



Second Stage

5. lecture

Criteria for special tray construction

م.د. نسرين مهدي صالح الفهداوي
جامعة المعارف / كلية طب الأسنان

Criteria for special tray construction:-

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



Purpose of Custom Tray

1. Minimize impression material distortion (uniform thickness, rigid tray).
2. Prevent tissue distortion (less viscous material, more accurately adapted tray).
3. Reduce costs - less impression material (expensive) is used.
4. Allow for accuracy by molding the border, resulting in improved retention.

Objective of Custom Tray

- Strong.
- Adjustable.
- Comfortable.
- The tray must have a handle for manipulation, and the handle must not interfere with functional movement of the oral structures.
- The tray must be smooth on its exposed surface, and should have no sharp corner or edges which would injure the patient.



Fabrication of the Custom Impression Tray

Armamentarium for the self-curing methyl methacrylate custom impression tray include:

- Wax.
- Separating fluid and brush.
- Auto polymerizing acrylic resin.
- Spatula and mixing container.
- Wax knife.
- Straight angle and carbide acrylic trimming burs.



Light-cured sheets of composite resin can also be used in place of the methyl methacrylate.

One advantage to this material is the absence of chemical fumes.

Disadvantages include

- Somewhat greater cost.
- Also, the debris formed from trimming light-cured materials is tenacious to clothing and surfaces in the dental operator and laboratory.
- More difficult to contain.



Objectives of impression making:-

- 1) Retention.
- 2) Stability.
- 3) Support for denture.
- 4) Support for esthetic.
- 5) Preservation of the residual alveolar ridge and soft tissue.



Primary impression: It is a negative likeness made for the purpose of diagnosis, treatment planning, or the fabrication of a tray. It is the first impression made for the patient and from which the study cast was produced. A stock tray obtained this impression.

Materials used for making primary impression:-

1- Impression compound.



2- Alginate impression material.



3- Rubber base impression materials.



Production of study model or primary cast: -

The study cast is produced by pouring the primary impression (after beading and boxing) with plaster that was mixed by the saturation method in the rubber bowl.

When plaster become hard, the cast is separated from the impression by the use of hot water (55°C – 60°C). When using very hot water, the impression compound will be sticky and it will be difficult to remove from the cast. On the study cast construct the special tray or individual tray which is use to make final impression.

Secondary or final impression

Final impression in general:- The impression that represents the completion of the registration of the surface or object.

Materials used for final impression:-

1- Zinc-oxide Eugenol impression material or paste. (Z.O.E)

2- Alginate impression material.

3- Impression plaster.

4- Elastomers impression materials

a- poly sulphide "rubber base"

b- poly ether c- silicon.

5- Waxes.



The techniques used for making final impression:-

- 1- Mucostatic impression technique (non pressure technique).
- 2- Function Impression technique (pressure technique).
- 3- Selective pressure impression technique.

Common faults in impression making:-

1. Poor selection of tray.
2. Insufficient material loaded in the tray.
3. Excessive material loaded in the tray.
4. Failure to press the tray completely to position (insufficient seating pressure).
5. Excessive seating pressure.
6. Incorrect positioning of the tray before finally seating it.
7. Obstruction of the proper flow of material by lips, cheek, or tongue.

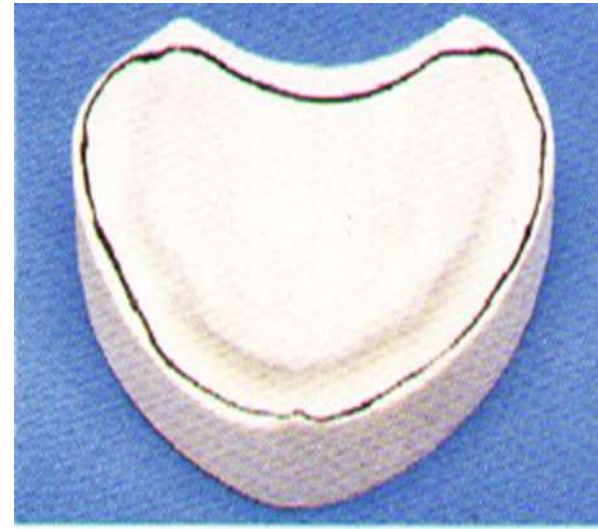
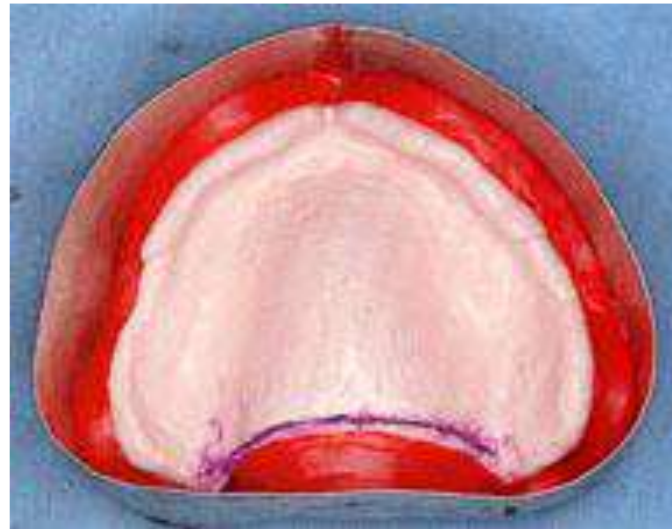


Boxing impression and making the casts:-

Boxing: Is the enclosure of an impression to produce the desired size and form of the base of the cast and to preserve desired details.

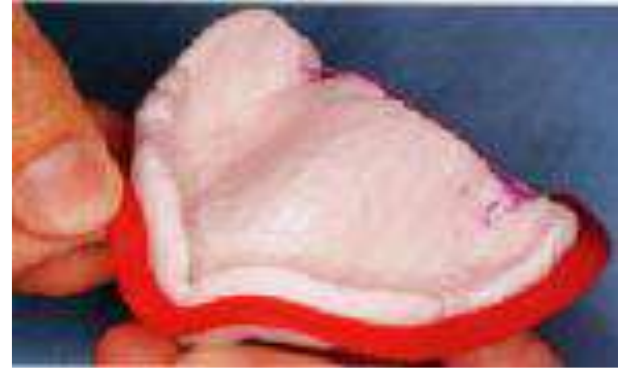
Advantages of boxing:

- 1- To facilitate pouring the impression with plaster or stone.
- 2- Produce the desired size and form of the base of the cast (adequate thickness of the cast).
- 3- Preserve desired details and borders of the impression.
- 4- In the lower impression, reproduction of the lingual borders & tongue space easier.
- 5- Provide adequate thickness of cast.

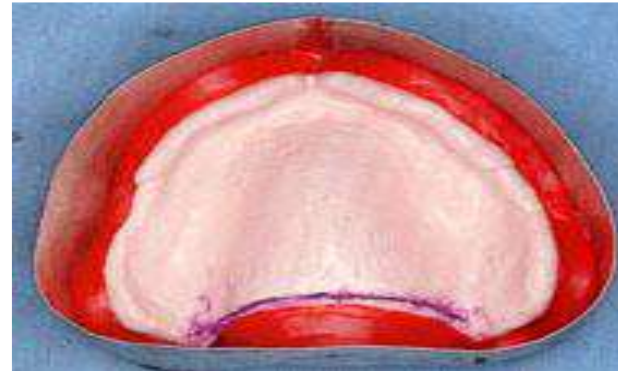


Materials used for boxing impression:

1- Beading wax: a strip of wax is attached all the way around the outside of the impression approximately (1-2 mm) below the border & sealed to it with wax knife.



2- Boxing wax: a sheet of wax is used to make the vertical walls of the box & it is attached around the outside of the beading wax strip so that it does not alter the borders of the impression, the width of the boxing wax is about 10-15 mm.



3- Base plate wax: a sheet of wax can be used to fill the tongue space in the lower impression that is sealed just below the lingual border of the impression.



The cast is called master cast