

A photograph of two dentists in a clinical setting. They are wearing white lab coats and light blue surgical masks. The dentist on the left is wearing white gloves and is focused on a procedure. The dentist on the right is also working. In the foreground, there is a white tray with a clear plastic container filled with white dental impressions, a white cup, and a petri dish. The background is slightly blurred, showing dental equipment and a patient in a blue chair.

WINNING THE IMPRESSIONS TRIFECTA

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IMPRESSION TRIFECTA:

THREE TOOLS AND TIPS TO BETTER IMPRESSIONS

By Drs. Marshall Fagin
and Marc Gottlieb

We are in the middle of a digital revolution in dentistry yet we daily 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, orthodontic and prosthodontic models.

The trifecta to perfect impressions will refer to the '5th Hand' lip and cheek retractor, the 'Dam-it' post-dam membrane and the **Occlusal Sweep** shown in figures 1, 2 and 3. 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), poured in stone and wax placed over the teeth with rest stops cut into the wax relief to limit seating and movement of the custom tray. Figure 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 seats against the palate and the tray has a solid design, the impression material is hydraulically forced up and around the teeth yielding perfect detail.

ABSTRACT

This lecture will cover all the current techniques and provide insight into future techniques for taking dental impressions. It will cover elastomeric materials, tissue management, and which digital impression system to consider for your practice.

LEARNING OBJECTIVES

1. To understand what materials and technology is available today for taking dental impressions.
2. Be able to manage soft tissues and the patient for the various types of impressions needed for fixed prosthetics and full arch models.
3. Determine which system is best for your practice and distinguish a perfect impression.



Figure 1



Figure 2



Figure 3



Figure 4



Figure 5

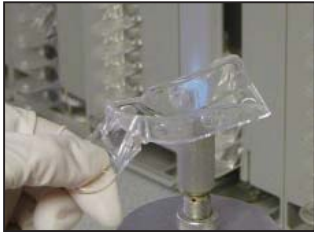


Figure 6



Figure 7



Figure 8



Figure 9



Figure 10



Figure 11

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 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, 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 figure 5, allows 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 8 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 (figure 6). Wet your forefinger and thumb or use a 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 ease of 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 from the mouth when the implants are not parallel. Figure 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 figures 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 that gels 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. Figure 10 demonstrates an impression tray with a wax post dam and palatal stop. This rim of wax creates a speed bump which rarely adequately 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 (figure 11). It's been proven clinically to be compatible with all impression materials. Simply 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's 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. Figures 12 and 13 illustrate the outstanding 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.

Prior to taking an impression with any material, have the patient brush their teeth and rinse out their mouth. This removes the chance of debris remaining on the teeth. Once settled back in the chair, insert an appropriately sized '5th Hand' lip and cheek retractor (figure 14). This simple device provides better access to the oral cavity and at the same



Figure 12



Figure 13



Figure 14



Figure 15



Figure 16



Figure 17



Figure 18



Figure 19



Figure 20



Figure 21



Figure 22



Figure 23

time prevents the patient from catching their upper lip on the impression tray. Bend the flaps in the posterior, as shown in figure 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 (figure 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 (figure 17). The '5th Hand' retractor is then pulled straight out before the impression material sets. At this point manipulate the upper lip and you have captured the labial fold (figures 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 (figure 20). This minor step supports the material and prevents the running or pulling away of the impression material (figure 21).

Many orthodontic and removable prosthetic impressions require a very detailed monophasic polyvinyl impression. The Occlusal Sweep (figure 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 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 (figure 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. *[End]*

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Dr. Fagin received his dental degree from the State University of New York at Buffalo School of Dental Medicine in 1970 and his Certificate in Prosthodontics in 1972 from Boston University.

An international lecturer and educator for almost 35 years, Dr. Fagin frequently updates his colleagues on the most recent advances in cosmetic and reconstructive dentistry. He is currently a part-time Associate Professor in the Dept. of Graduate Prosthodontics at SUNY at Buffalo School of Dental Medicine and has conducted several “Hands-On” courses for dentists on “Anterior Esthetic Makeovers” at the school’s Esthetic Dentistry Education Center and for the University of Florida School of Dentistry’s Mastership Program . He was voted by his colleagues to “Best Dentists in America” 2004/2005, 2008 “Global Who’s Who Man of the Year” in Dental Health, “Top Dentists” 2008 and was elected to faculty membership in the Honorary Dental Society Omicron Kappa Upsilon. He was awarded Diplomat status in the International Congress of Oral Implantologists in 1994 and is an honored Fellowship recipient of the International College of Dentists (1993) for his contributions to Dentistry.

Dr. Fagin is also an active member of the American Academy of Fixed Prosthodontics, the American College of Prosthodontists, and Alpha Omega International Dental Fraternity. To learn more, see his website at www.transformyoursmile.com.



Dr. Marshall D. Fagin

Marc Gottlieb, ***D.D.S., Dental Anesthesiologist***

Dr. Marc M. Gottlieb was born and raised on Long Island, attended undergraduate at Union College in Schenectady New York and Dental School at the University of Buffalo. While at the University of Buffalo he received several academic scholarships, awards and fellowships.

After graduation from dental school Dr. Gottlieb went on to a two year post-graduate residency program at Long Island Jewish Medical Center. The first year as a PGY1 in a post graduate general practice program and the second as a PGY2 as a medical anesthesia resident. This unique opportunity provided advanced training in anesthesiology exposing him to and all the specialties of medicine and dentistry. Dr. Gottlieb utilizes local anesthesia, hypnosis, oral and i.v. sedation to treat the apprehensive, unmanageable and medically compromised patient that would normally go untreated.

Dr. Gottlieb is currently on staff at Stony Brook University Hospital, maintains a full time private practice, lectures all over the country and has authored over a dozen dental articles. In 1987 he started Affordable Dental Products, Inc., and patented the Crystal Tray Impression System.



Dr. Marc Gottlieb

Objective:

There are certain challenges to overcome in order to take a perfect impression. A perfect impression captures the entire labial fold, is free of voids, pulls, and tears and extends to the hamular notch. This article demonstrates how to use the 5th hand, Occlusal Sweep and Dam it! membrane to reproduce the anatomic detail often lacking.

Course Review Questions

1. **The 5th hand is used to:**
 - a) Retract the Lips and Cheeks
 - b) Prevent the lip from getting caught inside the impression tray
 - c) Holds dry angles against Stensen's duct blocking the flow of saliva
 - d) Ischemically close off Stensen's Duct if no dry angle is used
 - e) All of the above
2. **True or False. The Dam it! microporous membrane is compatible with all current impression materials.**
 - a) False
 - b) True
3. **The advantages of a clear disposable impression tray are:**
 - a) See the underlying anatomy and easily molded to form a custom tray
 - b) Costs the same as a custom tray
 - c) Can be autoclaved for sterility
 - d) Easily modified and used for an open tray implant technique and sides can be cut off to accommodate tori
 - e) Answers a and d
4. **Dam-it forms:**
 - a) A fence across the back of a metal or plastic tray forcing the impression material apically
 - b) A speed bump slowing down the flow of material down the esophagus
 - c) A gel speeding up the set of poly-ether impression material
 - d) A barrier across custom trays reducing the amount of impression material used
5. **Select the correct statement or statements:**
 - a) The Occlusal Sweep is an inexpensive applicator that is placed over the standard dynamic mixing tip to redirect the flow of impression material against the teeth
 - b) The Occlusal sweep is used prior to an impression to remove food and debris from the teeth and eliminates the rinsing step saving time and money
 - c) The Occlusal sweep is designed for use with monophasic or regular body impression material to create a three dimensional "finger sweep"
 - d) The Occlusal sweep is best used for triple tray and quadrant impressions with light or extra light impression material
 - e) Answers a and c

Caution: After reading this article the techniques, procedures, theories and materials presented herein, you must make your own decisions about specific treatment for patients. Use your professional judgement to determine your need for further clinical testing and education.. You must use and rely on your own clinical expertise before trying to implement new procedures. You are encouraged to participate in additional hands on participation courses.

Handout Evaluation Questions

On a scale of 1-5, 5 being Strongly agree, 3 neutral and 1 strongly disagree please answer the following questions:

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_____ Material discussed was presented in sufficient depth.

_____ The quality of this article was what I expect of a self instruction article.

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