

Impression Trifecta: Three Tools and Tips for Better Impressions

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Abstract

This article will cover three current techniques and tools available for taking dental impressions. The 5th Hand lip and cheek retractor to capture the fold, Dam-it post dam membrane to prevent gagging and the Occlusal Sweep to force impression material onto the occlusal surfaces of the teeth. All three together ensure accurate perfect impressions.

Learning Objective

How to predictably take perfect impressions for prosthodontics, orthodontics, bleaching trays and other oral appliances.

We are in the middle of a digital revolution in dentistry, yet daily we must revert to using some of our vintage tools to obtain dental impressions. Most impression articles focus on the impression material. This article will demonstrate how to use three unique impression accessories, or tools, along with clear thermoplastic impression trays to obtain perfect full arch impressions for bleaching trays, sleep apnea appliances, night guards, and orthodontic and prosthodontic models.

When used in combination they will eliminate most, if not all, of the problems associated with full arch dental impressions.

Every impression starts off with the impression tray. Custom trays are the gold standard. In order to fabricate a custom tray, a preliminary impression is taken with alginate (irreversible hydrocolloid) and poured in stone. Wax is then placed over the teeth with rest stops cut into the wax relief to limit seating and movement of the custom tray. Fig. 4 illustrates this process. They can then be fabricated with self- or light-cured materials in your office or laboratory at significant cost or loss of time. Since the posterior of the tray is seated against the palate and the tray has a solid design, the impression material is hydraulically forced up and around the teeth, yielding perfect detail.

One step below the gold standard is the all-metal tray. Metal trays are rigid with mechanical features welded internally, which locks the impression material into the tray. They can also be perforated to add mechanical retention of the impression material, but this reduces the pressure and flow of the impression material up and around the teeth. Since most

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Fig. 1



Fig. 2



Fig. 3



Fig. 4



Fig. 5



Fig. 6



Fig. 7

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metal impression trays are solid and opaque, it is impossible to customize them to fit around lingual tori, buccal exostosis or malpositioned teeth. When brand new, they are shiny and impressive. Once cleaned and autoclaved they oxidize, turn dark and stain, and no longer looking sterile to the patient.

Today we live in a clean, disposable world and plastic impression trays have superseded the use of metal trays and, many times, custom trays. Using a clear disposable solid impression tray, as shown in Fig. 5, allow easy visualization of the underlying anatomy. Solid trays support the impression material and force the material apically. Solid trays work exceptionally well with polyether materials and rarely require an adhesive. Alginate and polyvinyl (PVS) requires an adhesive and perforations to lock the material inside the tray. Perforated versions are available from the manufacturer, or you can perforate the trays with a number eight round bur. With the extremely heavy-bodied PVS materials currently in use, the large perforations

found in the tray allows some hydraulic pressure relief when seated. All plastic trays can be manipulated with heat, just like dental compound, to create a custom tray. A Bunsen burner or butane torch will allow you to modify a specific section of the impression tray (Fig. 6). Wet your forefinger and thumb or use Sargeant pliers to bend the tray into any shape needed to clear the abnormality. Cool down the plastic with cold water or room temperature air and it has the same hardness as before. Try the tray back into the mouth, further customize the palatal section of the tray with wax, acrylic or heavy stiff bite PVS and your first step to a perfect impression is finished.

When restoring implants, the clear disposable plastic impression tray allows precision placement of holes over the implant copings and their abutment screws for accurate positioning with an open tray impression technique. This technique reduces the chance of misplacing the transfer copings back into the impression. It also eliminates distortion of the impression upon removal and makes it easier to remove the impression



Fig. 8



Fig. 9



Fig. 10



Fig. 11



Fig. 12



Fig. 13

from the mouth when the implants are not parallel. Fig. 7 demonstrates the marking of the holes and the placement of the holes to allow try-in of the impression tray. Once the tray is seated, the excess impression material is swept away to expose the screw heads. The exposed screws and final impression are shown in Figs. 8 and 9.

When using metal or plastic impression trays, the next step is to close off the back of the tray. All classes of impression materials at first flow like a liquid, but then gel into a solid state. Liquids will follow the path of least resistance. Upon seating a loaded impression tray into the mouth, the path of least resistance is the soft palate and the material tends to run or drip down the patient's throat. In an effort to slow down this cascade of material, many doctors will use a bead of wax. Fig. 10 demonstrates an impression tray with a wax post dam and palatal stop. This rim of wax creates a speed bump which rarely stops the flow of impression material.

Dam-it post dam membrane is a microporous membrane designed to form a fence, redirecting impression material up into the labial fold and hamular notch (Fig. 11). It has been proven clinically to be compatible with all impression materials. Place a strip of Dam-it membrane across the posterior of any tray. The weight of the material prevents it from imploding until seated. It is the same analogy to a swimming pool. Once filled with water, the walls remain upright until emptied. Dam-it's microporous design ensures that it becomes incorporated into alginate, polyether and polyvinyl impression materials. Figs. 12 and 13 illustrate the detail of the tuberosity region, along with the hamular notch. It eliminates the pulls and drags frequently found in this area of an impression and helps to better capture the distal of second and third molars.

Before taking an impression with any material, have the patient brush their teeth and rinse out their mouth. This removes the

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Fig. 14



Fig. 15

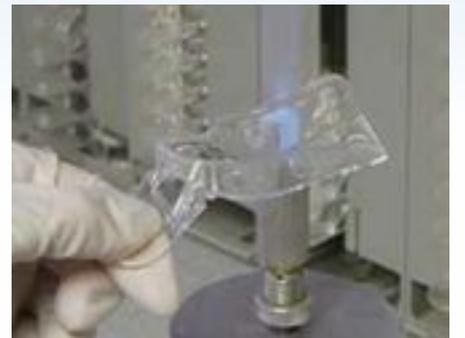


Fig. 16



Fig. 17

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chance of debris remaining on the teeth. Once settled back in the chair, insert an appropriately-sized 5th Hand lip and cheek retractor (Fig. 14). This simple device provides better access to the oral cavity and, at the same time, prevents the patient from catching their upper lip on the impression tray. Bend the flaps in the posterior, as shown in Fig. 15, to conform to the plane of the cheek. These flaps were designed to hold dry angles in place and also cause ischemic compression of Stensen's Ducts blocking the flow of saliva. White foam pads are provided by the manufacturer to be placed on the periphery to provide a cushion against the alveolar ridge (Fig.16). When taking impressions requiring full detail of the labial fold, you can place material onto the retractor and then sandwich the loaded tray onto the retractor (Fig. 17). The 5th Hand retractor is then pulled



Fig. 18

straight out, before the impression material sets. At this point, manipulate the upper lip and you have captured the labial fold (Figs. 18 and 19). This technique works with all materials.

Another clinical tip is to create sides on all your triple tray impressions prior to loading the tray material on the tray (Fig. 20). This minor step supports the material and prevents the running or pulling away of the impression material (Fig. 21).

Many orthodontic and removable prosthetic impressions require a very detailed monophasic polyvinyl impression. The Occlusal Sweep (Fig. 22) is an inexpensive applicator that is placed over the standard dynamic mixing tip. Cut the sides of the nozzle on the sweep to form leaves or flaps that will redirect the impression material over the occlusal, buccal and lingual



Fig. 19



Fig. 20

surfaces of the teeth. The dental assistant will mix the material for the impression tray. When the tray is loaded halfway and the 5th Hand is in place, the occlusal sweep is placed over the most distal tooth and the material is rapidly expressed in a sweeping motion towards the midline and then repeated for the other side (Fig. 23). The loaded tray with Dam-it across the back is seated apically and the retractor pulled straight out and removed before the material sets. Once the impression material completely sets, remove and inspect the impression.

With the use of these three simple tools along with the use of the clear thermoplastic tray, you can win the trifecta of impressions. All three accessories, the 5th Hand, the Dam-it membrane and the Occlusal Sweep are uniquely designed tools to allow dentists and their assistants to make accurate and predictable dental impressions.

Disclosures: Dr. Gottlieb is a sponsored speaker by Danville Materials and founder of Affordable Dental Products Inc. Dr. Marshal Fagin has no financial relationship to any of the products demonstrated.

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Dr. Gottlieb will be presenting during the 2011 Florida National Dental Convention (FNDC2011), which will be held June 9-11, 2011 in Orlando. To register for Dr. Gottlieb's course, or any of the other 115 continuing-education courses at FNDC2011, visit www.floridadentalconvention.com.



Fig. 21



Fig. 22



Fig. 23