Complete denture impressions

Dental Impression:

Is a negative imprint (replica) of an oral structure used to produce a positive replica of the structure (cast) to be used as a permanent record or in the production of a dental prosthesis.

Complete denture impression:

It's a negative registration of the entire denture bearing, stabilizing and seal area of either the maxilla or the mandible.

Objectives of impression making:

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

Retention: It is the quality of dental prosthesis acting to resist the forces of dislodgment along the path of placement (away from the tissue).

Retention must hold the denture in its position when it is set at rest.

Stability: It is the quality of dental prosthesis to be firm, steady or constant to resist displacement by

functional horizontal or rotational movement (mastication force).

Support: It is the quality of dental prosthesis to resist displacement toward the denture supporting foundation. Therefore, the greater the amount of area covered by denture the greater the support, the best support for denture is came from compact bone covered with fibrous connective tissue.

- Retention result from the relation of (Denture base + Soft tissue).
- Stability result from the relation of (Denture base + Underlying bone).
- Support result from the relation of (Denture base + Underlying bone + Soft tissue).

Esthetics: Border and flanges thickness should be varied with the need of each patient in accordance with extend of residual ridge loss. The vestibular fornix should be filled, but not overfilled by denture flanges to restore facial contour.

Preservation of the residual alveolar ridge and soft tissue: Natural teeth cause stimulation for the alveolar ridge to stay in health condition. Preservation of the remaining residual ridge is physiologically accepted that with the loss of natural teeth, the alveolar ridge will atrophy or resorbed.

Primary impression

it is a negative likeness (replica) made to produce the positive replica (primary cast)which used for the purpose

of diagnosis, treatment planning, or the fabrication of special tray. It is the first impression made for the patient by stock tray.

Stock tray selection

A- For the upper stock tray, the posterior border of the tray should cover the maxillary tuberosity and hamular notch, anteriorly should include the anterio- alveolar ridge.

B- For the lower stock tray posterioly should cover the whole area of retromolar pad area and anteriorly include the alveolar ridge.

Materials used for making primary impression:

1. Impression compound.
2. Alginate impression material.
3. Rubber base impression material (Silicone putty).

Primary cast: (Study model or diagnostic cast).

It is a cast formed from a primary impression used in diagnosis, treatment plan or the fabrication of special tray.

Production of study cast (primary cast):

The primary impression is poured or casted in plaster (after beading and boxing the primary impression) with gentle vibration on the vibrator to get the primary cast or study model which is the positive reproduction of the oral tissues.

The plaster mixed with water by the saturation method in the rubber bowel. When the plaster became hard, the cast is separated from the impression(When impression compound

used) 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. The special tray will be constructed on the primary or study cast which is used to make the 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 before making the final impression.

Final or Secondary impression:

The final impression is made with special tray and it is used for making master cast which must be poured with stone or die stone materials.

Materials used for final impression:

1. Zinc oxide eugenol impression material..
2. Elastomers:
   - a- Silicon (light body). (Mostly used)
   - b- Poly ether.
   - c- Polysulphide.
3. Impression plaster.
4. Impression wax. (Rarely used)
5. Alginate impression material.

The techniques used for making final impression:

1. Mucostatic impression technique (non pressure technique).
2. Mucocompression impression technique (pressure technique or closed mouth or functional technique).
3. Selective pressure impression technique.

Master cast: (definitive or final cast): a positive replica of the tooth surfaces, residual ridge areas and or other parts of the dental arch and or facial structures used to fabricate a dental prosthesis or maxillofacial prosthesis.

It is a cast formed from the final impression.

Production of master cast (definitive cast):

The final impression is poured or casted with stone (after beading and boxing the final impression). The stone mixed with water first by the saturation method in a rubber bowel then added to the impression with gentle vibration on the vibrator. When the stone became hard, the master cast is separated from the impression.

Beading and boxing:

Boxing: is the enclosure (circling) of an impression to produce the desired size and form of the base of the cast and to preserve the fine details.

Boxing impression can be used for primary and final impression for complete denture. This procedure cannot usually be used on impression made from hydrocolloid materials (alginate and agar) because the boxing wax will not adhere to the impression material and the impression material (alginate) will be distorted.

Advantages of boxing:

1. To facilitate pouring the impression with plaster or stone.
2. Provide adequate thickness of the cast.
3. Produce the desired size and form of the base of the

cast.

4. Preserve desired fine details and borders of the impression.

5. In the lower impression, boxing makes the reproduction of the lingual borders and tongue space easier.

Materials used for boxing impression:

1. Beading wax: a strip of wax is attached all the way around the outside of the impression approximately (2-3 mm) below the border and sealed to it with hot wax knife.

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

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

- ❖ Artificial stone is mixed according to manufacturer's direction and sufficient stone is poured into the final impression so that the base of the cast will be from 10-15mm in thickness.

Common faults in impression making:

1. Poor selection of the tray.
2. Incorrect position of the tray(non centralization of tray)
3. In sufficient material loaded in the tray.
4. Excessive material loaded in the tray.
5. Insufficient seating pressure.

6. Excessive seating pressure.

7. Obstruction of the proper flow of the material by lips, cheek or tongue.