ADVANTAGES OF INTRAORAL SCANNING

Over the past 25 years, we have witnessed a change from analog to digital in the way data are captured and stored in many aspects of our lives, including communications, banking, entertainment, and more. In dentistry, we have experienced the transition to digital technologies in our shift to paperless practice management systems and digital radiography. The transformation of dental lab work from analog to digital has been extremely rapid. In just 10 years, the percentage of restorations that have a digital component in their manufacturing has jumped from less than 5% to more than 50%, and that number continues to rise. New restorative materials are being introduced and improved that are manufactured exclusively through the digital workflow. These materials—zirconium, lithium disilicate, and nano-ceramics—often eliminate the need for metal substructures and, in the case of implants, can significantly lower production costs.

Historically, intraoral scanning has been challenging compared to extraoral scanning of models. Most dentists avoided intraoral scanners because of the expense, cumbersome workflow, and steep learning curve. Labs chose to scan conventional models to introduce them into their digital workflow. However, the past 3 years has seen an explosion of new, chairside optical scanners that are finally up to the task of routinely capturing the intraoral environment in a rapid, easy, and economical way.

BENEFITS AND ROI

The paramount advantage of digital scanning is the ability to deliver better dentistry on a consistent basis. Although both impression material and optical scanning are theoretically capable of producing accurate models, the clinical reality is often different. A 2005 Lab Management Today survey found that 59% of impressions did not convey the information that labs needed to make an ideal restoration. This is not related to the accuracy of the impression material but rather to the challenge of impression making in a wet environment, on the difficulties of working with a moving patient, and the difficulty in evaluating the impression chairside. It is often difficult to tell if the margin has been fully captured or if a “pull” is significant when looking at the “negative” in an impression. Remaking impressions is time consuming, expensive, and disliked by patients. Often, it is not possible to fully assess the quality of the impression until the model has been poured. By that time, the patient is long gone and there is additional inconvenience and expense involved in remaking the impression. In contrast, optical impressions are easy to evaluate immediately as the dentist can view an enlarged 3D virtual model. With many systems, space for restorative material and occlusal clearance can also be assessed while the patient is in the chair. Making corrections to the preparation and impression is free and often just part of the optical scan needs to be retaken. The patient benefits by having a better restoration in fewer visits along with a better experience while the dentist saves time and minimizes patient
dissatisfaction. Financially, eliminating expensive impression material, saving chair time and reduced lab fees, makes optical impressions an economic plus for the office.

As new scanners have entered the market, the price has declined while new features have been added. Several of the scanners no longer require a reflective powder, greatly simplifying the impression process and reducing the learning curve. Some labs offer a discount of up to 20% for digital impressions. A number of manufacturers offer the ability to plug the optical scanner into a laptop, making the process easier in tight, clinical spaces.

**INTEGRATION**

When choosing a system, there are additional considerations that should be taken into account. The ability to upgrade the optical scanner so that restorations can be designed and milled in the office is not available on all systems. Even when that option is available, it may mean dealing with multiple manufacturers as opposed to a single company with an integrated system. While many dentists may initially only be interested in the optical scanning segment of the workflow, there is a good chance that as design and milling improves, more dentists will choose to incorporate this part of the digital workflow. The dentist also needs to know if his or her lab can accept scans from their optical scanner.

Integration with CBCT is now available on some systems, which allows for the rapid and inexpensive making of precision surgical guides in the office. Dentists should have an idea about their future needs when choosing a system. Support is also an important consideration, as some systems are sold by large distributors with extensive service departments and others come from small, local distributors. In general, the major manufacturers are the first to have additional features and are distributed by the major supply houses.

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TRUE SUCCESS WITH ANY TECHNOLOGY IMPLEMENTATION COMES WHEN THE ENTIRE PRACTICE IS ON THE SAME PAGE. TIME AND ENERGY MUST BE SPENT ON TRAINING ALL MEMBERS OF THE DENTAL TEAM SO THAT THEY UNDERSTAND THE BENEFITS OF DIGITAL TECHNOLOGY AND THEY CAN PROPERLY EXECUTE A SUCCESSFUL WORKFLOW.

DIGITAL DENTISTRY... ARE WE THERE YET?

technology is influencing the world around us and dentistry is by no means immune to this trend. One area of particular note is the recent explosion of the CAD/CAM marketplace. For nearly 30 years, Sirona's CEREC (www.sirona.com) platform was the only player in this arena and if a practitioner chose to enter this world they were forced to jump in with both feet. The landscape over the past few years has changed drastically, with many more competitors entering the market, and practitioners today have the flexibility to enter this digital world in any way they believe is appropriate for their practice. This entry point can range from simply digital impressioning all the way through essentially creating a digital lab in one’s office.

ADVERTISER SHOWCASE

BENCO DENTAL ONEVISIT
Benco’s new solution—OneVisit—provides same-day restorations. Affordable innovation has long been sought in dentistry and now, with the 3M True Definition Scanner used with the IOS Glidewell TS 150™ mill, technology is no longer something of dreams.

benco.com
800-90-BENCO
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KELLER LABORATORIES
The clear leader in bite guard solutions, Keller Laboratories is a full-service dental laboratory and manufacturer of dental prosthetics. Keller accepts digital files, VPS impressions, or full-arch models for NTI-tex Plus™ and bite guard cases.

kellertab.com
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Circle #3 on Reader Service Card
TODAY'S OPTIONS

Most individuals would agree that the traditional workflow for crown and bridge restorations is fraught with error and many steps must align for a restoration to be truly successful. In addition, most would agree that a patient would prefer not have a tray full of impression material placed in their mouth for 3 to 5 minutes, wear a provisional crown for 2 to 3 weeks, and return for a restoration on second appointment. In an ideal world, a highly accurate digital impression would be captured and a restoration would be designed and fabricated in office for delivery on the same appointment. Although this would be ideal, this workflow requires the clinician or trained staff member to take on the responsibility that previously fell with the laboratory. If an office chooses to enter this world in total, the practitioner now has the ability to choose a system from Sirona (CEREC), Planmeca/E4D Technologies (PlanScan, www.e4d.com), Carestream (CS Solutions, www.carestream.com), and many others will come to market as time goes on. Each of these systems has a combination of a digital impressioning unit, design software, and an in-office mill.

If, on the other hand, a practitioner would like to enter the digital path incrementally, they can do this by simply starting with a digital impressioning unit that has the ability to grow as time goes on. These units can capture highly accurate digital impressions when proper soft-tissue management is implemented and the captured digital data can then be sent to a dental laboratory for restoration fabrication. Many systems, including 3Shape's Trios (www.3shape.com), Align's iTero (www.itero.com), Planmeca/E4D's PlanScan, and 3M ESPE's 3M™ True Definition Scanner (www.3mespe.com) now have the ability to export data in an open architecture stand point (open STL file) to essentially any dental laboratory, whereas other systems (Sirona's CEREC) have a closed data set that can only be used by partner laboratories. If in the future the practitioner chooses to pursue an office milling, a milling system can simply be added. Over the past few years, more and more systems are adopting an open architecture format and multiple milling systems can now work with different digital scanners. This allows the practitioner to choose the setup that is right for them.

WHAT PRODUCTS OR SERVICES DO YOU PLAN TO PURCHASE IN THE NEXT 12 MONTHS?

<table>
<thead>
<tr>
<th>Product/Service</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Digital imaging/panoramic x-ray equipment</td>
<td>11%</td>
</tr>
<tr>
<td>Cone-beam technology</td>
<td>9%</td>
</tr>
<tr>
<td>Digital impression system</td>
<td>12%</td>
</tr>
<tr>
<td>CAD/CAM technology</td>
<td>6%</td>
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<tr>
<td>Digital scanner</td>
<td>18%</td>
</tr>
<tr>
<td>I do not plan on purchasing any of these</td>
<td>65%</td>
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</tbody>
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CONSIDER ROI

In addition, new services are available where a practitioner may actually have both a digital impression system and a milling system available.

ADVERTISER SHOWCASE

GLIDEWELL LABORATORIES

GlideWell Laboratories offers more benefits with digital impressions. In addition to documented improvement in clinical accuracy compared to conventional impressions, there is no inbound shipping cost, quicker case turnaround, and a $20 per unit savings off the list price.

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Trident Dental Laboratories has been providing innovative dental products and a commitment to excellence since 1988. When dentists send chairside scans from a wide variety of systems, Trident offers model-less restorations at the most competitive prices.

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in office; however, they can outsource the design phase to a third party for a relatively small cost and not have to be intimately involved with this phase.

From a business standpoint, the return on investment (ROI) can be both simple and difficult to calculate. If one decides to fabricate the restoration in office, a simple ROI essentially takes into account the savings in laboratory cost and a small portion of chair time relative to the monthly payment over a period of time. This ROI is a very tangible number. On the other hand, if one chooses to enter the digital impression route only, the numbers become a little softer. The investment in the system is offset by a reduction in laboratory fees (many labs discount charges when a digital impression is sent), decrease in material costs related to traditional impressions, faster laboratory turnaround times, and potential increase in patient flow.

As time goes on, our technologically savvy patients will seek out practices with this technology because they perceive the digital process as patient friendly. In addition, internal referrals are likely to increase as well when patients have positive experiences.

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References