

Impression tactics In Prosthodontics- A Review

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Abstract

Satisfaction of a patient who visits a dentist begin right from the history taking to completion of the treatment. Impression making is the foremost and the crucial step not only in fabricating complete dentures, removable partial denture, fixed prosthesis, implants and finally maxillofacial prostheses but also to design a treatment plan with a diagnostic model that is gleaned from the diagnostic impressions. Though the Digital Dentistry is advancing day by day, there is a need to know different theories and various methods or techniques in making the impressions for the prescribed prosthesis. This article gives scope for quick evaluation and assessment in relation to different theories of impression making for the academicians as well as the clinicians practicing dentistry.

Keywords: Digital Dentistry, practicing dentistry, Prosthodontics.

Introduction

A patient generally visits a dentist for replacement of completely lost structure in the oral cavity or to get a partially damaged structure to be restored. In that case, dentists have to make impressions of the sight to replicate the lost structure by considering the adjacent structures. To attain this specially in the field of Prosthodontics several techniques have been invented to make impressions for removable prosthodontics like complete denture and removable partial denture and Fixed prosthodontics. A multitude of concepts have been presented over the years with various considerations in mind.¹ Hence this article was attempted to focus the attention of the dental fraternity on different theories of impression making for different clinical situations.

Objectives of impression making: the impression technique being employed should achieve the following objectives.²

- Retention
- Support
- Stability
- Esthetics
- Preservation of ridge (supporting structures).

Impression techniques in complete denture:

Impression techniques in complete denture:

1. **Mucostatic theory** (based on Pascal's law) helps out to record the mucosa in its static (supported by underlying basal bone), undisturbed form. This is possible only if the impression material is watery and requires no pressure to place against tissues. Such an impression will not cover enough area to attain retention, stability and esthetics of a denture.

2. **Mucocompressive theory** claims that the tissues can be recorded in their functional / supporting form so as to achieve stability in occlusal function. This concept is not so encouraging that it seeks to subject the tissues to a continuous pressure which is responsible for resorptive changes in basal tissues. In addition these displaced tissues tend to dislodge the denture due to their resilient property.

3. **Minimal pressure theory** is a little satisfying between the above two. It advocates application of minimal possible pressure which is less than the weight of free flowing material. But here a question arises, "How to decide this minimal pressure?"

4. Last is the **Selective pressure theory** which is the most widely accepted one. edentulous areas of the preliminary cast. 2. Making occlusal rim on the custom tray to make sure patients bite while making the impression. 3. Loading impression material onto the tray and inserting into the patient's mouth. 4. Instructing the patient to bite on the

occlusal rim. 5. Make impression and do not remove custom tray from patient's mouth 6. Then an alginate impression is made over it by using a large Here, the idea is to differ the pressure over the denture seat (which is a single unit) depending on the displaceability of the tissues and hence transferring the load onto the selected areas of the seat e.g. buccal shelf area.

Impression techniques in RPD: 1. Physiologic

impression technique: This is also known as functional impression technique where it records the position of ridge by placing an occlusal load on the impression tray during the making of impression in partially edentulous patients.³ This produces a generalized displacement of changes in the mucosa, whether to a greater or lesser degree which was intended to record any tissues in the correct configuration when occlusal loading was applied to the patients' denture. Physiologic impression technique can be further classified into a. McLean and Hindel's method, b. functional relining method and c. fluid wax method.⁴

a. McLean's and Hindel's method: In this, the tissues of residual ridge that support a distal extension of denture base are recorded in their supporting form and as a second impression of the remainder of the arch. This second impression is also called as 'pick up' impression due to its function, covering and picking up the functional impression. **Procedure:** 1. Fabrication of the custom-made impression tray without any spacer over the stock tray. 7. The functional master impression will now come along with the over-impression which is called as 'pick up' impression. 8. Finger pressure should be applied while making over-impression. 9. The teeth in the anatomical form and the tissues in the functional form will be produced after pouring the cast into the impression.

Drawback: It uses finger pressure that cannot produce the same function of tissue displacement possible by that of biting force.

Hindel's modification of McLean's technique:

Procedure: 1. Occlusal rim is fabricated in a special tray using the primary cast along with stoppers to avoid excessive pressure on stress-bearing areas. 2. Anatomical impression is recorded with the supporting tissues under rest. 3. A pick up impression is made by applying steady constant pressure on the occlusal rim. Till the alginate is set, the pressure should be held. 4. A pseudo-functional stress is given to the edentulous ridge by using the finger pressure on the special tray which is similar to the functional impression. 5. Excessive tissue compression is avoided by using the stopper on the custom tray.

Disadvantages: 1.If the action of the retentive clasps of RPD is sufficient in order to maintain the denture base in soft tissue displaces, then blood vessels are interrupted with worst soft tissue destruction and bone resorption. 2. If the action of the retentive clasps is not sufficient to maintain the denture base in position, it will result in artificial teeth premature contact that may become objectionable for patients.

The functional relining method: In this method new surfaces are added to the inner side or the tissue side of the denture base. This should be done before the insertion of RPD or sometime later in future whenever the denture base becomes loose or it no longer fits to the ridge due to bone resorption.⁵

Procedure: The patient should partially open his mouth while making impression. So that the border tissues, cheek and tongue are best controlled. In the final impression making by using the functional relining method, Zinc Oxide eugenol wash impression is commonly employed. If the ridge has any undercuts, then light bodied polysulphide or silicone rubber is used.⁶

Advantages: The amount of soft tissue displacement can be controlled by the relief given amount to modelling

plastic before the final impression making. The tissue displacement will be less if the relief is greater.

Disadvantages: This technique fails to maintain the exact relationship between the abutment and the framework as well as the occlusal contact in relining procedure.

1. The first step when using this impression technique is

trying in of work done frame

Fluid wax impression technique: its main objective is to obtain maximum peripheral border extensions without interfering the functions of the peripheral tissues. The borders should be made short for all movable tissues not more than 2 mm since the fluid wax cannot support itself beyond the distance due to inadequate strength. Also the tray must remain in place for about 5 to 7 minutes upon placing in the patient's mouth. This allows the flow of wax and prevents the pressure buildup under the tray.⁷

Procedure

1. The first step when using this impression technique is trying in of work done frame

Procedure: 1. preparing a diagnostic cast. 2. Adopting the spacer and fabrication of special tray or custom tray. 3. Providing relief holes along the crest of the ridge. 4. The wax (IOWA or KORREKTA WAX NO.4) should be maintained in fluid consistency between 51°C and 54 °C. 5. It is now painted to the impression tray on the tissue side using brush. 6. The dull surface is added with wax and the impression is placed back into the mouth for 5 minutes. 7. The procedure is repeated till the impression is completed and should be carefully handled. 8. The obtained impression should be poured into a cast as soon as the impression is made to avoid wax distortion. 9. This impression technique is employed with open mouth technique to reduce over displacement of tissues especially the ridges by occlusal or vertical forces.

Disadvantages: This technique is time consuming. The excessive tissue displacement might lead to inaccurate impression if the timing period is not followed properly as mentioned in the procedure.

Selected pressure technique: In this technique two types of impressions are made. Anatomical impression and functional impression. The anatomical impression made is utilized in preparing a master cast.⁸ It will alter based on the selective pressure functional impression. In this technique, the tissue surface of relieving areas is reduced. The reduction is made as there is enough space available for not to exert pressure by the impression materials. Therefore the impression tray contacts the tissues only at the stress-bearing areas while making impression. As there are only certain areas where the pressure is exerted while impression making, this technique is called as selected pressure impression technique.⁹

Procedure: 1. Fabrication of a special tray without spacer on the master cast from the anatomical impression. 2. Trimming the tissue surface of the special tray for adequate relief. 3. Loading it with impression material, such as zinc oxide eugenol and inserting into the patient's mouth. 4. The patients has to open their mouth and the finger pressure is used to make the impression. Make sure that only the stress bearing areas should be compressed during the procedures.

Advantages: The resorption rate of ridge will be lowered due to the stress relieving areas. It equalizes the stress that acts on the soft tissues and abutment teeth.

Impression techniques in Fixed Partial Denture

Different techniques are available for making fixed partial denture (FPD) impressions. Those are:

- I. Putty-wash impression
- II. Dual-phase impression
- III. Mono-phase impression
- IV. Hydrocolloid laminate technique

- V. Copper-band impression technique
- VI. Impression using vacuum-adapted splints
- VII. Impression using preformed crown shells
- VIII. Dual-arch impression technique
- IX. Functional check bite impression
- X. Matrix impression system
- XI. Cast impression coping technique
- XII. Digital impressions

I. Putty-Wash Impression

This is a stock tray impression technique. Here are two methods to make a putty wash impression.

1. One step/ Single mix putty-wash impression
2. Two step/double mix putty-wash impression.¹⁰

One step/ Single mix putty-wash impression

In this procedure both the light body and putty are used. The putty material is first loaded into the stock tray. The light body material is then syringed around the tooth preparation and a full mouth impression is made using the loaded stock tray.¹⁰

Two step/double mix putty wash impression

In this procedure putty impression is made in suitable stock tray and then the light body is syringed over the putty impression as well as over the tooth preparation. Either Polyethylene sheet is used as a spacer for the light body or it is achieved by scraping the material using BP blade or round bur.

Advantages

1. Reduces the time and cost of fabricating custom tray.
2. Metal stock trays are rigid and less susceptible to distortion.

Disadvantages

1. More impression material is required.
2. Metal trays must be sterilized.
3. As the thickness of impression material is uneven the polymerization shrinkage may occur unevenly.

II. Dual-Phase Impression

This impression technique is otherwise called as “custom tray impression technique” or “laminated single impression technique”. The most accurate impression is obtained by using heavy-body and light-body addition silicone in conjunction with a rigid custom tray and a meticulous clinical technique. These materials can also be used in a rigid stock tray.¹¹ In this technique, the light body is laminated in a thin layer on the surface of the heavy body and immediately positioned upon the preparation. The purpose of this lamination is to prevent the direct contact of the heavy body with the preparation surfaces, which may cause roughness of the cast surface. The heavy body material also drives the light body material into the gingival sulci and preparation details are recorded without the use of a syringe.¹²

Advantages

1. Less material is needed to make impression than with stock tray technique.
2. Sterilization is not a problem as the tray is used only for one patient.
3. A uniform thickness of the impression material minimizes the distortion due to uneven polymerization shrinkage.
4. Patient comfort.

Disadvantages

1. Custom tray fabrication is time consuming.
2. The tray must be constructed **24 hours** before use to minimize the distortion.
3. The residual monomer from special tray may cause tissue irritation for some patients.

III. Mono-Phase Impression

This procedure imitates the same as dualphase impression except that **medium-viscosity material** is used alone as the tray material and syringe material as well.

A medium viscosity (regular body) elastomeric impression material in a custom tray with **3mm** spacer is used. The surface reproduction may not be good like that of light body material in this technique. Also the medium viscosity material will show a greater amount of polymerization shrinkage than compared to that of heavy body materials because of less filler content.¹⁰

IV. Hydrocolloid Laminate Technique

The hydrocolloid laminate technique uses combination of both reversible (agar) and irreversible (alginate) hydrocolloids. The agar is used in the form of syringe material and is injected onto the area to be recorded, and chilled alginate mix in the stock tray is positioned on it. The alginate sets by chemical reaction and the agar by means of contact with the cool alginate rather than a water circulated tray. Since the hydrocolloid in contact with the tissue surface is agar, it reproduces maximum surface details.¹⁰

Advantages: 1.It is more economical compared to the newer elastomeric impression materials. 2. Good surface reproduction but sometimes agar may be displaced due to high viscosity of alginate.

V. Copper-Band Impression Technique

The patient's condition, the extent of the aberration evaluated and the judgement determines whether the copper band technique saves time or a remake of the original impression is more appropriate.¹⁰

This technique includes the following combinations.

1. Original copper tube and modelling compound method
2. A variety of copper tube and elastomer combinations
3. Resin copings and elastomer
4. Polycarbonate crowns and elastomers
5. Resin (provisional) crowns or fixed partial dentures with elastomers

All the above techniques make use of a rigid carrier for the impression material that typically becomes the part of

the impression. The finish line is recorded initially in the carrier. The displacement of the gingiva is usually accomplished as the modelling compound or elastomer is delivered to the sulcus.¹³

VI. Impression Using Vacuum-Adapted Splints

A simplified procedure for making impressions of multiple abutments, using vacuum adapted temporary splint material as a tray former is given by **Antony LaForgia (1970)**. In this technique tray former is fabricated using temporary splint material. After the preparation of teeth is completed, cold-curing resin is mixed and inserted into the tray former to fill the space created by the preparations and the edentulous spaces. The resin loaded tray former is then seated onto the arch and cold cure acrylic is allowed to polymerize. The internal surface of the tray is relieved except one stop that is retained on the occlusal area. Thin rubber base adhesive is applied all over the tray and allowed to dry. Now it is loaded with heavy body rubber base impression material and a primary impression is made. All the internal surfaces are relieved for final impression and perforations are made on the occlusal and incisal surfaces to provide escape vents for the impression material. The tray is filled with equal parts of light and regular-body rubber base impression materials by means of a syringe or spatula and placed into position on the abutments in the mouth. After the material sets, final impression is made in an oversized stock tray or an acrylic resin tray using regular-body rubber base impression material.¹⁴

VII. Impression with Preformed Crown Shells

In this technique, prefabricated temporary crown shells are used for each tooth preparation and a final over impression is then made with a stock tray.¹⁵

1. Take a preformed polycarbonate crown and adjust the gingival margin to extend slightly to the finish line of the preparation. The crown should fit loosely over the tooth.

Adjust the proximal contacts to avoid binding on contiguous teeth. Do not remove the tab.

2. Coat the internal and external surfaces of the provisional crown shell with the adhesive recommended by the manufacturer that is specific to the impression material.

3. Mix a regular-body elastomeric impression material and fill the provisional crown shell without air entrapment.

4. Seat the crown onto the prepared tooth covering the finish line and allow the material to set.

5. Finally make a pick-up impression using regular-body impression material in a full-arch stock tray.¹⁵

VIII. Dual-Arch Impression Technique

The simultaneous recording of tooth preparation and the opposing antagonistic teeth

within a single impression for the fabrication of one or two indirect restorations was first introduced by **Wilson & Werrin in 1983**.¹⁶

Technique:¹⁶

1. The syringe material is injected into the area to be recorded.

2. The high viscosity material is mixed and loaded in excess on both the arches.

3. The tray is placed in between the arches.

4. Patient is asked to bite slowly.

5. After making impression, the patient is instructed to open his mouth slowly.

6. The tray will adhere to one arch as the patient opens his mouth.

7. Bilateral pressure should be applied to remove the tray as it helps to minimize distortion.

8. The impressions are boxed and casts are poured with die stone.

9. Articulation should be done on a hinge articulator with an incisal pin to maintain vertical dimension.

Advantages

- Less impression material is required as only one part of the arch is recorded.
- Less time is taken as both the arches are recorded simultaneously.
- Maximum intercuspation position can be recorded due to functional impression.

Disadvantages

- Distortion as the tray is not rigid
- Cannot be used for more than one casting per quadrant.
- Uneven distribution of impression material.

IX. Functional Checkbite Impression

A new procedure combining the functional impression with the checkbite impression was introduced.¹⁷

Checkbite impression is made conventionally with unilateral tray using medium body rubber-base impression material. After fabricating a temporary fixed partial denture of acrylic resin, a functional Checkbite impression is made. There should be a few days gap between the tooth preparation and the impression procedures.¹⁸

The temporary restoration is removed from the mouth and occlusal surface is reduced to add 1 to 2 mm of wax. Then centric relation record is first established accurately with generous amount of wax.

Then final verification of the centric relation position is carried out.

When finished, the opposing teeth used in developing the wax chew-in record are dried and painted with a sheet of thin, wet cellophane, and the patient is instructed to close the jaws in centric position. The acrylic forms an accurate impression and then the temporary restoration with the attached chew-in record is removed from the mouth. The gingival retraction procedure is done and the acrylic index adhering to the opposing teeth is left undisturbed. Once the gingival displacement is achieved the syringe and tray

are filled with rubber-base impression material and the impression is made in centric position. Now the completed impression contains both the abutment preparations as well as the edentulous ridges on one side and functional index on the other side.¹⁸

X. Matrix Impression System

The matrix impression system uses three impression materials:

1. A suitable elastomeric semi-rigid material required to form the matrix
2. An elastomeric impression material with high viscosity, which will bond to matrix-forming material, and
3. A stock tray with a medium viscosity elastomeric impression material is used to make pickup impression and the remaining arch is not covered by the matrix.¹¹

XI. Cast Impression Coping Technique

This cast impression coping technique uses a stock tray and a second impression appointment is required because of the laboratory phase. This waiting period results in healthier periodontal tissues and better impressions. Also, this technique negates the need for gingival displacement; it results in a better impression environment and does not result in postoperative sensitivity. The technique can be performed without local anesthesia.¹⁹

Technique

After the completion of teeth preparation an alginate impression is made and poured with die stone. Provisional restoration is cemented on to the prepared teeth and the patient is called for another appointment to make the final impression.

Dies are prepared and coated with several layers of die spacer so that the copings will have a space of at least 0.7 mm for the light body impression material. In addition, blockout material may be used under the margin areas so the casting can be approximately 1.0 mm past the margin so as not to engage any undercuts. The buccal surface of

each coping is marked so that they can be oriented correctly during the impression procedure. The internal surfaces of the copings may be roughened to secure the impression material within the coping. A polyether material is suggested, as it is accurate enough for the wash and strong enough for the pickup phase.

At the final impression appointment, the clean cast copings are tested to ensure the proper fit and preparation coverage. The cast copings are filled with light body syringe material using syringe and placed on each prepared tooth. It is best to keep the copings slightly under filled for improved visibility. Then a stock tray is filled with heavy body impression material and positioned onto the arch and the tray is removed in a snap fashion and the temporaries are re-cemented. The impression is poured with die stone and further laboratory procedure is carried out to fabricate the restorations.¹⁹

XII. Digital impression

With the CAD-CAM techniques, a concept of intraoral digital impressions was put forward in the early 1980s.¹⁹ Systems are composed of three major parts: (1) a data acquisition unit, which collects the data from the region of the preparation teeth and surrounding structures and converts them to virtual impressions, (2) software to design the virtual restorations from virtual impressions by setting up all the milling parameters and (3) a computerized milling device for manufacturing the restoration with solid blocks of the chosen restorative material.¹¹

The main digital impression systems available include CEREC, Lava C.O.S. system, iTero, E4D and TRIOS.

Impression techniques in Implants

A good impression technique for implants records their three dimensional position in the oral cavity. Basic impression techniques for implant are Implant level

impression technique and Abutment level impression technique.

1. Implant Level Impression: This technique is universally employed for fabrication of any type of restoration. This impression gives greater flexibility for the selection and modification of an abutment and is usually advocated when implant is not ideally placed. There are 2 types of impression techniques: Pick up / open tray and Transfer Type / closed tray techniques.

A. Pick up impression / open tray: This is better than closed tray technique, especially in case of multiple implants and in edentulous patients. This technique exhibits higher accuracy in comparison to closed-tray technique with TC and TC-Cap.²⁰

It also reduces the effect of implant angulation and deformation of the impression material upon recovery from mouth, and removes the concern of replacing the copings into the impression.²¹ open-tray metal splinted impression coping was significantly superior and was quite more precise.²² The technique can be further subdivided into splinted and non-splinted techniques. The splinting procedure is carried out in case of multiple implants to decrease the amount of distortion and to improve impression accuracy and implant stability. Rotational movement of the impression copings in the impression material during analog fastening is prevented by splinting of the transfer copings which provides better results than not splinting. Accuracy of a splinted impression technique depends upon its resistance to deformation under the forces of impression material; hence the use of rigid splint material is essential for accurate master cast.²³

B. Transfer Type / Close Tray Technique: In this technique the impression copings remain in the mouth on the removal of the set impressions. After the removal of the impression, the impression copings are transferred to

the impressions and then the cast is poured. It is mainly indicated in case of restricted mouth opening²⁴, limited access areas (posterior) and severe gagging patients, the closed tray impression technique is better choice.²⁵ Regarding the transfer impression techniques used, T4 (square copings that are splinted with prefabricated acrylic resin bar) showed the best results, followed by T3 (square copings splinted with dental floss and autopolymerizing acrylic resin, sectioned and splinted again with autopolymerizing acrylic resin). This shows that the use of prefabricated acrylic resin bars for splinting square copings can decrease the polymerization shrinkage of the acrylic resin and increase system stability.²⁶ The most favourable implant position for the impression transfer was the one perpendicular to the horizontal surface. Transfer impressions for osseointegrated implants at various angulations concluded that the most favourable implant position for an accurate transfer impression is when it is perpendicular to the surface (90°), while the worst results occur with more inclined implants (65°).²⁷

2. Abutment Level Impression: If there is a requirement to replace old implant supported crown, abutment level impression is indicated just like crown and bridge cases²⁵ abutment-level impression with open tray technique is more accurate.²⁸ Performing conventional impression techniques for crown and bridge to obtain accurate implant abutment level impressions may be required when further modifications need to be applied to prefabricated or customized implant abutments. It has been reported that the accuracy of the implant-abutment level impression is higher when the pick-up technique is used as opposed to conventional crown and bridge impression technique. The fixture-level method was not superior to the abutment-level technique in terms of angular accuracy and most of the linear errors. The abutment-level impression method showed better linear accuracy in case of highly diverged

posterior implants. Increasing the angle of implants' divergence from 40° to 60° might not usually lead to a significant increase in the errors, especially when using abutment-level impressions.²⁹ Implant splinting technique is to stabilize the impression copings during the subsequent clinical and laboratory impression transfer procedures and to minimize 3-D spatial relationship changes. The shim splinting technique introduced in the present technique report offers an alternative to previously reported approaches such as the block/ splinting approach. Moreover, the shim splinting technique has several advantages such as a simpler laboratory fabrication process, less patient chair time, and the need for fewer implant components. The most commonly used transfer techniques for implant supported prostheses with multiple abutments are indirect, direct, and direct splinted.³⁰ Some authors have noted that the impression made by the direct transfer technique for implants with splinting is more accurate than that of other techniques.³¹ Chemically activated acrylic resin is frequently used to fabricate intraoral splinting to join impression copings during the open-tray implant impression technique. However, some splinting methods can be used, each with advantages and disadvantages. The technique using dental floss as a framework for chemically activated acrylic resin is used thoroughly but charges longer clinical time for application. Other splinting forms are prefabricated bars³² and metal sticks which use a smaller amount of acrylic resin. However, digital dentistry has been introducing new methods in which conventional impression techniques are surrogated with intra-oral scanners.

3. Digital Impressions: Digital scanning and dedicated software for superimposition of the resultant STL datasets represent an efficient technique to measure and compare the trueness³³ (accuracy) at the microscopic level. The scanning and recording of structured data by the CAD

software applications can then create a geo-metric virtual 3D model and CAM techniques will employ several printing and milling machines to produce a duplicate which is a precise copy of the virtual model in a physical form. On the basis of this study, the authors advocate the use of an intraoral scanner in dental implant full-arch rehabilitations and digitally create an accurate dental impression, which greatly increase efficacy.³⁴

Impression techniques in Maxillofacial Prosthesis

Cleft lip and palate³⁵: 1. The clinician may use customary denture impression technique.

2. Small bony openings should be blocked out.
3. Primary impression is made using modelling compound with sufficient temperature to maintain it in a working state.
4. Then make a wash of light body rubber base impression material.

Cranial defects

Conventional method³⁵: 1.To make an impression for a cranial implant, the scalp should be completely shaved in case of larger defects. 2.For smaller defects, a shaved border of 5cm around the bony margin is adequate if there is sufficient number of landmarks to determine appropriate contours. 3. The outer bony margin is then palpated and outlined in indelible pencil on the skin.

Procedure: 1. The patient is placed in an upright position and draped so that the impression material will not spoil clothing. 2.Coat petroleum jelly to prevent interlocking of the impression with facial hair or eyebrows. 3.Irreversible hydrocolloid is mixed in appropriate consistency and then poured into the desired area, starting at the highest point to allow the mixture to flow downward and thus avoid trapping air. 4. Cotton gauze or paper clips are partially embedded into the impression material before it sets and once it reaches the final set, it is covered with several layers of quick setting plaster of Paris. 5.Two or three

layers may be required to achieve the desired 1cm thickness. 6. The plaster base will reinforce the impression material. 7. Some silicones are well suited as impression material because of their viscosity.

Delayed Surgical Obturation³⁵

- 1.It is fabricated 6-10 days postsurgically.
- 2.A maxillary impression is obtained with irreversible hydrocolloid impression material.
- 3.The impression should record as much of the lateral portion of the defect is possible. 4.A soft metal edentulous tray is altered so that approximately a quarter-inch clearance exists in all dimensions.
- 5.In the area of the defect, it may be necessary to remove some of the flange of the tray or bend it medially.
- 6.All flanges are covered with peripheral beading wax, with additional wax added in the area of defect to provide support for the impression material.
- 7.The tray is coated with a suitable adhesive to aid retention of the impression material.
- 8.Major medial undercuts are generally not useful and should be blocked out with gauze lubricated with petrolatum.
- 9.The lubricated gauze can also be used to limit the extension of the impression material into the defect.
- 10.If an orbital exenteration has been performed, the patch covering the orbit can be removed and observations made regarding the fitting and placement of the tray.
- 11.Impression material should be placed on the lateral side of the tray corresponding to the defect in order to record the contour of the lateral cheek surface with the help of a disposable syringe.
12. After the tray is positioned and seated, the cheek and lips should be carefully manipulated, especially on the defect side.
13. The sutures if still present tend to pull out of the impression easily.

14. A well-adapted irreversible hydrocolloid impression creates a vacuum that causes pain upon removal.

15. The impression is gently released from the mouth and examined for proper extension and adaptation.

Definitive auricular prostheses³⁵

1. Unlike orbital or nasal defects, the tissue bed in the auricular area is not displaceable and therefore distortions do not result from postural changes.

2. Consequently, the impression can be obtained with the patient lying on his or her side in a supine position.

3. Condylar movements should be carefully observed because they may result in the mobility of the tissue bed that can affect margin placement, tissue coverage and ultimately retention of the prosthesis.

4. The defect area is isolated with drapes, cotton placed in the ear canal and a suitable impression material is applied.

5. Adjacent hair should be taped or covered with petrolatum.

6. Disposable syringes are useful for depositing impression material into areas with difficult access.

7. Light body polysulphide, silicone or irreversible hydrocolloid are the appropriate materials.

8. If irreversible hydrocolloid is used, the addition of 50% more water will improve its flow properties and facilitate the impression procedure.

9. A backing of quick setting plaster will provide suitable support for the impression.

10. Gauze painted with the appropriate adhesive is used to unite the impression material with its plaster backing.

Definitive nasal prostheses

1. As in orbital defects, postural changes may result in distortions of the tissue bed. Hence impressions should be made with the patient in upright position.

2. Elastic impression materials that possess good flow properties like light body polysulphide are preferred.

3. The nasal passage should be blocked with gauze to prevent entry of impression material.

4. A syringe is used to inject impression material into skin crease, areas of difficult access and usable undercut areas: a very thin layer of impression material is allowed to flow over the desired skin surfaces.

5. Small gauze segments are imbedded within the impression material as it begins to polymerize.

6. A thin layer of adhesive is then applied to the gauze and impression material followed by succeeding layers of fast setting impression plaster.

7. The first two layers should be kept as thin as possible in order to avoid distortion of the underlying polysulphide layer.

8. The impression is then removed and poured with improved dental stone.

Definitive Midfacial Prostheses (Orbital-Nasal-Cheek Defects)³⁵

1. Accurate impressions are difficult to obtain because the tissues bordering the defect may not have an underlying bony foundation.

2. Therefore these tissues are easily compressed with the impression material or distorted by changes in posture.

3. Selected areas in the defect are blocked out with gauze.

4. Patient should be preferably placed in a semi-upright position and apply a thin layer of light body polysulphide rubber impression material to the tissues associated with the defect. It has a good flow properties.

5. This thin layer is made to avoid compression and distortion of the tissues.

6. As the material polymerizes, gauze strips followed by a thin layer of adhesive is applied to the polysulphide impression material.

7. Diluting the adhesive with acetone is usually advisable in order to apply a thin layer of adhesive.

8. Now plaster backing is done and the impression is removed and poured with improved dental stone.

Impressions for facial portion of the prosthesis

1. Variable degree of tissue bed mobility will be encountered in these facial defects.

2. The movement of structures such as the anterior border of the ramus, the corner of the mouth and the lower lip should be accounted for in the impression procedure.

3. Modeling plastic and thermoplastic waxes can be used to record the movement of these tissues.

4. The oral prosthesis is positioned, a preliminary impression is obtained and a master impression tray is fabricated from the resulting cast.

5. The patient should be in a semi-upright position during the making of the master impression in order to avoid distortions secondary to postural changes.

6. The movable portions of the defect are recorded with a thermoplastic modelling material.

7. After the tray is border molded, the impression is completed with a polysulphide impression material.

8. A syringe is useful in injecting impression material into desirable undercuts or into areas of difficult access.

Implant retained prosthesis in mandible

1. Impressions are made in the usual manner using impression copings.

2. Cylindrical type impression-coping is preferred because of the ease of use and less chair time.

3. The inaccuracies associated with these impression copings are accounted for by the use of a solder relation record made at the time of metal try in.

4. If an overlay prosthesis is planned, then impression must be border molded.

Hemimandibulectomy³⁶

1. Maximum extension and tissue coverage should be recorded with the preliminary impression.

2. Irreversible hydrocolloid is used in combination with an altered stock tray.

3. Wax or modelling plastic may be useful to extend the stock tray in areas of difficult access especially for the lingual flange on the unresected side.

4. Often the tongue closely approximates the alveolus and the placement of impression material into the lingual sulcus on the non-defect side is difficult.

5. The areas of soft tissues posterior to the resection should be recorded with attention.

6. A disposable syringe is often used to inject impression material into areas of difficult access prior to seating the stock tray with impression material into position.

7. Conventional border molding with dental modelling plastic to establish peripheral extensions is usually preferred.

8. These peripheral extensions can also be refined with an elastic impression material or a thermoplastic wax.

9. Some studies advocated making a functional impression of the polished surfaces of the mandibular prosthesis.³⁶

Maxillary defects³⁵

1. Before making impressions, the defect should be clean and free of mucous crustings.

2. If not the irreversible hydrocolloid impression material used may remove at least some of them during withdrawal which are then transferred to the cast.

3. The objective should be recording of the defect with surrounding favourable undercuts and other structures.

4. An edentulous stock tray is selected according to the configuration of the remaining maxilla.

5. The tray is altered if required and anterior undercuts are blocked out with lubricated gauze.

6. Adhesive is applied to the tray and wax.

7. The impression material is carefully mixed and loaded into the tray and placed laterally to record the lateral configuration of the defect.

8. Prior to seating the tray, impression material is wiped or injected into posterior and lateral undercuts.

9. The impression is retrieved and cast is poured.

10. The undesirable undercuts recorded in the cast are blocked out with a suitable wax prior to constructing the custom tray.

11. Relief of 1 thickness of baseplate wax is provided for the skin graft-mucosal junction and the superior lateral aspect of the defect.

12. The residual palatal structures are relieved in the customary way and the tray fabricated with an acrylic tray resin.

13. Extensions of the tray are verified in the mouth and inaccessible areas are checked with disclosing wax for possible overextensions.

14. Conventional border molding with low fusing compound provides more working time.

15. Preferably border molding should be completed initially on the unresected side since this serves to stabilize and orient the tray to the defect.

16. The medial palatal margin of the defect is then developed.

17. The superior height of this extension should terminate at the junction of oral and respiratory mucosa or at the level of the nasal floor.

18. Now the soft palate extension is border molded about 1cm onto the oral surface of the residual soft palate.

19. If the soft palate exhibits significant elevation during function then it can be refined later with thermoplastic wax and the tray should be stable.

20. Later the lateral, posterior and anterior aspects of the defect are recorded in 2 sections.

21. First the area below the skin graft-mucosal junction is molded and next the lateral, posterior and anterior aspects above the scar band are developed.

22. The impression is now carried with elastomeric impression material.

23. Prior to making the master impression, the modelling plastic is relieved approximately 1mm in all areas.

24. Several perforations are made for the escape of the impression material with atleast 3 perforations along the medial palatal margin.

25. The tray and modelling plastic are coated with adhesive.

26. The defect area is made free of secretion and the impression material is loaded into a syringe and dispensed into the desirable undercut areas and the impression tray is seated into position.

27. The lips and cheeks are manipulated and the patient is instructed to perform eccentric movements of the mandible.

28. After the material is set it is removed with gentle teasing action and inspected.

29. The impression may be difficult to remove because of the extension of the material into multiple undercuts.

30. If so, the lateral portion of the impression should be released initially as the flexibility of the scar band will enhance this maneuver³⁷.

31. If the patient exhibits extreme trismus, an alternative impression technique is suggested for edentulous patients that makes use of interim prosthesis.

Conclusion

though several methods are invented, advocated and implemented, no one method is deduced as the best one. Hence an impression technique or the material to be used is entirely dependent upon the clinical scenario and the systemic conditions of the patient.

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