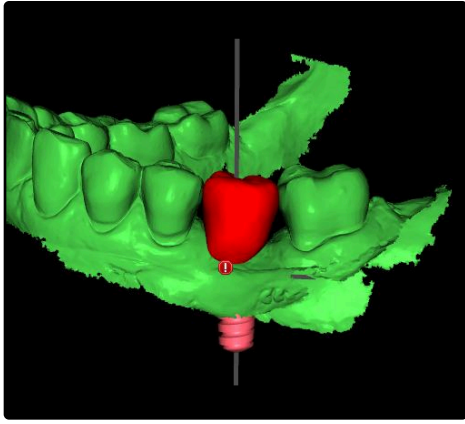
The patient was ready in October 2025 for implant placement. He had not previously worn a removable prosthesis but began wearing an Essix retainer upon completion of ortho. The edentulous space was created as a result of a tooth crack. As the patient remembers he had an amalgam filling on tooth #19 from his childhood. The tooth had fractured at the gumline in 2014, and it was deemed non-restorable. Immediately following the extraction, the patient had a bone graft placed.

Almost eight years had passed since the tooth extraction as the patient was waiting to find the right doctor to take over his care, which was part of the reason the site hadn't been restored. After building a relationship through multiple restorative visits and providing care for his family, the patient felt confident receiving implant treatment from my practice.

Patient CBCT Analysis & Treatment Planning

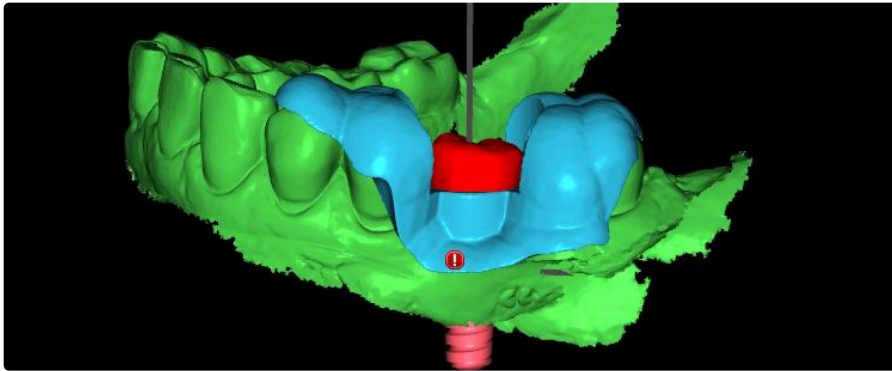
To begin treatment planning, CBCT scans were taken along with an intraoral scan using the Trios 5 equipped with Dandy's Chairside scanning software. The case was planned for implant placement based on restorative needs. The surgical guide was designed and planned in BlueSkyPlan digital treatment planning software (BlueSkyBio), and was printed in-office on our Creality Halot Mage Pro 3D-printer.

The surgical guide was designed to ensure precise placement of the implant within the available bone, at a safe distance from vital patient anatomy, and in a position that allowed for exiting of the screw-access channel through the central fossa of the implant crown.



An intraoral scan was taken, and a restorative-driven digital treatment plan was created to replace tooth #19, with the long axis of the implant exiting through the central fossa of the restoration.

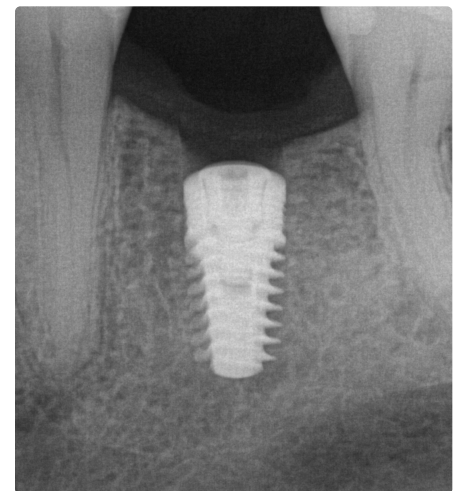
View of the implant plan using CBCT imagery on BlueSkyBio's digital treatment planning software.



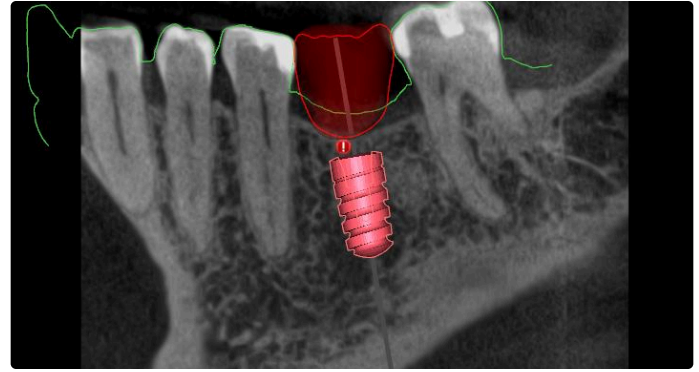
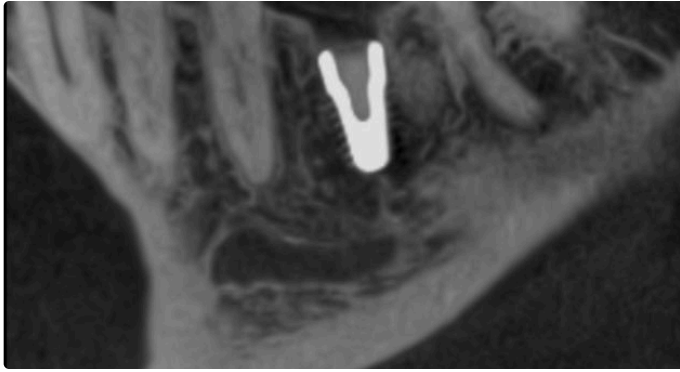
The implant surgical guide design was exported for in-office printing in preparation for the surgical appointment.

Implant Placement

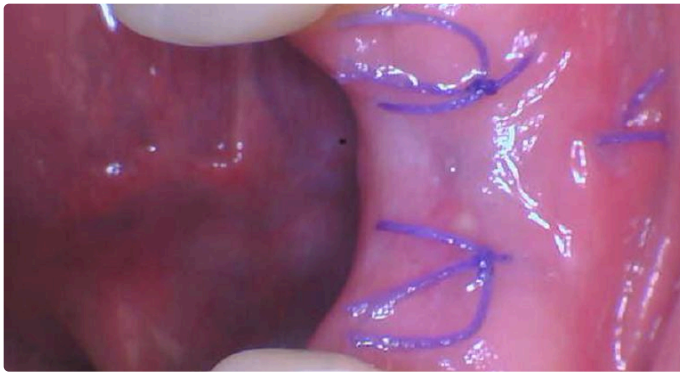
At the next appointment, a 4.2 mm x 10 mm Implant Direct Simply Iconic implant was placed. The alignment of the implant was almost ideal when compared with the plan, though it presented a variation of several degrees, possibly due to slight unseating of the guide during one of the final drills. The final implant position still adhered well to clinically acceptable metrics. Final restoration would bear the access opening right in the central fossa, as intended. The placed implant was finalized with a flat cover screw and the site was then sutured. The patient was evaluated for healing within the subsequent months, which was occurring within normal limits.



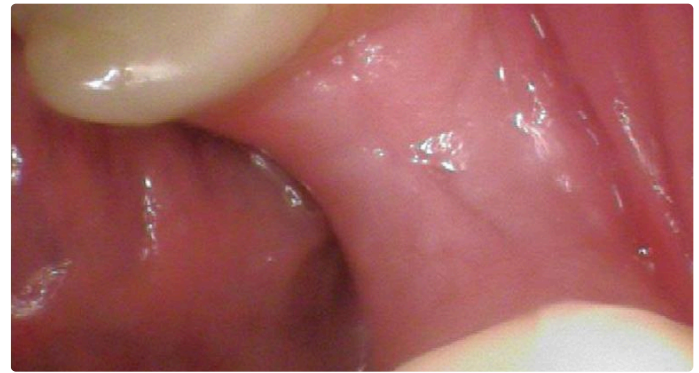
Radiograph shows final positioning of the implant.



CBCT scans illustrate final placement of the implant compared to the initial plan.



Condition of implant site at recall appointment one week post-surgery



The implant site showed excellent healing one month post surgery

Implant Uncovering and Intraoral Scans

The easiest way to plan and deliver the restoration is through the Dandy workflow. At no additional charge, the clinician can order the appropriate scan body in advance of the intraoral scanning appointment through the dental lab's portal. The appropriate scan body for the case is either delivered to your practice or you are reminded that you already have the correct one.

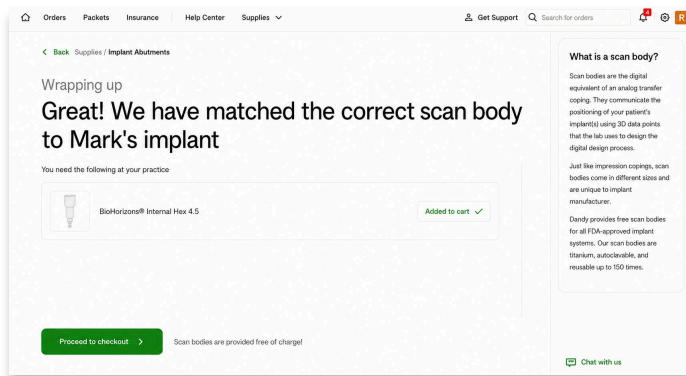
The patient presented for uncovering of the implant several months after implant placement. Because the implant was finalized with a cover screw, gum tissue had healed over the implant,

and minor surgery was needed to uncover the site. The tissue was anesthetized, and a small incision was made to gain access to the implant. The cover screw was removed, and quality of bone was evaluated. Because some bone had overgrown into the platform of the implant, bone profiling was performed. The implant stability was tested physically via reverse torque to 40 Ncm, with no movement present.

With enough space around the implant and the platform fully exposed, a scan was taken to show the level of soft tissue. This scan is generally important to capture if the patient has been in a healing abutment because it communicates to the lab exactly where the tissue lies. This case was slightly different, as my patient presented with a cover screw that needed to be removed from the implant, followed by bone profiling.

One option I had was to place a healing abutment, wait for healing to take place,

and have the patient present for the scan 2–3 weeks later. I chose to forgo this as I believed the healing would happen in a fairly predictable manner, evaluating the distance of the soft tissue to bone. Thus, the scan body that Dandy provided was connected to the implant, and a radiograph was taken to confirm complete seating of the scan body. A healing abutment was inserted, and the surrounding tissue was sutured around it. The case was then submitted to the lab, and the option for receiving a 3D Digital Design Preview of the restoration was selected.



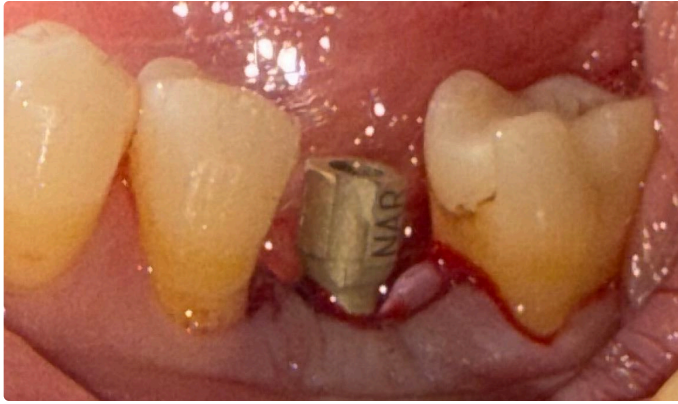
Prior to the patient's intraoral scanning appointment, I used the Scan Body Finder offered by Dandy, which either arranges for shipment of the necessary scan body to your office free of charge or notifies you that the correct scan body is already in your inventory.



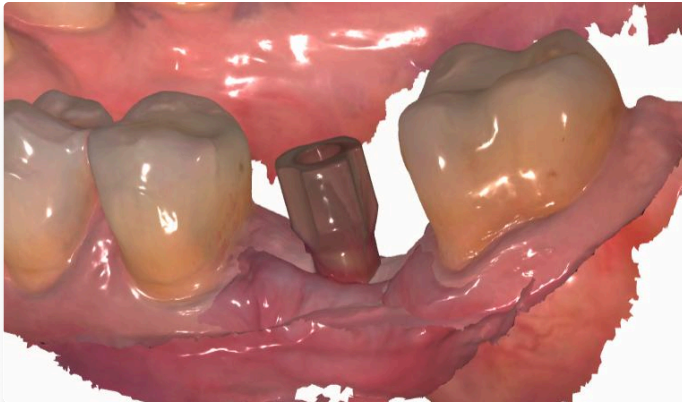
Patient presentation three months post implant placement, ready for restoration



The implant was exposed and evaluated prior to restoration, and an initial scan was taken of the implant site to capture the level of the soft tissue.



The scan body was seated, and a radiograph was taken to confirm full seating.



The scan body, implant site and lower arch were scanned to communicate the position of the implant and the anatomy of the implant site and surrounding teeth to the lab.



A healing abutment was attached to the implant, and the site was sutured.

Implant Restoration Design and Fabrication

The lab received scans and created the CAD design based on information submitted through the scanner's Chairside ordering + Rx software, which thoroughly captures all details needed to design the case based on the patient's anatomy, soft tissue, emergence profile, surrounding teeth, and other aspects captured in the scan along with the doctor's specifications for the restoration.

Within the Dandy digital workflow, you can choose from the following options when prescribing the restoration:

- Interactive, 360-degree Digital Design Preview
- Live review of the restoration design with the lab technician
- Video recording of the technician presenting the restoration design

Depending on your personal attention to detail and time constraints, all of these options are an incredible advantage to both the case outcome for your patient and to you as a clinician. I have chosen on occasion to meet with the lab technician and review the case. When you meet with the tech, these are the options you are presented with:

- The next available time
- Any other time you choose

One thing to note here is that when I have chosen the option to review the design with the lab technician, the Dandy representative presented and remained on time with no delay. I was not stuck in a queue wondering if I was going to be

late seeing patients. Any further questions could be answered via another call or live chat in the Chairside scanner portal.

In the implant case presented here, I chose to review a 3D Digital Design Preview and also have the technician review the case for me via recorded video within the portal.

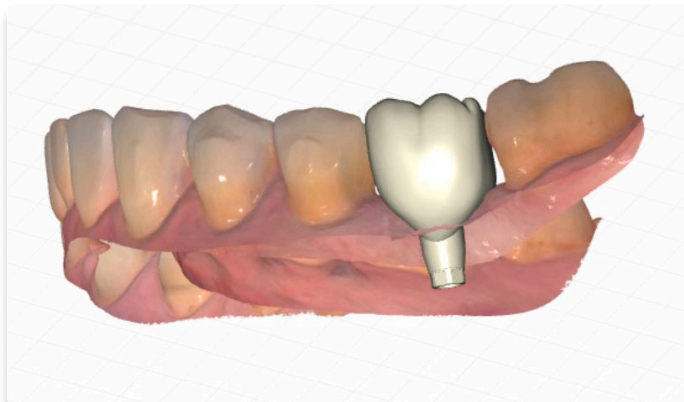
After viewing the video I began to examine both the restoration and abutment in 360 degrees view via the Digital Design Preview. I was able to review them together or I could take off the crown and just look at the abutment. I could also remove both the abutment and crown to look at soft tissue. Last, I could remove the model and examine the restoration alone. There is tremendous control in what you can view.



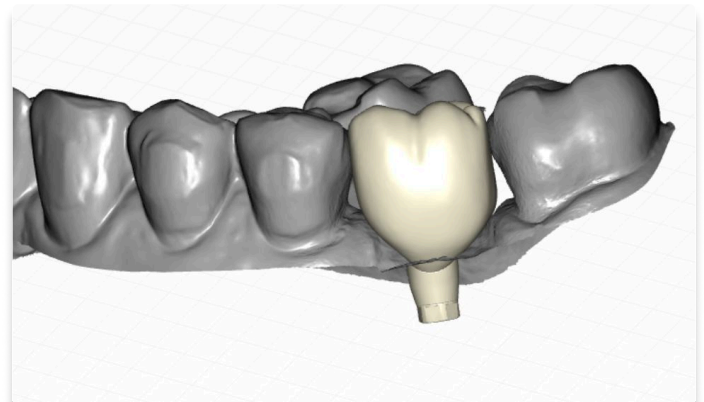
Screenshot of the video recording I received from the lab technician who designed the implant restoration.



Full case design with upper and lower arches present using the Digital Design Preview tool offered by Dandy.



Upper arch removed and evaluation of lower arch only.



A review of the case in stone model view.

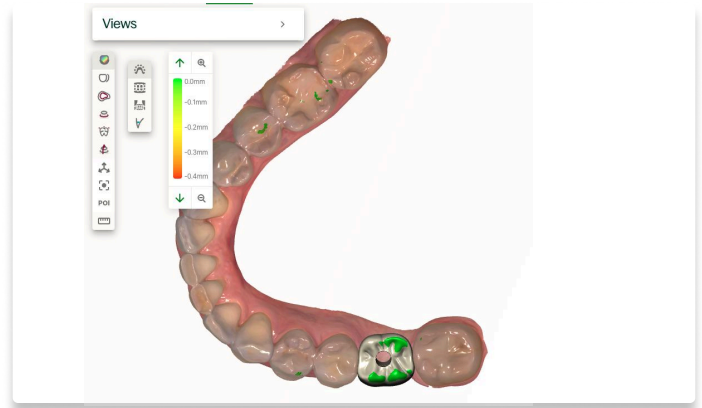


The digital design preview also allows you to view the abutment on its own, and from any angle or orientation you choose.

When I've worked with other labs for restorations, their setups only allow me to preview static screenshots, and time to review the design with the technician is not available—if they offer such services at all. Most labs do not have any communication systems for previewing the restoration readily available. When it is done with other labs, it is with email communication at best, with many days that sometimes go in between the request and information delivery.

With Dandy, after reviewing the proposed design, changes can be communicated to the technician via call with screen share in the Chairside scanning portal. There is also an instant live chat option available for this and any other laboratory service you might need help with. For example, I've contacted the lab via live chat to have a retainer made following implant therapy, with no additional scans needed to produce the appliance.

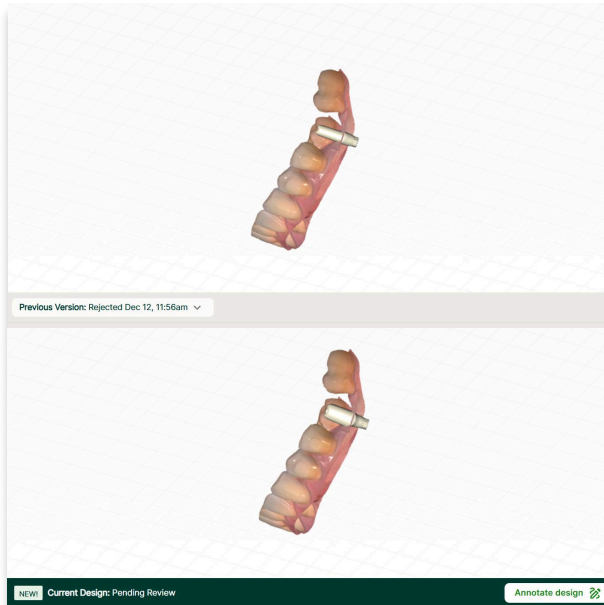
When communicating via the portal there is an opportunity to draw on or near the restoration to indicate alterations or provide more detailed information. The software is intuitive and easy to use.



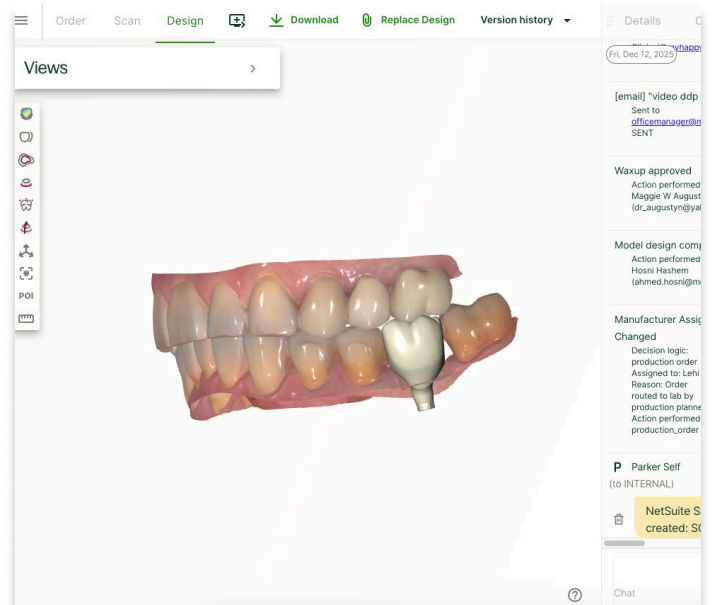
The crown can also be viewed with a heat map of occlusion.

Once the design adjustments have been made by the technician, the doctor is notified via email or phone call that an updated Digital Design Preview is available. When you're reviewing the recommended adjustments, you are able to pull up the restoration design before and after changes have been made for comparison.

This tool offers the flexibility to go back and forth with the designs until you're 100% satisfied with your plan. I have found that collaborating with the technician is quite beneficial, because you have an opportunity to ask for their expertise and recommendations, right there in real time. Once you arrive at the restoration you're satisfied with, you click the approved button and the restoration goes into fabrication.



Before and after of a Digital Design Preview, following a request to bulk out the abutment.



Final restoration design following collaboration with lab technician and minor alterations to the abutment.

Delivery of the Final Implant Restoration

About 1-2 weeks after the initial scan, depending on any requests made to the proposed design, you receive the restoration in your office. A full printed model with flexible gum tissue material is included at no additional charge.

With all the planning that had gone into this case, beginning with the very first rendering prior to implant placement, the delivery of the restoration was very simple and quick. No interproximal, occlusal or adjustments of any kind were needed.

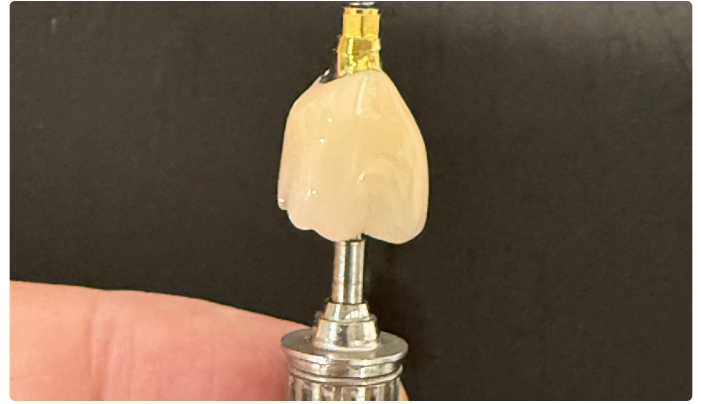
During the delivery appointment, the healing abutment was removed, and the gum tissue was evaluated for health. The final restoration, consisting of a custom abutment with a precemented crown that includes a screw access hole, was seated and immediately

established a precise fit. A screw was threaded into place, and prior to final torquing a radiograph was taken to confirm full seating.

Once it had been determined that the restoration is fully seated, the screw was torqued into place to 35 Ncm and plumber's tape and composite was used to plug the access channel. The patient immediately wanted to see the restoration, and after viewing it, was thrilled. He even took a photo with his own phone to celebrate. His only complaint was that the adjacent teeth had "yellow" staining on the cervical and to address that, he booked an in-chair whitening appointment.



The restoration was provided to our practice on a full-arch model with soft tissue material, and the patient was recalled for final delivery.



The final screw-retained restoration removed from the model



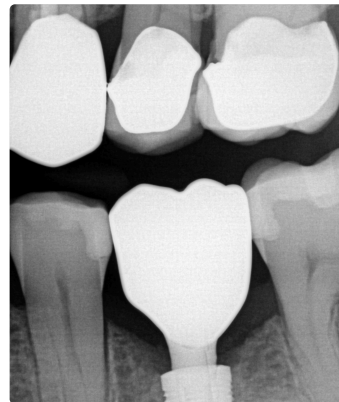
Presentation of patient at restorative delivery appointment.



Removal of healing abutment and evaluation of soft tissue and implant platform.



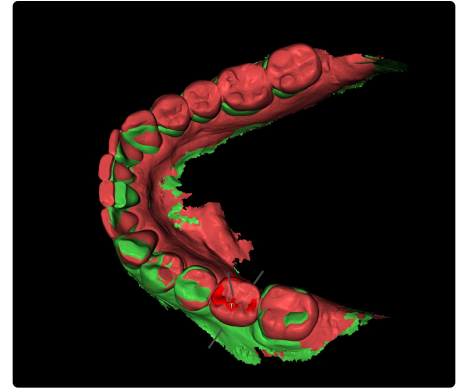
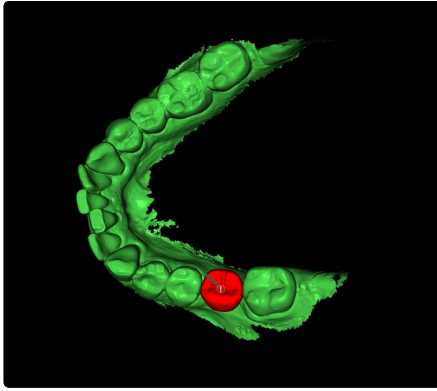
Initial try-in of the restoration confirmation accurate occlusion, interproximal contacts and emergence profile.



Radiographic confirmation of fully seated restoration.



Restoration delivered with access opening sealed with plumber's tape and composite.



Series of scans showing the planned restorative-driven implant placement, the initial restoration design Dandy proposed, and the scans from the planned restoration overlaid with a scan of the delivered restoration, illustrating precise alignment between each phase of treatment.

It is important to mention that unlike other labs that I have worked with, Dandy has one cost for the restoration that includes the milled titanium custom abutment and zirconia crown (or material of your choice). In addition to the low cost for the restoration, when you partner with Dandy you also get a free scanner and a free scan body for every case. And importantly, you have the ability to provide feedback on the design of the restoration in real time.

One last thing to note. As mentioned above, because surgical innervation was needed at the time of the scan, the soft tissue in that scan was not as accurate as it would have

been if a healing abutment had been in place during the healing phase. A choice was made to go straight to scan and restoration fabrication rather than waiting for the tissue to shape around the healing abutment we placed after uncovering the implant. That is not a decision that is made in every case. On the day of restoration delivery, there was a small space between the crown and soft tissue on the mesial-buccal of the crown (see photo A below). A week later the tissue had filled in (see photo B). The presence of bone in the final radiograph within 2 mm of the soft tissue makes it likely that the soft tissue will fill in to the cervical aspect of the restoration.



Photos A and B: Restoration at final delivery appointment with gap between gum tissue and restoration and restoration a week later, with gap almost eliminated

Patient Before and After



Dandy's Technology

Dandy was the first laboratory, nationwide, who offered free scanners to their clients. Several years ago, I had an interest in moving away from analog impressions into digital. I was also a small business owner attempting to grow my practice, my craft. I was doing it while providing my team with the highest compensation in the area, practicing in a downtown suburban location. We had been working with a consultant in attempting to be more profitable, which was another line in the budget. Our margins were tight. Dandy made it possible for me to enter into the category of digital dentistry with no cost. There was no risk. Even if I were to not like it, or if I were to decide to go back to analog dentistry, I could simply ship back the scanner. There would be no loan to worry about, no attempt for a resale.

Had it not been for Dandy, I never would have become passionate about digital dentistry. I would not have taken the time to learn and execute restorative driven implant planning. I might not have even gotten a CBCT scanner and later a mill. My relationship with Dandy was revolutionary for my evolution as a clinician. It allowed for risk free entry into the digital space and started a road for me that has been overfilled with not just promise—it delivered on satisfaction I longed for as a clinician.

Conclusion and Best Practices

What you have seen in this case has been treatment of an edentulous space that illustrates the evolution of implant placement and restoration. And not just any implant placement and restoration, but one that was planned and executed with function and the restorative outcome front of mind, and was meticulously planned to eliminate potential

complications and reduce chairtime. You've seen the one-of-a-kind collaboration between clinician and laboratory made possible by innovations in scanning technology, as well as the opportunity to co-create and design restorations in partnership with the lab reach its full potential.

ABOUT THE AUTHOR

Dr. Maggie Augustyn

Dr. Maggie Augustyn is a Dawson trained practicing general dentist, owner of Happy Tooth, author and inspirational speaker. She earned a doctorate of Dental Surgery from the University of Illinois at Chicago (UIC). Prior to that, she was awarded 2 Bachelor's degrees (UIC and Benedictine University). She is a Fellow of the Academy of General Dentistry, Fellow of the International Congress of Oral Implantologists, Fellow of the American Academy of Implant Prosthodontists and most recently Fellow in the International Academy of Dental and Facial Esthetics. She has been named one of Top CE Leaders in Dentistry 3 years in a row by Dentistry Today.



Dr. Augustyn reads, researches, writes, and speaks on the things that make us human, that make us hurt and that make us come alive. She has published over 100 articles in magazines such as Dental Economics, Dental Entrepreneur and others. She is a frequent contributor to Dental Entrepreneur Woman. She takes most pride in her role as a columnist in Dentistry Today publishing monthly in "Mindful Moments". She has been featured on various podcasts and is a sought after nationwide speaker bringing attention to the importance of authenticity and self-discovery.