Digital impressions advantages and a model-less workflow

By Meir Assoulin, owner of *Dentline* laboratory, Tel-Aviv, Israel

I never thought that my lab could create a crown without a model? Now i know it's possible with the right technology.
In ***Dentline*** laboratory we use DSi 6000 impression scanner (Optimet) as part of our routine.
As a lab owner, dealing with challenges in every day work, I will try to outlines the many benefits this type of workflow can bring to your lab, and of course, your customers – the dentists.

As a dental technician, you have so many technologies to choose from, technologies that are designed to improve the quality of the restoration, while making you more efficient at the same time. The possibilities continue to grow as technology continues to improve.
Incorporating a digital model-free workflow into your lab is one of those possibilities, and one that can really distinguish my lab from the competition, putting them on the leading edge of dentistry.

Let me take you through the digital workflow process of a single-unit, CAD/CAM produced dental office to the lab and back again—all without a gypsum model.

Step – by Step

1. Dentist sends a triple tray of a single crown restoration to the lab.
2. The dental technician scan the tray both sides in Dsi-6000, using the special holder that allows an automatic occlusion calculation.
3. STL files for both jaws with the correct occlusion are been created and sent to cad for design. Using exocad design software, the restoration can be sent for production the same day.
4. Production takes few hours when produced in the lab. Or between 2-4 days, when production is outsourced and sent back to the lab for final check.
5. Seating fit doesn't have to be with gypsum model, a printed model can be used or in case of simple cases no model is needed.
6. The crown sends to the dentist back.

<u>The biggest advantage is with full contour zirconia crowns.</u>
The dental market moves more and more to use full contour zirconia crowns, the process with the DSi impression scanner will be only 1 step.
No need for gypsum model at all.

Ease of use

Our dental technicians at the lab were able to work easily with the scanner and software after a short training.
The scanner is fully automated; by placing the impression tray on the special holder they can be free to design other cases at the scanning time.
Defining the scanning area was very easy and intuitive, and can be learned remotely.
The scanner is integrated with exocad design software, which is user friendly and includes the complete solution for all cases.

Different technologies in the market

As mentioned before, there are many technologies available in the market. I'll try to make some sense of all the existing possibilities in order to clarify the benefits of the product I use – Dsi 6000 (by Optimet).

Most of the scanners available in the market are based on a triangulation technology; it's a relatively inexpensive option based on one or multiple cameras to collect the data.
The angle created between the camera the sensor and the scanning object is essential but also very problematic.
It is limited to positive objects since the angle cannot reach any part in negative object, like impressions for example.
Stiff angles and deep cavities can also be very challenging with this technology.

How can you overcome challenging cases like those?

DSi 6000 scanner is based on a unique patent technology called "Conoscopic Holography".
By creating a co-liner method that enables scanning without using and angle. The laser beam is projected on to the object and returns at the same path.
This sophisticated technology allows scanning negative objects and other challenging cases in an easy and accurate way.

The digital, model-less workflow cuts down turnaround time.
Usually, our lab used to take two weeks for a lab to complete a crown once they receive the impression from the dentist. Working without a model cuts that time to 24-48 hours.
We didn't have to fabricate the gypsum model, scan it, design it and only then produce.
We simply received the impression tray from the dentist, design the restoration, milled it, polished it, and delivered it ready for seating. The seat time was minimal, which means we have our design parameters dialed in. This process completely cuts out many fabrication steps and allowed us to produce this restoration more efficiently."

What makes the overall process more efficient and saves time in different areas throughout the process came from the model-less approach.

You get a more accurate fit when you scan impressions, and that means fewer remakes.
By scanning directly the impression tray, we avoid the inaccuracy that can occur from gypsum deformation. Reducing steps in the process and human intervention will necessarily reduce the chance for errors.

An experienced digital lab that understands and can manage the challenges of working with the design software to establish correct design parameters without using a model can ensure you receive that accurate fitting crown you and your patients expect. The idea behind a model-less workflow is to save time and be more efficient.

A digital workflow gives you a competitive advantage. Whether you're just interested in scanning impressions or want to try a model-less workflow when it makes sense for a case you're working on, your customers (the dentists) are going to notice that your lab is more high-tech than the one down the street. They'll see you've invested in your lab, and that helps put them at ease, while also saving you time and money.

No need Spray or powder.
When most of the companies claim to have the ability to scan impressions, their way to solve the limitations of the technology is by using tools that are reducing the scanning accuracy, for example, using spray or powder. Using spray or powder can reduce the accuracy significantly, what ultimately will be reflected in the final prosthetic part quality.
DSi 6000 impression scanner no spray or powder is needed, so the accuracy level is preserved.