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Dental Impressions: The Digital Alternative

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Dental impressions: THE DIGITAL ALTERNATIVE

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Image courtesy of 3M

Dental impressions are defined as "a negative imprint of an oral structure used to produce a positive replica of the structure to be used as a permanent record or in the production of a dental restoration or prosthesis."[1]

The concept of taking dental impressions to create dental models was first introduced in the mid-18th century when Phillip Pfaff, dentist to Frederick the Great of Prussia, described the technique of pouring plaster of Paris into a beeswax impression.[2] While our materials have certainly evolved over the course of the last 260 years, we continue to follow a similar workflow in our attempt to create an accurate analog representation of the oral environment.

This conversion process presents many challenges for practicing clinicians that are related to impression retake cost, time, patient comfort and frustration when errors lead to an ill-fitting final restoration.

It is appropriate then to pose the question, why is the most critically important step in what we do in restorative dentistry, which is to transfer the data from the patient (dental impression) to the laboratory (gypsum model), continued to be captured in an analog manner when we have a viable digital alternative?

This analog dental impression workflow also creates complications for our dental laboratory partners that are perhaps best illustrated by a 2015 survey in which 47 percent of the survey respondents ranked dentists' impression-taking skills as their number one client related challenge.[3] The results of this survey are supported by an often cited 2005 article in the Journal of Prosthetic Dentistry which concluded that 89.1 percent of dental impressions sent to a dental laboratory had at least one or more observable, critical errors.[4]

Regardless of whether one chooses to replicate an oral structure digitally or in a more conventional manner, paying attention to the fundamentals of preparation design, tissue management and appropriate isolation is paramount. However, digital impressions address many of the concerns related to retake cost, time, patient comfort[5] and, due to their accuracy,[6,7] helps to reduce frustration when delivering the final restoration.

Dentistry is no different from any other business sector in the sense that there has been a quantum shift in the design, processing and manufacturing of goods. The laboratory community recognizes that digital impressions are integral to the future of their business model and although 41 percent of dental laboratories are equipped to receive digital impressions, only six percent of the cases submitted are from digital intraoral scans.[3]

The goal of every dental practice is to continually improve clinical outcomes and profitability, with gains in production quality being one of the key drivers of these improvements. As such, it is only reasonable to assume that our profession will continue to embrace digital methods in managing one of our most routine and critically important procedures.

In a continued effort to be on the forefront in educating the dentists of tomorrow and recognizing that the future resides in a digital workflow, we at the Marquette University School of Dentistry are currently modifying our curriculum to place a stronger emphasis on emerging dental technologies. One such example is our acquisition of several 3M™ Mobile True Definition Scanners. I am proud to say that

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we are the first dental school in North America to have secured these recently introduced intraoral scanners for use by our students in the pre-doctoral clinics.

I view these units as game changers that offer distinct advantages over conventional impressions, and with many intraoral scanner options available, there is no need to wait to join the early adopters as you can easily find one that meets your individual practice goals. Implementing this contemporary approach in capturing "positive" images of oral structures will certainly afford you the opportunity to improve your clinical outcomes while showcasing your interest and commitment to providing-state-of-the-art dentistry to your patients.

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