Types of impression trays

In complete denture prosthesis we make two impressions for patient a primary impression and final or secondary impression. To make an impression we should have impression tray.

Impression tray:

It is a device used to carry, confine and control the impression material from the patient's mouth while making an impression.

During impression making, the tray facilitates insertion and removal of impression material from the patient's mouth.

Parts of the impression tray:

1- Body: it is consisting of:

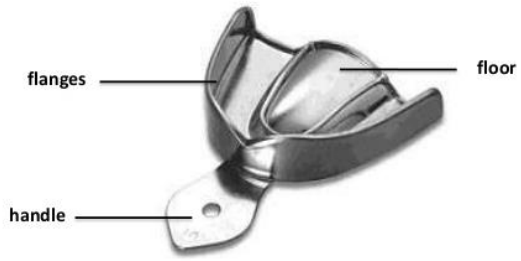
A: Floor.

B: Flanges.

2- Handle

It is an extension from the union of the floor and labial flange in the middle region (midline), it's (L) in shape so that it will not interfere with lip during impression procedure.

There are upper trays to make impression of upper arch and lower trays to make impression of lower arch. The difference between them is that in the upper tray there is the palatal portion we called (vault) and in the lower tray there is the lingual flanges.



Types of trays:

There are 2 main types:

1- Stock trays: used for primary impression procedure.

2- Special trays or individual trays: used for final impression procedure.

Stock trays:

Impression trays serve to carry the impression material to the mouth and support it in the correct position while it is hardening. This type of the trays can be used for several patients and used for making primary impression.

They are made of different materials such as Aluminum, Tin, Brass or Plastic, in variety of shapes, size to fit different mouths.

Types of stock trays (according to the present of teeth):

1- Stock tray for dentulous patient.

2- Stock tray for edentulous patient.

We can distinguish between them by: stock trays for dentulous patient have long flanges, wide and flat floor, while for edentulous patient have short flanges, oval and narrow floor.

Tray with combination flat and oval floor is suitable for partial denture work.

Types of stock trays (according to impression material):

1. Perforated stock tray.

   A. Perforated stock tray without rim lock used with alginate impression material.

B. Perforated stock tray with rim lock (rim lock stock tray). These types used with alginate impression material.

2. Non - perforated stock tray.

A. Non - perforated stock tray without rim lock used with impression compound.

B. Non - perforated stock tray with rim lock used with alginate impression material.

Factors effect in selection of stock tray:

1. The type of impression material used in the primary impression procedure. Example with impression compound we used non-perforated tray because it will be stick on the tray. And if we use alginate impression material we should use perforated stock tray.
2. Size of the arch (XL, L, M, S, XS).
3. Form of the arch. (round, square and taper).
4. The stock tray must cover all the anatomical landmarks needed in complete denture and this is a most important point.
5. Stock tray should give a sufficient space to impression material in all direction (the stock tray should leave sufficient room or space for impression material 4-5mm).

- The primary impression poured by plaster of paris to produce the primary cast (study cast). On this study cast the special tray fabricated.

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 to give more fine details of the anatomical landmarks.

Advantages of special trays:

1. More accurate impression.
2. Special tray is more accurately adapted to the oral vestibules, this helps in better retention of denture.
3. Economy in impression material (used less impression material required in special tray).
4. Special tray provides even thickness of impression material. This minimizes tissue displacement and dimensional changes of impression material and produce impression with correct extension.
5. The work with special tray is easier and quicker than modifying stock tray to provide accurate impression (for the dentist).
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 (self cure 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

1. Spaced special tray. A. With stoppers.
   B. Without stoppers.
2. Closed fitted special tray.

Criteria for special tray construction:

1. The impression tray must not impinge upon movable structures.
2. The borders must be under extended (2mm).
3. The posterior limits of the impression tray should be slightly overextended to ensure inclusion of the posterior detail for development of the post-dam area in upper tray.
4. The tray must have a handle for manipulation and the handle must not interfere with functional movement of the oral structures.
5. The tray should be rigid and of sufficient thickness that it will not fracture during its use.
6. The tray must be smooth on its exposed surfaces, and should have no sharp corner or edges which would injury the patient.

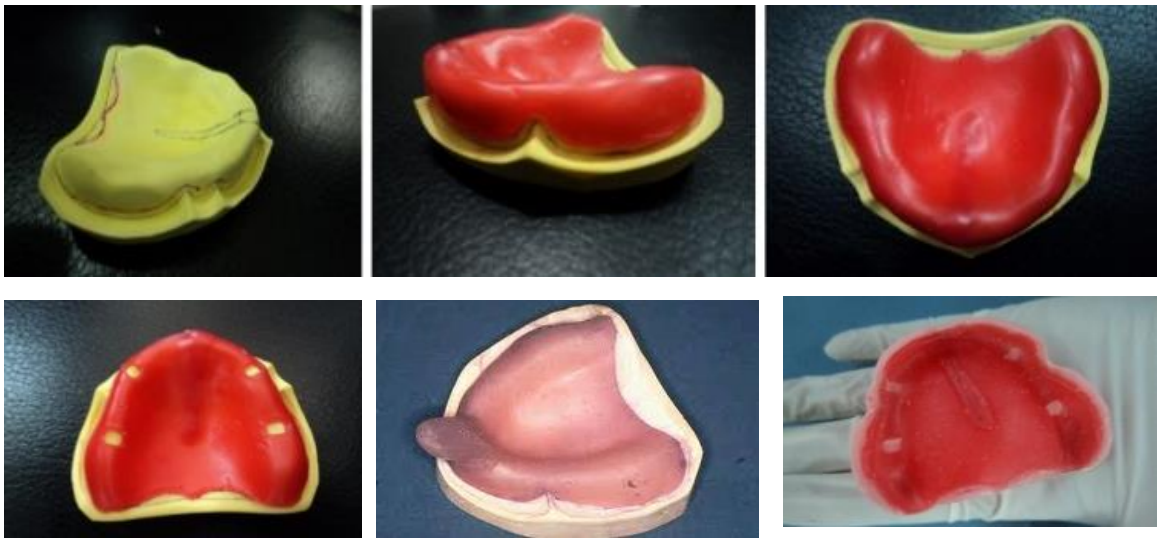
Techniques or methods of construction of special trays:

We draw special tray out lines on the study cast before special tray construction.

1. Finger adapted dough method.
2. Sprinkle-on acrylic method.

Finger adapted dough method:

A. In spaced special tray with stoppers we should have 4 stoppers, 2 at anterior area (canine areas) and 2 at posterior area (first molars areas) in both sides. A baseplate wax sheet l mm in thickness is adapted on the primary cast (after heating the wax) and a window open on the wax sheet in area of stoppers (canines and molars) by removing the wax to make the stoppers and then put a uniform layer of self cure acrylic resin upon it. After complete acrylic polymerization we remove the tray from study cast then remove the wax from the acrylic tray, there is a space (between special tray and primary cast) with 4 stoppers which will stop the acrylic special tray in the mouth of the patient and stop the pressure on the final impression material during make the final impression.



B. In spaced special tray without stopper a baseplate wax 1 mm in thickness is adapted on the study cast (after heating the wax) then put the acrylic resin on it, after complete acrylic polymerization we removed the tray from study cast then remove the wax from the acrylic tray there is space (between special tray and primary cast) without stoppers.

C. In close fit special tray we used only separating medium on study cast and a self curing acrylic resin tray material is mixed and uniformly adapted over the cast, so that the tray will be about 2-3 mm in thickness.

- Acrylic resin handle is attached in the anterior region of the tray to facilitate removal of the final impression.

Sprinkle- on acrylic technique

1. Eliminate undercuts on the cast with a thin coat of wax.
2. Paint cast with separating medium (cold mold seal).
3. Place acrylic resin powder (polymer) in a container with a perforated top (like a salt shaker). Place the (liquid) monomer in a dappen dish.

4. Shake the polymer on the border area. With a glass medicine dropper, add monomer over the acrylic powder to the saturation point. Continue to build this over the entire denture bearing area to thickness that will yield a rigid tray (a minimum of 2.5mm).

5. Just before the final polymerization, remove the tray, reseat on the cast, and allow complete polymerization.

6. Reduce the borders to coincide with the outline on the cast (2mm under extended).

7. Make a handle from acrylic resin and attach it to the top of the tray anteriorly at the midline.