Dental Material

Dr. Hiba Jassim Rassol
Ph.D.

Lecture 1

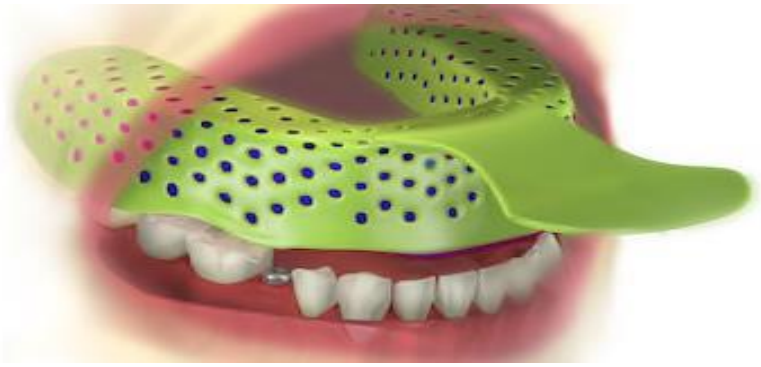
Impression materials

- **Impression materials are used to make replicas of oral structures and their relationship.**

- **All impression materials Impression can be made by placing fluid or semi fluid material inside the patient mouth and wait until it set's then removing it . From this (the impression) a positive reproduction, or cast is made.**

- **Physical change, chemical reaction, or polymerization convert these fluid materials into either elastic or nonelastic.**

- **Impression materials are materials used to make impressions for the dental arch. (upper or lower)**
- **The impression is a negative reproduction, whereas the replica (model or cast) is a positive reproduction.**



Requirements of an impression material

1. It should be elastic after its placement in the patient's mouth so that it can be removed from the undercut areas that exist on the external tooth surfaces adjacent to the prepared tooth without distortion or fracture.

2. It should have adequate strength to resist breakage or tearing on removal from the patient's mouth (adequate tear strength).

3. It should have adequate dimensional stability over temperature and humidity ranges normally found in clinical or laboratory procedures for a period long enough .

4. It should have adequate accuracy for the production of the fine details so that it is an exact

5. Additional factors such as cost, taste, colour, etc.

Impression materials are generally transferred to the patient's mouth in an impression tray (stock or special tray). The tray is required because these materials are initially quite fluid and require support. Once positioned in the patient's mouth, the material undergoes setting either by physical or chemical process. After

setting, the impression is removed from the patient's mouth. This negative replica is converted into a positive replica by pouring it with cast or die.

<u>The purpose of making modes: (casts)</u>

1. To study the cast.

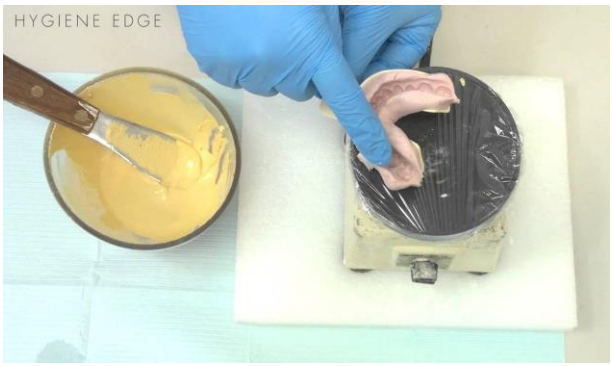
2. To diagnose the case.

3. To plan the line of treatment.

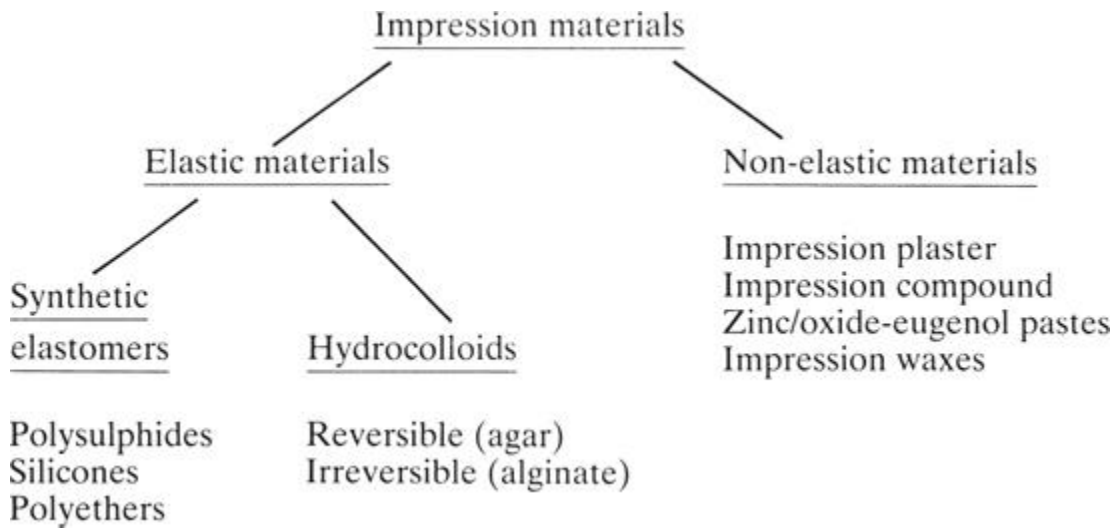
4. To construct indirect restorations e.g. (inlay, onlay, crown, bridge, bridge complete or partial dent

<u>Pouring</u>

•A model or cast material e.g., high-strength stone is poured into the impression and, upon setting, produces a positive impression of the tissues.



Classification of Impression Materials

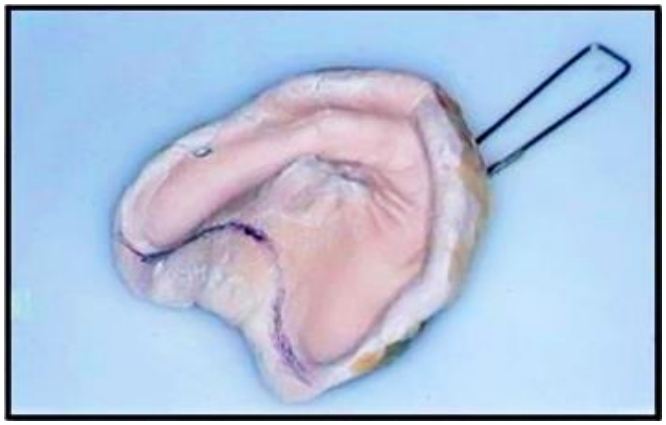


Nonelastic Materials (rigid impression material)

1. **Impression plaster**

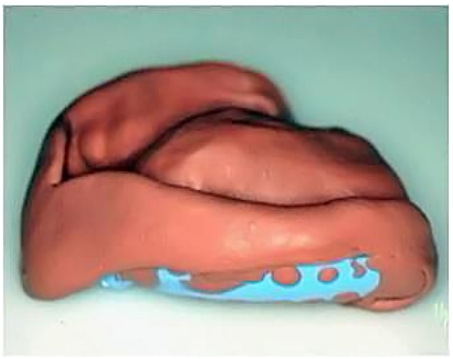
- **Plaster of Paris is seldom used as impression material now is used for the final impression of an edentulous patient.**

- **The main component of impression plaster is calcium sulfate, which reacts with water.**



2. <u>Impression compound</u>

- **It can be used for impressions of completely edentulous jaws.**
- **Compound cannot be used to record undercuts since it is not elastic.**



- **Impression compound is available in either cakes or sticks in various colors**
- **Dental compound is thermoplastic; it is used warm (45 C) and then cooled to oral temperature (37 C), at which it is fairly rigid.**

Advantages

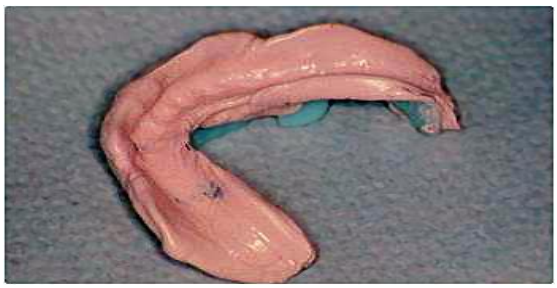
- **Dental impression compound is compatible with die and model materials.**
- **Can be reheated and readapted**

Disadvantages

- **Poor dimensional stability**
- **Poor surface detail**

3. Zinc oxide eugenol

- **Zinc oxide eugenol's main use as an impression material is for complete dentures on edentulous ridges with minor or no undercuts.**
- **It can also be used as a wash impression over the compound in a tray or in a custom acrylic tray.**



Advantages

- **Good surface detail.**
- **Good dimensional stability.**
- **Can be added to with fresh zinc oxide eugenol**
- **Stable on storage and good shelf life.**
- **Inexpensive**

Disadvantages

- **Variable setting time due to temperature and humidity.**
- **Eugenol allergy in some patients.**

4. Impression Waxes

- **Waxes are thermoplastic materials, which flow at mouth temperature and are harden at room temperature.**
- **Normally used to correct small imperfection (e.g. air bubbles) in other impressions, especially zinc oxide impressions.**
- **They consist of a combination of a low melting paraffin wax and beeswax.**
- **These materials are not used to take impression, just to correct impression.**

Thank You