



The Right Clinical Work-Up – and the Right Impression Material – When Creating Dentures for Edentulous Patients

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Our dental laboratory has been told frequently over the years that the amount of preclinical training dental school students receive on removable prosthetics is continuing to decline. This is particularly problematic when you consider that the process for creating a denture is one of the most complex types of restorations and hence requires more communication between the dentist and the laboratory than other restorations. As a result, creating dentures has probably never been more challenging for dentists, which is why the quality of the average denture produced today may be well below what it was 30 or more years ago. And that's why our laboratory has committed itself to bridging the knowledge gap and helping dentists and technicians alike become much more successful with the dentures they provide their edentulous patients.

What we teach dentists

We've been providing clinical courses in Removable Prosthetics at Edmonds Dental Prosthetics, Inc. for many years. In 2020, we have become the North American training partner of the Swiss School of Prosthetics, which is an extension of the Zurich, Switzerland-based Swiss School of Prosthetics by CANDULOR continuing education organization. Our school facility is located in Springfield, MO. Our clinical courses have been attended by almost 50 dentists over the past two years, and we also offer several technical courses for lab owners and technicians as well. Two operatories are being added to the facility to offer live-patient courses.

Our courses for dentists are grounded in the philosophy that successful removable prosthetics are based on impeccable working documents for both the dental practice and the laboratory. Our students learn the essentials of support and position stability, initial anatomic impressions, functional impressions, pre-bite registrations, esthetic checking templates, and the determination of the definitive jaw relations using the GERBER method of intraoral support pin registration.

What we've learned from dentists

Our attendees have educated us in three main areas. First, they've told us that their biggest frustration with creating dentures is difficulty of achieving reliable and predictable results. Eliminating that frustration – by allowing them to create high quality restorations with as few appointments and as little rework as possible – is the goal of our course.



Second, we've learned that the two biggest pain points for dentists restoring edentulous patients are recording the physiological centric relation, which is essentially determining where the patient's bite used to be according to the neuro-muscular programming, and taking the impression, which will be the focus of this article.

Our third major takeaway from teaching this course is that the vast majority of our attendees omit taking a secondary, myo-functional impression and instead use the preliminary impression throughout the denture creation process. As we will explain later in this article, we recommend strongly against this approach for several reasons.

Anchoring the denture

There are three factors that determine position stability of complete dentures:

1. Physical factors
 - a. The interaction of the denture base, saliva, and the mucous membranes (i.e., adhesion, cohesion, surface tension and saliva flow).
2. Biological factors
 - a. Quantity and viscosity of saliva.
 - b. The shape and volume of the residual ridge.
 - c. Interactions of the tongue and perioral musculature with the denture body.
3. Prosthetic factors
 - a. Type of static and dynamic occlusion.
 - b. Positioning of the denture teeth in relation to the residual ridge and to one another.
 - c. The incorporation of implants for support.

How to make a great second impression

The structures used as a foundation for the denture body are influenced by the movement of several muscles and frenulae. Their movement can destabilize the denture as patients speak, chew and make facial expressions. The denture needs to sit on an area that is myo-static, which means that the dentist needs to create a functional impression of the areas not affected by muscle movement. As noted above, most of the dentists who've attended our course have told us they use the preliminary alginate impression as the final impression rather than taking a secondary myo-functional impression.



We rather vigorously advise our attendees to take a better approach: Make a model from the preliminary impression and then fabricate a custom impression tray. Depending on the impression technique and material employed by the clinician, this custom tray should feature a gap of zero to several millimeters. If done correctly, this secondary impression serves to establish the myo-static areas of the denture bed and establishes the future valve margins.

While omitting the creation of the secondary impression might seem like a way to save time and money, its effect is actually the opposite. The preliminary impression uses a stock tray that simply can't deliver the accurate fit of the custom tray that's used for the myo-functional impression. Moreover, the secondary impression greatly enhances the retention and suction-effectiveness of the dentures.

As a result, skipping the myo-functional impression significantly increases the risk of having to adjust and rework the restoration multiple times – and possibly having to start over from scratch. The cost of multiple reworks or a restart is far greater than the cost of creating a myo-functional impression, particularly since adjustments – let alone remakes – are not billable.

An equally compelling reason to take a myo-functional impression is patient satisfaction: Your patients will enjoy a better fit, and they won't have to go through the hassle and frustration of multiple adjustments and rework.

The right impression material

This brings us to the topic of the appropriate impression material. While compound modeling material (also known as “greenstick”) is viable for capturing valve margins, dentists might be interested in a more convenient option. Of all the impression material brands we've seen over the years, DMG's Honeygum is the one that delivers superior results.

The Honeygum Rigid Extra Fast version is ideal for border molding because its setting time and viscosity hit a Goldilocks-like sweet spot that lets you complete the myo-functional impression all at once.

To complete the impression, Honeygum Light Body creates the most congruence between the denture and the denture bed of any material we've seen. The two materials do not create the detrimental overlaps and delamination of other polyvinyl-siloxane materials.



In conclusion

Dentures tend not to command the respect we feel they deserve, in part because dentists find them challenging to work with and in part because patients can be frustrated by a sub-optimal fit and too many return visits to the practice for rework. However, as we have attempted to show above, using the right clinical work-up – including the creation of a secondary impression – and using the right impression material can significantly reduce frustration and cost for the practice and improve the overall experience for the patient.

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