Secondary, master, (functional impression) taking methods

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Secondary (master, functional) impression:

**objective:** -to obtain an impression, from which a retentive denture base can be constructed

**properties:**

1. Taken by a special tray,
   - created onto the primary cast in the lab, according to the outlining of the dentist.
2. Made individually according to the tissues of the patient
3. Working impression: the patient carries out special movements during impression taking.
4. Extended till the border of the denture
Requirements of the denturebase

1. Should be extended until its border lies on displaceable tissue where a seal can be obtained (sulcus, underextension)

2. Mobile tissues adjacent to the border should not displace the denture or suffer injury (sulcus, overextension)

3. Should have the closest possible contact with the surface of the mucous membrane lying beneath it (impression surface, precision)

4. Extended, providing the possible maximum coverage of the jaw, ensuring that the minimum force per unit area is transmitted by the denture during function (clinical anatomy)
1. Transforming the special tray to functional tray
   - control on the cast
   - close fitting or spaced tray
   - cleaning
   - control in the mouth to have enough space for the chosen impression material 2-3mm.
   - providing retention for the impression material
1. Special tray adjustment modalities:

If: 1. Over-extension:

- With a bur or fraser or stone we trim away the offending edges:
- The tray can be displaced during functional movements - instable denture
- Injury on the soft tissues

2. Under extension:

- The edges can be completed:
- Otherwise the final denture will be short
- It results an inaccurately fitting denture, because the unsupported impression material on the edges are distorted during casting

Border trimming material (green stick, wax, acrylic)
1. Adjustment of the special tray during special movements:

- 1. Opening and closing the mouth
- not maximally:
- Both in the upper and
- in the lower jaw:
- Both in adjusting the special tray
- and making the impression
- Moving: Posterior sulcus
- area.
Movements:

- **2. Smiling and suckling:**
  - Both in the upper and lower jaw
  - Both in adjusting the special tray and making secondary impression:

- **Moving: the upper and lower**
- **vestibular sulcus area**
3. Moving the tongue according to the lower lip:

- Adjusting the lower tray, and during lower secondary impression procedure:

**Controlled regions:**

- 1. sublingual area
- 2. paralingual area
- 3. lingual pouch are controlled
Movements

3. Blowing of the nose
 Adjusting the upper tray, taking the upper functional impression:

Controlled region:
- We control the vibrating line,
- The post dam region.
- The area between
- the 2 pterygomaxillar plica.
Movements:

- **4. Swallowing:**
  - Adjusting the lower special tray, taking the lower functional impression.

- **Controlled region:**
  - Paralingual area, and
  - Lingual pouch.
Impression techniques: 1. mucostatic, 2. mucodinamic

1. Mukostatic: Applies minimal pressure to the mucosa and therefore records their resting shape.

- **Indications:**
  - thin submucosa
  - bad clinical-anatomical conditions
  - (great bone resorption)

- **Disadvantage:**
  - The distribution of occlusal loads by the finished denture will be uneven, the impression (intaglio) surface will be uneven. Resulting injury during function—foils. Physical retention is good in resting position.

- **Impression materials:**
  - Low and high viscosity impression materials are suitable. (gypsum, alginate, ZnO eugenol, silicon, poliéter-polisulfid, oroelastic.)
Impression technique:

2. **Mucodisplacive**: Applies pressure to the mucosa during the impression taking procedure, so that the shape of the tissues under load is recorded.

- **Indications**: - thick submucosa
  - good clinical-anatomical conditions (less bone resorption)
  - chewing stability is optimal
- **Advantages**: - registering the tissues under load
  - occlusal loads are more evenly dispersed over the tissues
  - displaced shape of the mucosa is recorded under occlusal load
  - tin foil is not necessary
  - less decubitus
  - good functional stability can be obtained.
- **Disadvantage**: - physical retention of the denture is less than obtained with mucostatic impression techniques, in resting position fitting is not so accurate.

- **Impression materials**: high viscosity materials only (ZnO eugenol, silicon, poliéter-poliszulfid, oroplasic)
Impression materials:

1. Plaster of Paris:
   - low viscosity, mucostatic impression only, spaced tray, today history

2. Alginate:
   - irreversible hydrocolloids
   - spaced tray
   - adhesive spray

3. ZnO eugenol:
   - mucostatic and mucodynamic impressions as well
   - close fitting and spaced tray as well
   - working time is long

4. Silicone:
   - mucostatic and mucodynamic impressions as well
   - close fitting and spaced tray as well
   - the edges of the tray should support the impression material
Impression materials:

5. Polieter - polisulfid impression materials:
   - similar characteristics as silicone

6. Oroplastic impression materials:
   - doesn’t have setting time
   - thermoplastic
   - spaced tray can be used only
   - mucostatic and mucodinamic impressions
   - heated in water-bath
   - severe bone resorption,
   - bad clinical anatomical condition,
   - flat or negative alveolar ridge
   - inspite of the moving denture base on a saliva film, no injury.
7. Combined impression technique with ZnO-eugenol and Oroplastic impression material

Upper secondary impression:
1. static impression with ZnO eugenol paste.
2. borders are trimmed away and oroplastic material is placed 2mm width and height approximately
3. at mouth temperature functional movements are performed 3-4 times
4. cooled with water, eliminated from the mouth

Lower secondary impression:
1. The edges of the secondary tray is covered with oroplastic material- functional movements are performed-
    cooled with water – eliminated from the mouth
2. The whole surface of the tray is filled with ZnO paste, performed.
Determining the post-dam region:

1. Drawing with indelible pencil on the secondary cast

2. Functional determination:
   a.-impression compound
   b.-Rand form wax or oroplastic impression material
Controlling the secondary impression:

- Stability during speaking, and functioning (functional movements)

- Chewing stability: applying forces on the handles of the tray
Special impression techniques:

I. In case of flabby ridge:
- fibrotic soft tissue
- not able to adapt to biting forces
- not adviceable to eliminate by oral surgery
  1. Mucocompressive impression taking with ZnO eugenol
  2. Mucostatic part with ZnO eugenol, and strengthening with plaster of Paris
  3. Control

II. Oronasal and oroantral communication:
- trauma, tumor, malformation
- prae-and post op. stádium
- obtaining a vacuum effect is impossible.
- obturator or simple baseplate are possible.
Boxing with impression wax, casted with plaster of Paris:

- The full depth and width of the sulci are carefully maintained
Thank You for Your attention!