



Professional Resources

Making Impressions of Subgingival Finish Lines

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The Hydraulic and Hydrophobic (H&H) Impression Technique is the easiest and most predictable way to make an impression of a crown preparation with subgingival finish lines. You do not need tissue retraction, hemostasis or isolation. This eliminates 99% of the frustration and paraphernalia associated with conventional impression techniques. It also eliminates the pain and discomfort experienced by patients who must sit through retraction cord being jammed down into their sulcus, only then to be told that the impression has to be done again.

The H&H technique was developed to fill a particular niche in crown and bridge impressions, which frustrates even the most experienced and competent dentists. Subgingival finish lines are difficult to capture accurately with any conventional crown and bridge impression technique. It is difficult to retract tissue deep enough and long enough to enable the passive flow of low or medium viscosity elastomeric impression material, which can be readily compromised by the presence of even a small amount of blood or saliva.

The H&H technique enables the dentist to capture an accurate impression of subgingival finish lines in the presence of hemorrhagic tissue or copious saliva. In the typical general dental practice, most fixed prosthodontics involves single crowns and many of these have subgingival finish lines. The H&H impression technique is a new and unique development that offers unparalleled ease in capturing subgingival finish lines.

For those who have not tried the H&H technique, we provide a brief description outlining the main points. We have selected a mandibular first and second molar with subgingival finish lines for our example. We commonly see this situation in private practice and we describe the case exactly how we would treat it.

The teeth are fractured and carious (**Fig. 1**). The teeth are pre-pared for metal ceramic crowns. The design of the finish line is a deeply subgingival shoulder with a bevel (**Fig. 2**). Note the copious hemorrhaging due to the depth of the finish line.



Figure 1. Mandibular first and second molar pre-operative.

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Figure 2. Mandibular first and second molars prepared with subgingival finish lines for metal ceramic crown.

We make a double arch impression using a quadrant tray and 30 Second Blue Velvet, a thixotropic vinyl polysiloxane bite registration material (**Fig. 3**). This material has a working time of 30 seconds and an intraoral setting time of 1 minute. Because this material is thixotropic it captures an impression of the prepared tooth down to the gingival. Again because it is thixotropic it does not flow into the sulcus (**Fig. 4**). After it undergoes its initial set at 1 minute, the impression is held on the maxillary arch and the patient opens. The prepared tooth is washed and dried and the Blue Velvet impression is washed and dried. It is important not to remove the impression from the opposing arch. Removing the impression introduces the chance of error because you may not be able to reseat it correctly.



Figure 3. Blue Velvet impression.



Figure 4. Details of Blue Velvet impression.

We then deliver a small dollop of 30 Second Flexi-Velvet, a thixotropic low viscosity vinyl polysiloxane impression material to the cervical area of the Blue Velvet impression of the prepared tooth (**Fig. 5**). The patient closes into the impression and generates hydraulic force by compressing the Flexi-Velvet against the walls of the Blue Velvet impression. This propels the Flexi-Velvet into the sulcus, insinuating itself in between the gingival and root interface, displacing blood and saliva. One minute later the impression is completed yielding a clear and complete reproduction of the sub-gingival finish lines (**Fig. 6**). The fit of the crowns is exceptional (**Fig. 7,8**).



Figure 5. Deliver Flexi-Velvet directly via mixing tip.



Figure 6. Details of final impression.



Figure 7. Buccal view of cemented crowns.



Figure 8. Occlusal view of cemented crowns.

We accomplish most impressions for single units with quadrant trays with 30 Second Blue Velvet and 30 Second Flexi-Velvet in less than four minutes of chair time. We seldom need to remake an impression.

We have been working with the J. Morita Corp. for the last 10 years in developing and refining Blue Velvet and Flexi-Velvet for the H&H impression technique. We have made over 8,000 impressions with a very low need for remake. Our castings fit well and many cases just drop into place.

We do recommend that the master dies receive extra coats of die spacer. In most dental laboratories, for conventional crown and bridge impressions, master dies receive 1-3 coats of 25 micron die spacer. We recommend as a rule of thumb that the dental technician place 5 coats of 25 micron die spacer on the occlusal and all walls of the master die. No die spacer is placed on the finish line.

There is simply no other way to capture a subgingival finish line with such ease and predictability. With H&H, there is no concern for blood, saliva or tissue retraction. For the overwhelming majority of crown and bridge cases, we feel H&H is the best fit.



Dr. Jeffrey Hoos has been in private group practice for 26 years. His practice was started in 1978 with one dental chair and is now a comprehensive practice in Stratford, Conn. with 3 partners and 26 dedicated dental professionals. Dr Hoos has developed many innovative techniques to help achieve maximum patient comfort during their treatment. Dr. Hoos lectures extensively on Implants, Cosmetics, Occlusion, and Practice management. With the support of his wife, Betsy, of 30 years, he is always working on Balancing: the Art, Science, & Business of Dentistry. Dr. Hoos is president of the Giraffe Society; for dental professionals willing to "stick their necks" out. He can be reached for comment through e-mail at jchdmd@msn.com.



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