

STAYING AHEAD OF THE CURVE: INTEGRATING A DIGITAL SCANNER INTO YOUR IMPLANT WORKFLOW

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It's no secret that technology is finding its way into almost every facet of our lives, and the dental world is seeing this first hand with the advent of digital oral scanners. As dentists, we owe it to our patients to be up-to-date on the latest technology trends and to begin implementing new pieces of technology into our everyday practices. Although the thought of learning a new process and investing in new equipment can be scary, it's even scarier to think that if you don't invest in cutting edge equipment, you could be holding your practice back. By breaking out of the technology comfort zone and investing in a digital oral scanner, a practice can become a pioneer in all-digital workflows and grow with the technology as it moves forward.

To stay ahead of the curve, my practice began integrating the 3M™ True Definition Scanner into our workflows over five years ago, and we haven't looked back. Recently, with the availability of the Straumann® CARES® System as a Trusted Connection, we have been able to implement an all-digital workflow to our implant procedures as well. With the Straumann Trusted Connection, patients now have the prospect to receive their crowns sooner with less time in the chair for the procedure, which can often be a key aspect of case acceptance. This connection means one less analog procedure holding us back from fully integrating digital scanning into every procedure we do – which is the ultimate goal for efficiency and predictable outcomes.

Choosing the Right Scanner for Your Practice

The act of choosing which digital oral scanner to purchase can be stressful, but determining what features your practice will utilize most can help guide your de-

cision. It's important to take the time to consider your practice's needs – if you purchase a system that doesn't perform all of the tasks that are most important to your practice, the scanner could end up sitting in a corner and collecting dust.

When we chose the 3M True Definition Scanner, we wanted a system that could



Once the field is prepared, an adept user can scan a full diagnostic arch in as little as 60 seconds with the new 3M™ True Definition Scanner.

integrate into our existing workflows and would grow with our practice. The scanner's open architecture for STL files allows us to keep using our existing labs and equipment, and with the help of training provided by 3M, only a brief learning period was needed to become proficient in using the system. Because we didn't have to worry about a major learning curve and we didn't have to change our existing practice techniques, using the scanner quickly became second nature to our staff.

For us, one of the most significant benefits of the 3M system was its list of verified Trusted Connection workflows. We know these workflows have been extensively vetted and tested to guarantee the results are accurate and predictable

every time we use them. This guarantee gives us confidence in each procedure we complete, and when it comes time to seat a restoration or implant, we know the adjustments will be minimal, if any are needed at all. By using a digital oral scanner that consistently offers results we can trust, our office saves considerable time during delivery appointments, which can lead to an increase in revenue.

Quicker and More Accurate Implants: The Straumann Trusted Connection

With our previous all-digital impression workflow, we used our 3M True Definition Scanner for almost any procedure, from single crowns and bridges to multi-unit veneer cases including orthodontic aligner cases. But even with a digital system, our implant cases required that we take an analog impression with polyvinyl siloxane (PVS) material. When the Trusted Connection to Straumann CARES was released, we began using it immediately and saw total production time for implant abutments and crowns decrease on our very first case.

The scanning process for an implant case differs from a traditional scan for a crown or bridge only in that you first place a scanbody onto the head of the implant. Upon completion of the scanning process, we can digitally send all of the scan images to the lab. Virtual design and digital fabrication of the crown and abutment can begin immediately. With the highly accurate scan image that is taken, the lab is able to virtually create custom abutments and crowns for each patient, which translates to a better fitting crown that will last longer, especially when compared with stock abutments.

Stock abutments aren't made for the

specific crown shape or tissue contour, so although the fit is often close, it's not perfect. A custom abutment allows the margin of the abutment and crown to be positioned right at tissue level with ideal contour in mind. This helps immensely when cementing the crown because the excess cement doesn't flow down around the implant and get trapped under the tissue, which can lead to infection and a compromised implant. Cleaning becomes much easier and less invasive when the margins line up with the tissue, and it's easy to verify no cement is left around the implant with a simple radiograph.

With the all-digital process, the lab can 3D print a model of the teeth and place the abutment and crown on it to ensure a proper fit. Upon final placement, the abutments and crowns often need minimal to no adjustments, which further contributes to time-savings for both the patient and clinician.

In contrast, when completing this procedure with PVS materials, we would remove the healing cap and we would place an impression post instead of a scanbody. We then would take an impression and send it off to the lab. In some cases we would actually have the abutment fabricated and placed in the mouth, take another impression of the abutment and then have the lab fabricate a crown, which added a significant amount of time to the process. Transitioning to an all-digital process has allowed us to eliminate extra steps and appointments, while still providing outstanding results.

CASE STUDY

A 60-year-old patient presented with pain when biting on tooth No. 18. Upon radiographic examination, a widened ligament and periapical lesion were noted on the end of the root, and the patient returned to undergo root canal therapy. During treatment, a crack running from mesial to distal was discovered. After determining the tooth was non-restorable, it was removed and a synthetic bone graft with gortex resorbable membrane was placed. The site was allowed to heal for 5 months before a Straumann Bone Level 4.8 mm Regular CrossFit™ implant was placed.

When completing this implant case with the 3M True Definition Scanner, the implant placement procedure and subsequent healing period (4 months in this case) is the same. The difference is in the fabrication process. A true 3D optical impression of the mouth is made with with the scanner instead of using traditional impression material to initiate the process of creating an abutment and crown.

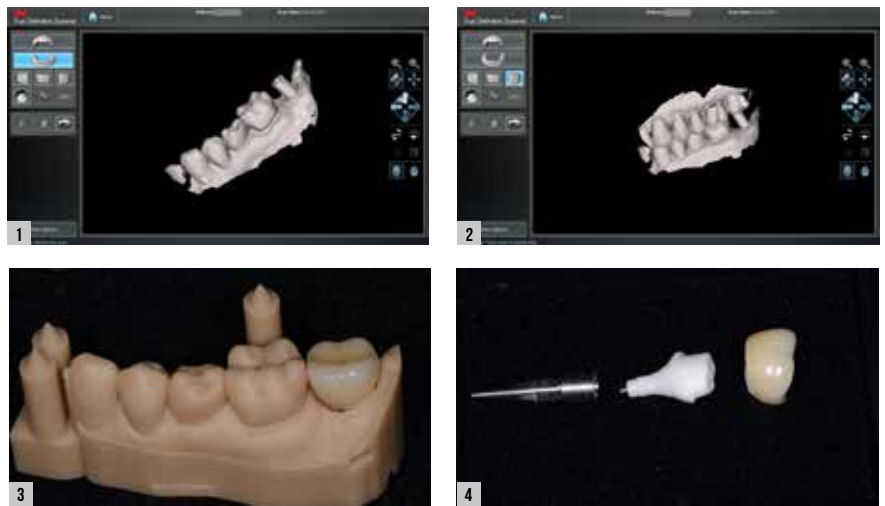


Fig. 1: Once the implant is ready to be restored, the healing cap is removed and a Straumann® Mono Scanbody is placed on top of the implant. The scanbody consists of a small plastic predetermined coping that screws into the implant during the digital impressing process. This scanbody is only hand tightened. This allows the digital scan to relay the accurate positioning and angulation of the implant. After the scanbody is placed, we scan the area of the implant and the opposing arch. **Fig. 2:** A bite scan is taken with the patient biting down in centric occlusion. Often the scanbody must be removed to allow for proper occlusion. After placement of the healing cap, the patient leaves until delivery. Upon completion of the scan, we fill out the on screen prescription and select the implant type, abutment and restoration material. The digital scan files and lab RX are then uploaded to the lab. **Fig. 3:** After receiving the digital files, the lab uses the Straumann® CARES® Virtual Software to design and order the prosthetic components. The SLA model of the area is sent for printing and simultaneously the custom abutment and crown are fabricated at Straumann's central milling facility. The 3D model includes a socket for the corresponding implant analog that allows the lab and dentist to verify the fit of the abutment as well as the esthetics in the mouth. **Fig. 4:** The Straumann® Repositionable Implant Analog, custom milled abutment and crown all digitally fabricated by the lab.



Fig. 5: The healing cap is removed. **Fig. 6:** The custom zirconia abutment is placed and torqued to 35 N-cm. The slight blanching that appears when tightening is normal and will disperse in time. **Fig. 7:** Polytetrafluoroethylene (PTFE) tape is inserted into the screw housing to ensure no voids occur when the cement is placed.

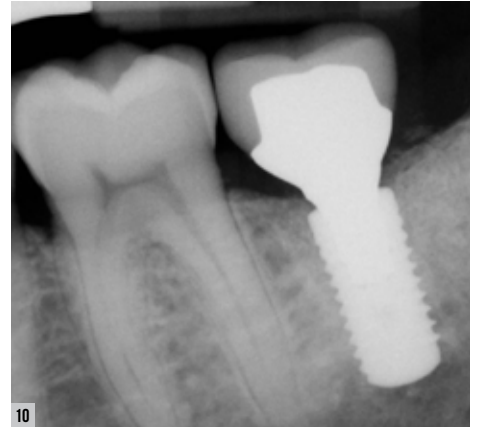
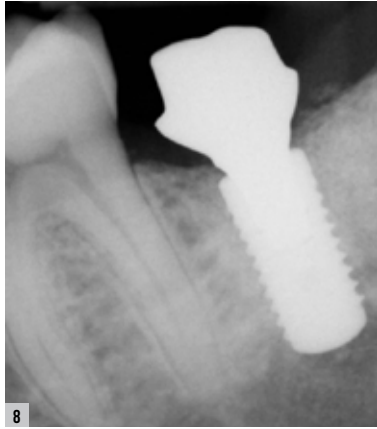


Figure 8: A radiograph confirms proper placement of the implant and abutment. **Fig. 9:** The final crown is cemented with 3M™ ESPE™ RelyX™ Unicem 2 Self-Adhesive Resin Cement. The implant is left slightly out of occlusion to allow for the natural compression that occurs on adjacent teeth under heavy occlusion. **Fig. 10:** A radiograph of the completed implant, abutment, and crown. This view confirms no cement remains around the margins or implant.

A Tool for the Future

The 3M True Definition Scanner has had an immensely positive impact on my practice, and has added efficiency, ease and consistency to many of our workflows. My scans can be completed in a fraction of the time of a traditional impression and are incredibly accurate. With the newest addition of the Trusted Connection to Straumann, the implant procedure process has been streamlined to become

less intimidating, more specific, and much faster. This Trusted Connection allows my practice to be completely digital, and also makes us one of the few practices that is able to offer our patients an all-digital workflow for implant procedures. In my opinion, digital oral scanning is the future of dentistry and is here to stay. The proliferation of new, verified Trusted Connections allows me to truly realize the potential of such a powerful machine. ■



Dr. John Weston is a native Californian who received his doctorate from Oklahoma University in 1989 and graduated with Honors. As a commissioned officer in the US Navy, he received

multiple advanced medical certifications while completing a General Practice Residency at Naval Hospital, San Diego and served independent duty in support of Desert Storm. Dr. Weston has earned the credential of “Accredited Fellow” by the American Academy of Cosmetic Dentistry (AACD), an honor shared by fewer than 51 clinicians worldwide. Dr. Weston is past Chair of the AACD Professional Education Committee and has served two terms as an elected member to the Board of Directors. He is currently an active Accreditation and Fellowship Examiner and is serving a three-year term on the American Board of Cosmetic Dentistry. He lectures nationally and internationally, publishes articles, evaluates new dental products and has been practicing in La Jolla for the past 20 years with an emphasis in reconstructive and esthetic dentistry. He is owner and director of “Scripps Center for Dental Care,” a multi-specialty dental center located at Scripps Memorial Hospital, La Jolla, California.