Impression for Complete Denture

Dental impression: a negative likeness or copy in reverse of the surface of an object; an imprint of the teeth and adjacent structures for use in dentistry.

Complete denture impression: is a negative registration of the entire denture bearing, stabilizing and border seal areas of either the maxilla or the mandible present in the edentulous mouth. In complete denture prosthesis, we make two impressions for the patient:

1. Primary impression.

2. Final or Secondary impression.

To make an impression we should have a suitable tray and impression material.

Tray: It is a device that is used to carry, confine and control the impression material while making an impression. During the impression making, the tray facilitates insertion and removal of the impression material from the patient's mouth.

Parts of the tray

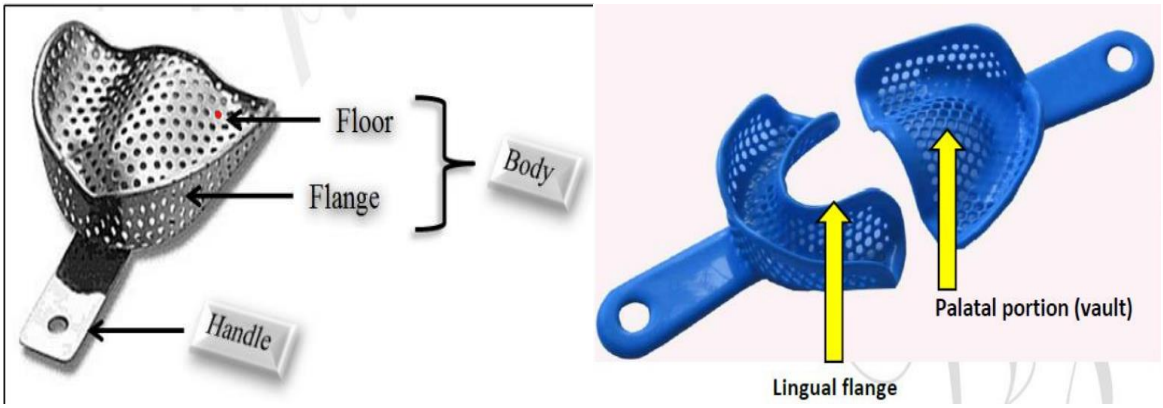
l- Body: It consists of:

a) Floor.

b) Flange.

2- Handle

It is an extension from the union of the floor and labial flange in the middle region (midline), it is (L) in shape so that, it will not interfere with lip during impression procedure. the difference between upper and lower tray is that in the upper tray, there is the palatal portion we called (vault) and in the lower tray there is the lingual flanges.



In general there are two types of trays

Stock tray: It is used for primary impression procedure.

Special tray (individual tray) (custom tray): It is used for final Impression procedure.

Stock tray:

It is an impression tray serves to carry the impression material to the mouth and support it in the correct position while it is hardening. This type of trays can be used for making primary impression. It makes from different materials such as Aluminum, Tin, Brass or plastic, in variety of shapes, sizes to fit different mouth.

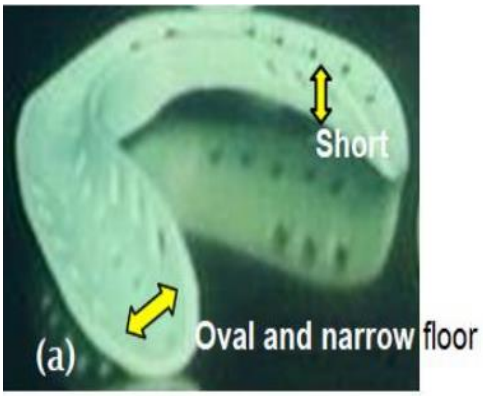
Types of stock trays

A. Stock tray for dentulous patient

B. Stock tray for edentulous patient

We can distinguish between them by:

Stock tray for edentulous	Stock tray for dentulous
• Short flanges. • Oval and narrow floor.	• Long flanges. • Flat and wide floor.



Classification of stock tray according to the impression material used

1- Perforated stock tray: used with alginate impression material.

2- Non-perforated stock tray: used with sticky impression material like impression compound.

Factors affect the selection of the stock tray

1- The type of material used in the primary impression procedure, like impression compound we used non-perforated tray, because it will be stick on the tray. And if we use alginate material we should use perforated stock tray for mechanical retention of impression material to the tray surface.

2- Size of the arch, stock tray comes in different sizes.

3- Form of the arch, (ovoid, square, V-shaped).

The stock tray must cover all the anatomical landmarks needed in complete denture and give a sufficient space (4-5 mm) for the impression material in all directions.

Primary impression

a negative likeness made for the purpose of diagnosis, treatment planning, and/or the fabrication of a custom impression tray. It is the first impression made for the patient and from which the study cast was produced. These impressions are obtained by a stock tray.

When the primary impression is made, the objectives are to record all areas to be covered by the impression surface of the denture and the adjacent landmarks with an impression material.

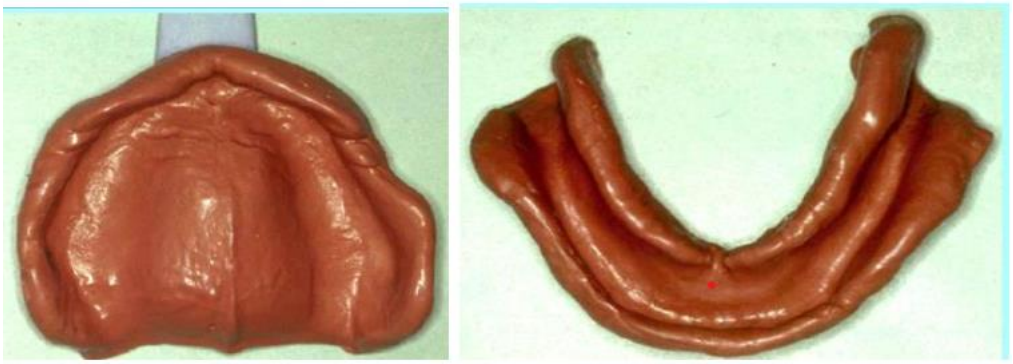
Materials used for making primary impression

1- Impression compound.

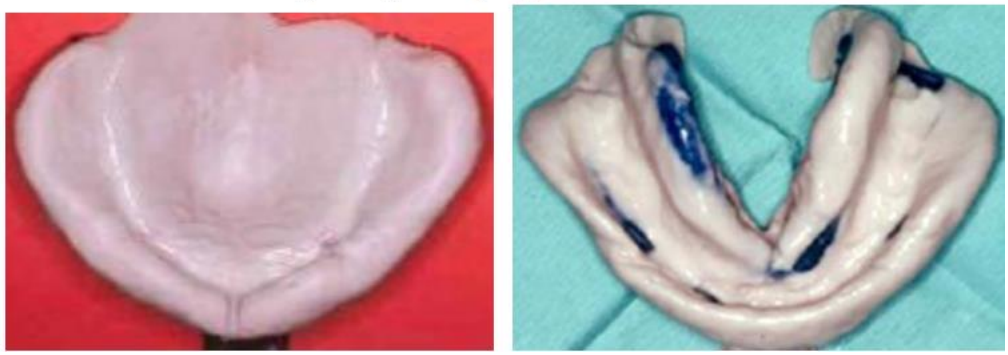
2- Alginate impression material.

3- Putty body silicone rubber base.

Compound primary impression



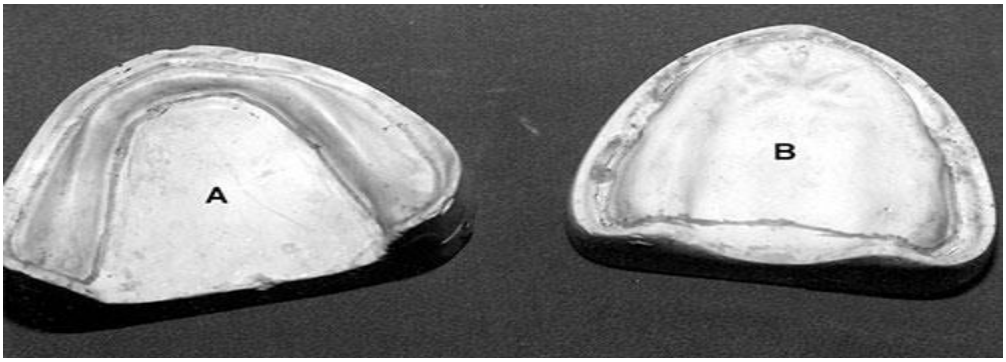
Alginate primary impression



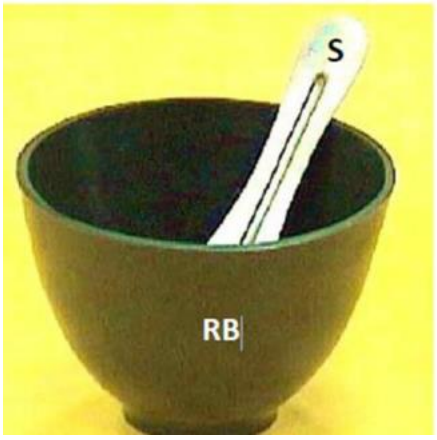
Putty body silicone primary impression

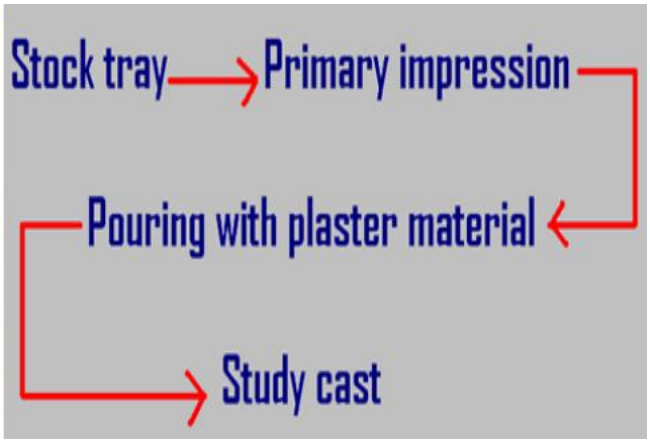
Production of study cast (primary cast)

The Primary cast (study model or diagnostic cast) is produced by pouring the primary impression with plaster which is the positive reproduction of the oral tissues.



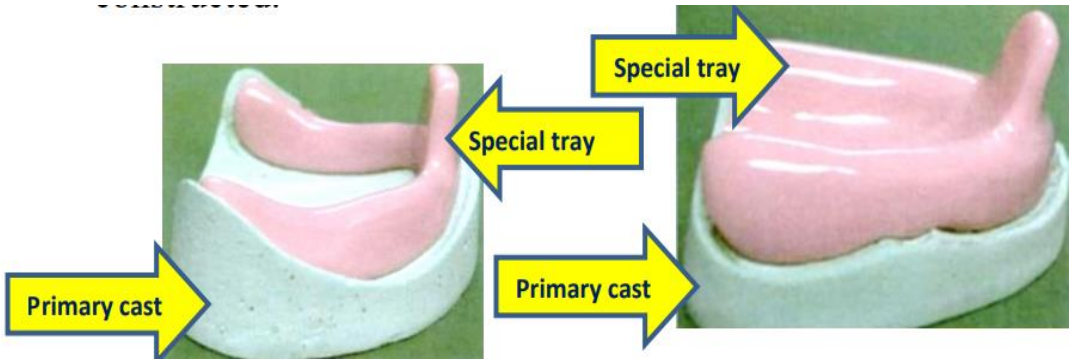
The plaster mixed with water by the saturation method in the rubber bowl and pour in the impression compound impression material after beading and boxing of the impression. When the plaster becomes hard, the cast is separated from the impression by the use of hot water (55-60ºC). When using very hot water, the impression compound will be sticky and it will be difficult to remove from the cast. The special tray will be constructed on the primary or study cast which is used to make final impression. After construction of special tray, it is tried in the patient mouth and checked for proper extension and adaptation on the alveolar ridge, as good impression cannot be obtained unless this step is made. So a correct special tray is a primary fact in obtaining a good working impression.





Special tray (Individual or custom tray)

An individualized impression tray made from a cast recovered from primary impression. It is used in making a final impression. Special tray is constructed on the primary cast. As edentulous ridge show variations of shape and size (some have flattened ridges and other have bulky ridge), for this reason stock tray can fit the ridge only in an arbitrary manner, so special tray is constructed.



Advantages of special trays

1. Economy in impression material (used less impression material required in special tray).

2. More accurate impression.

3. Special tray provides even thickness of impression material. This minimizes tissue displacement and dimensional changes of impression material and produce impression with correct extension.

4. The work with special tray is easier and quicker than modifying stock tray to provide accurate impression.

5. Special tray is more accurately adapted to the oral vestibules, this helps in better retention of denture.

6. Special tray is less bulky than stock tray which is more comfortable for the patient.

Materials used for construction of special tray

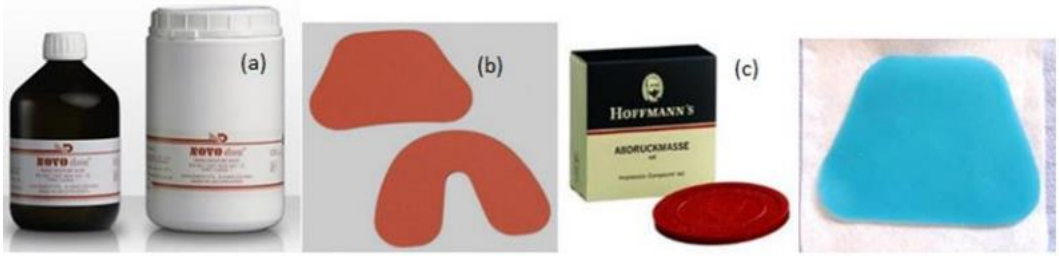
1. Cold cure acrylic resin or self-cure acrylic resin or autopolymerizing acrylic resin (more common).

2. Visible light cured acrylic resin (VLC).

3. Shellac base plate.

4. Impression compound (some time).

5. Heat cure acrylic resin (rarely).

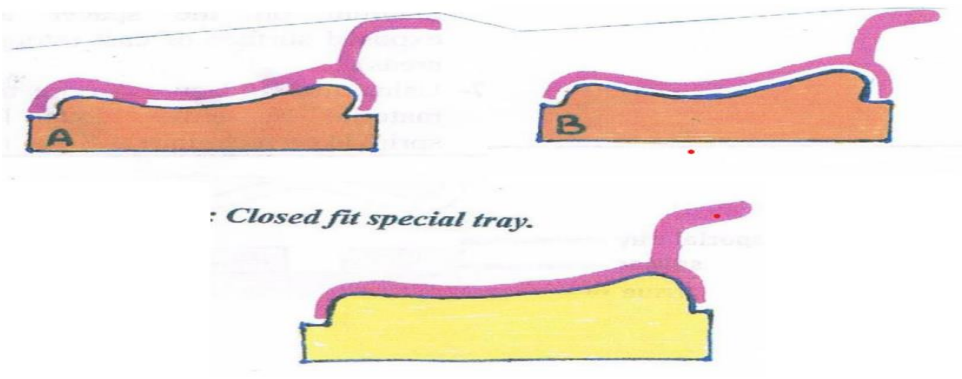


Types of special tray

We have two types of special tray:

1. Spaced special tray (with or without stoppers).

2. Closed fitted special tray.



Fabrication of special tray

1- The cast should be soaked in water.

2-The borders of the special tray and should be marked.

3-The borders of the tray marked on the cast are grooved deeper using a carver, this act as guide to trim the tray later.

4-Severe undercuts should be blocked out using wax.

5- The relief areas are covered with the wax spacer. *To this step the same for close fit and spaced special tray

6-Application of separating medium on study cast.

7- Using the cold cure acrylic tray material by either dough or sprinkle on technique. (For close fit special tray)

While the difference in spaced special tray:

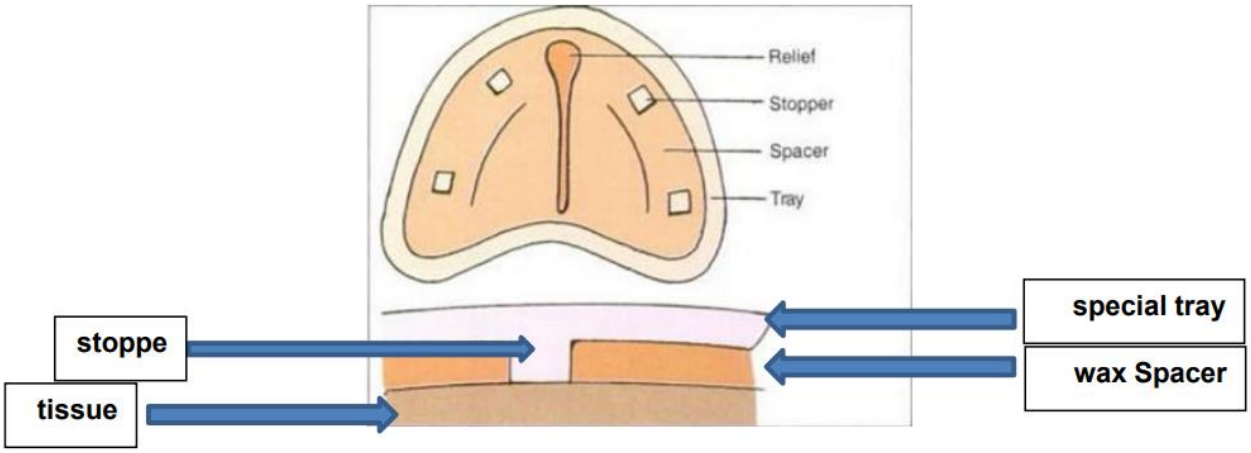
6- Adapting the wax spacer, should be about 2 mm thick, the posterior palatal seal area on the cast is not covered with the wax spacer. Spacer should be cut out in 2-4 mm places so that the special tray touches the ridge in this area. This is done to stabilize the tray during impression making. The part of the special tray that extends into the cut out of the

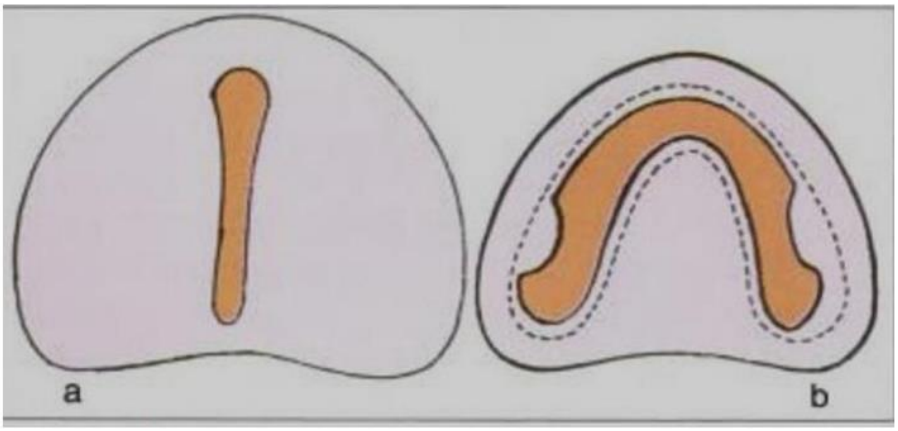
spacer is called stopper, usually 4 stoppers are placed, 2 on the canine eminence and 2 in molar region on either side.

7- Application of separating medium on the spacer and exposed surface of cast (stopper areas).

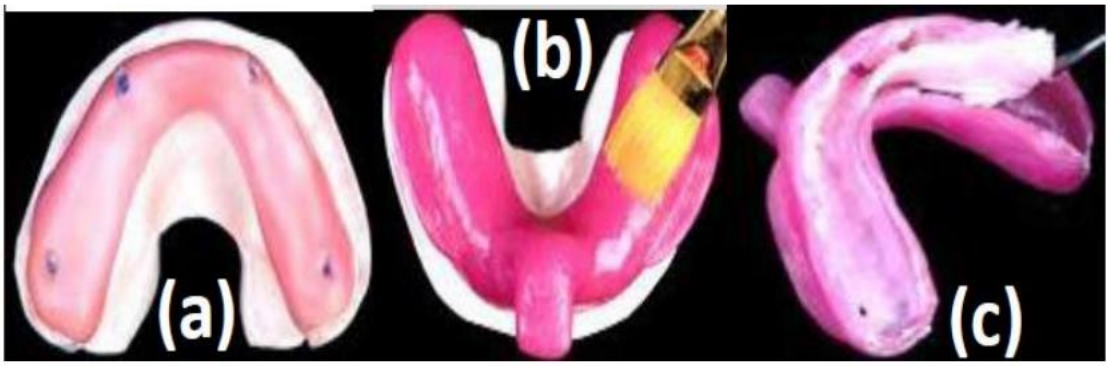
8- Using the cold cure acrylic tray material by either dough or sprinkle on technique.

9- When the special tray is removed from the cast, the wax spacer is left inside the tray to be properly positioned in the mouth during border molding procedure.





Relief for maxillary (a) and mandibular tray (b).



Wax spacer (a), spaced special tray (b), removing of wax spacer (c).

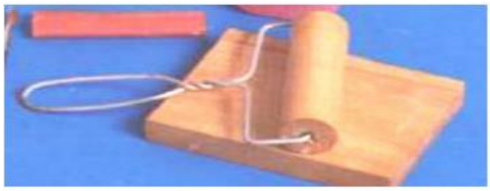
Finger adapted dough method

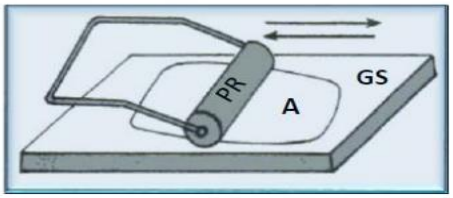
1- The powder and liquid should be mixed in a mixing jar. After mixing the monomer and polymer the mix undergoes three stages (sandy stage, stringy stage, dough stage).

2- In the dough stage the material is kneaded in the hand, to achieve a homogenous mix. Then the material shaped into a 2mm thick sheet either by plastic roll or by pressing the material between two glass slabs the two techniques need a separating medium.

3- After that the sheet of acrylic is adapted over the cast from the center to the periphery to prevent the formation of wrinkles.

Then cut the excess material with blade before setting the material. Then the material should be held in position until complete polymerization. After that the excess dough material is used to handle fabrication





Sprinkle- on acrylic technique

This technique used for construction of individualized impression tray, the monomer and polymer are applied in alternate layers till relative thickness is achieved. The powder and liquid are loaded in separate dispensers. A small quantity of powder is sprinkled on a particular area over the cast and liquid is sprinkled over the powder. Sprinkling drops of the liquid polymerizes the powder. This is continued till the entire ridge and the associated landmarks are covered. Then roughen the ridge area on the top of the tray anteriorly at the midline to make the handle from acrylic resin and attach to the tray.

Criteria for Special tray construction:

1. The impression tray must not impinge upon movable structures.

2. The borders must be under extended (2 mm).

3. The posterior limits of the impression tray should be slightly over-extended to ensure inclusion of the posterior detail for development of the post-dam area in upper tray.

4. The tray should be rigid and of sufficient thickness (2-3 mm) that it will not fracture during its use.

5. The tray must have a handle for manipulation and the handle (L-shape) must not interfere with functional movement of the oral structures.

6. The tray must be smooth on its exposed surfaces, and should have no sharp edges which would injury the patient