

University of Basrah
College of Dentistry
Department of prosthetic dentistry

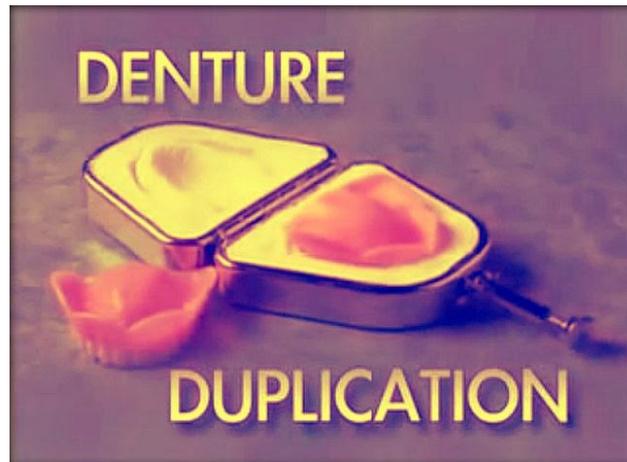
5th stage / lec 17

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Complete Denture Duplication

- **Definition:**

A duplicate denture is a second denture intended to be a copy of the first denture. Synonyms Copy dentures, Template dentures, Replica dentures.



- **Aims:**

1. The transfer of contours from old to new dentures for maintenance of neuromuscular control.
2. Any modifications done to the basic shape of the old denture should therefore be only those necessary to correct the loss of fit i.e., (patient's complaint) and those considered essential by the operator, e.g., slight increase in the OVD and the replacement of the worn denture teeth.



Source: Authors.

- **Indications:**

1. When it is desirable, especially for the older patients, to provide replacement dentures (with improved fit) similar in most aspects to those to which patients are already accustomed. It is not easy for a geriatric patient to get used to a new denture with altered polished surface contours readily.
2. If we desire to renew old deteriorated and stained denture base material, the duplicate denture will have the appearance of being completely new.
3. If it is desired by a patient to have a spare denture in case of accidentally fracture or loss of the original denture. The patients often are concerned about being without dentures during required repair or relining process.
4. If we need to experiment interchanging the occlusal relationship of the dentures – for clinical or research reasons. This could be carried out on the spare denture, without changing the original one.



(a)



(b)

- **When to Duplicate a Denture:**

1. We are not going to duplicate a denture unless its examination reveals satisfactory findings as regards to esthetic, physiologic, and psychologic needs of a patient.
2. The denture(s) should be evaluated for any previous fractures, craze lines, missing or replaced teeth, esthetics, phonetics, accuracy of fit, and vertical and centric relations.
3. On the basis of this examination, the patient is then advised whether the existing denture should be duplicated or remade.



- **Temporary Duplicate Dentures:**

Production of temporary duplicate dentures is sometimes carried out with the aim that these can be progressively modified if the patient's capacity to adapt is in doubt (e.g., gradual increase in occlusal vertical dimension) or if the cause of the patient's complaints is not clear (e.g., patient may be a denture collector).

These could be fabricated with low cost and with less clinical and laboratory time. Once a satisfactory appliance has been achieved, it can then be copied to produce a definitive denture.

- **Techniques for Denture Duplication**

A number of methods or techniques have been reported for producing a template for a duplicate or copy denture. All these techniques are similar except in the use of mould container and materials. Some of these methods are

1. Modified denture flask method
2. Duplicating flask method
3. Pour resin flask method
4. Cup flask method
5. Soap container method
6. Agar container method CD Duplication
7. 3D printing method

Basically, a mould of the old denture is produced in an elastic material, such as alginate or silicon putty supported in a rigid container.

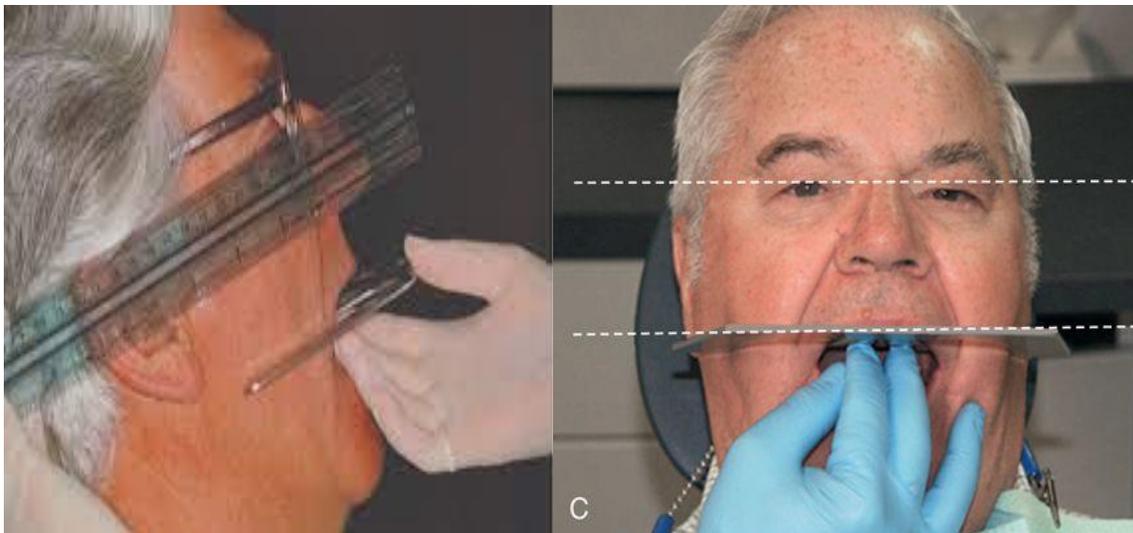
The wax or auto-polymerizing resin template is fabricated from this mould. Any necessary modifications to the old denture are performed on this template denture and tried – in the patient's mouth before finishing the prosthesis.

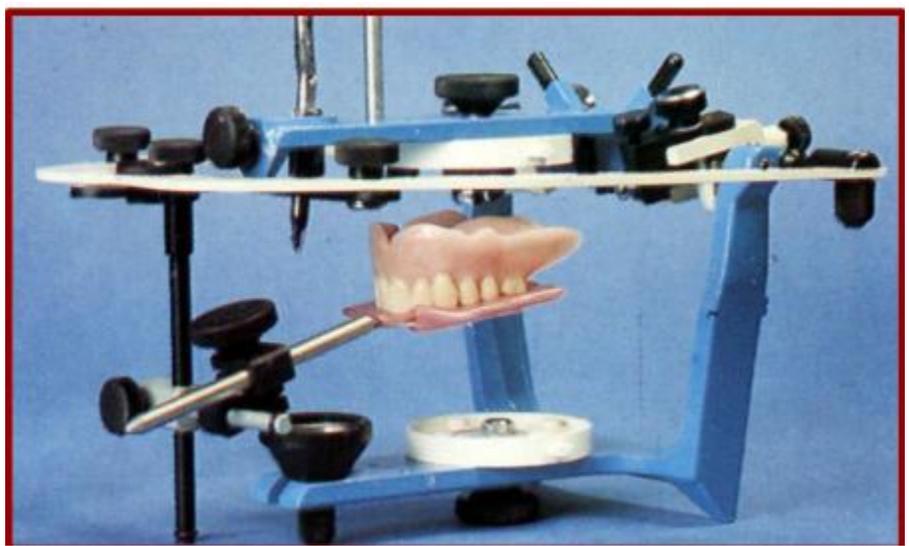
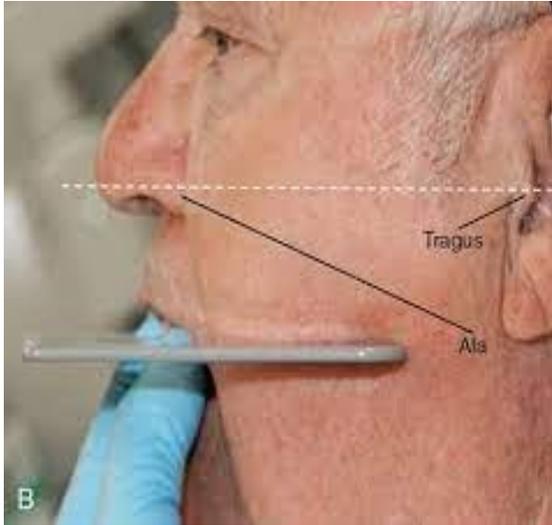
In some of the techniques, auto-polymerizing resin teeth are also fabricated instead of using available ready-made mould, especially for the temporary duplicate dentures.

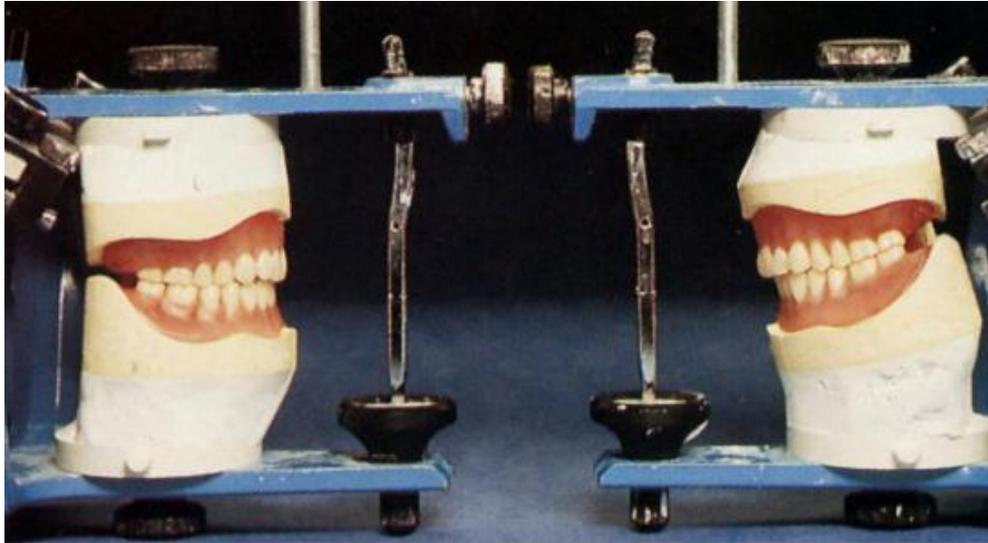
- **Denture Duplication Technique ‘The Duplicating Flask’**



- **1st visit:** This visit includes duplication of the old denture in auto-polymerizing acrylic resin, recording the centric jaw relation, and selection of the shade, size, and form of the denture teeth, if the previous selection (old denture) is not accepted by the dentist and the patient.





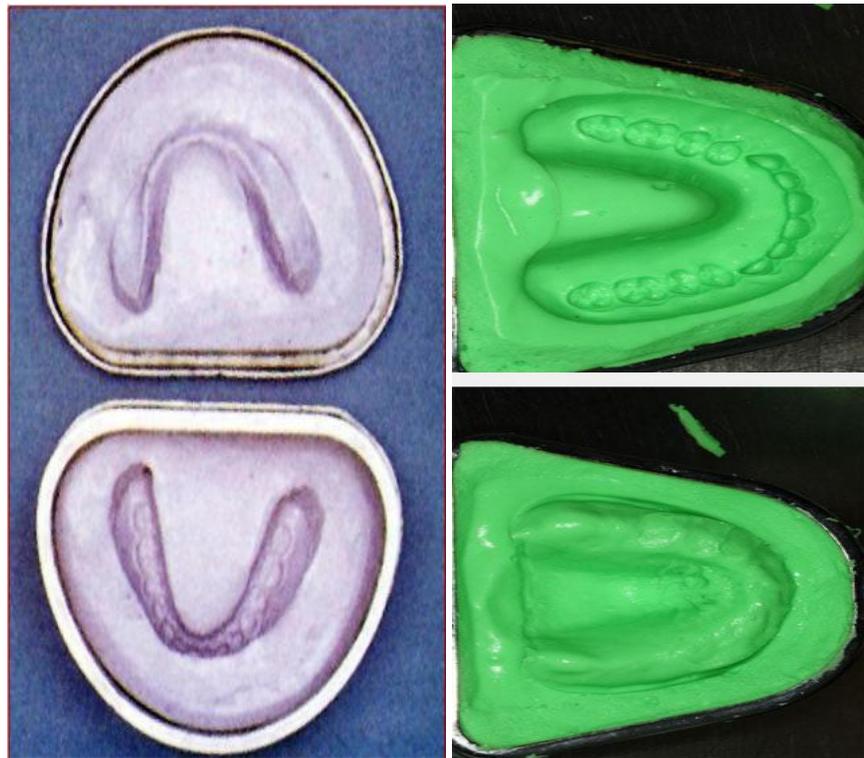
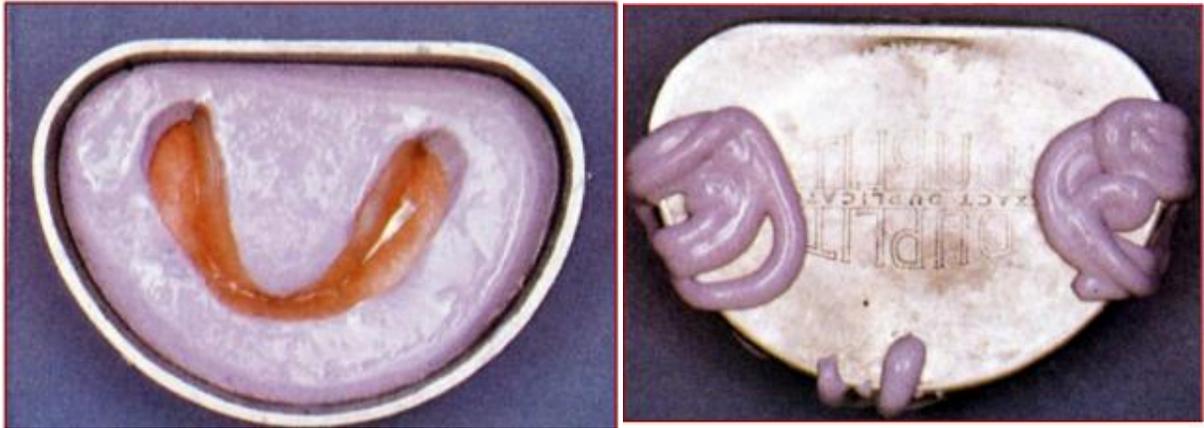


- **Laboratory procedures for denture duplication**

Impressions of the dentures are recorded in alginate using a suitable rigid container, such as a duplicating flask, a modified denture flask or a soap container



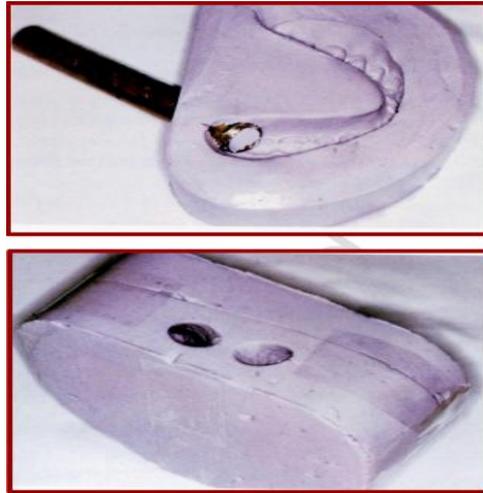
Types of containers to be used
The denture is submerged in alginate.



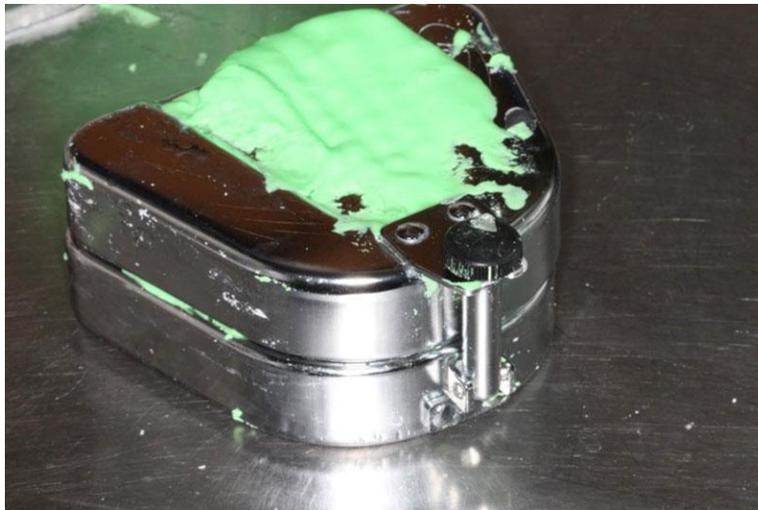
When the alginate is set, any flash of the material on the base is trimmed with a sharp knife.

The flask is then filled with a new mix of alginate avoiding any air entrapment, and the lid is closed.

Alginate halves are separated and the denture is removed. It is returned to the patient.



Sprue holes are then cut into the posterior border of the alginate mold.



The impression is reassembled and held together with adhesive tape. Auto-polymerizing resin is then run into one of the sprue holes until it rises from the other.



Lastly, the duplicate monochrome denture is removed from the flask and mounted on a suitable articulator. Then the pink colored teeth are replaced by the selected mold of the teeth. Original and Auto-polymerizing resin Upper & Lower Template dentures

- **2 nd visit** This visit includes try in of the dentures verification of the jaw relations and tooth positions for esthetics and phonetics. A relining / rebase impression is then obtained as in the conventional reline technique.



- **Laboratory Procedure:**

The dentures are now processed, finished and polished with routine laboratory procedures.

- **3 rd visit**

This visit includes all the necessary clinical procedures performed at the insertion appointment of a complete denture including the PIP adjustment and occlusal adjustments. A clinical remount procedure should also be carried out to perfect the occlusion of the duplicated dentures.

- **Denture Duplication Technique ‘The Soap Container’**

The Soap container



Denture borders are modified with green stick compound



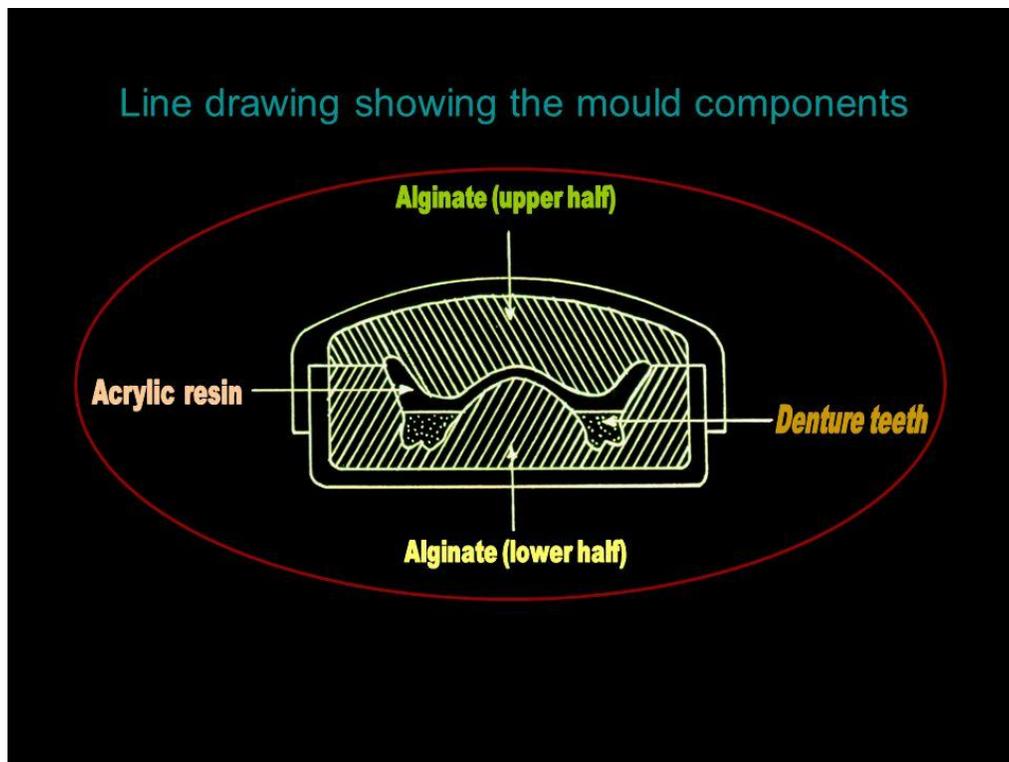
It is then submerged in alginate in the soap container. Denture invested in the lower part of the container



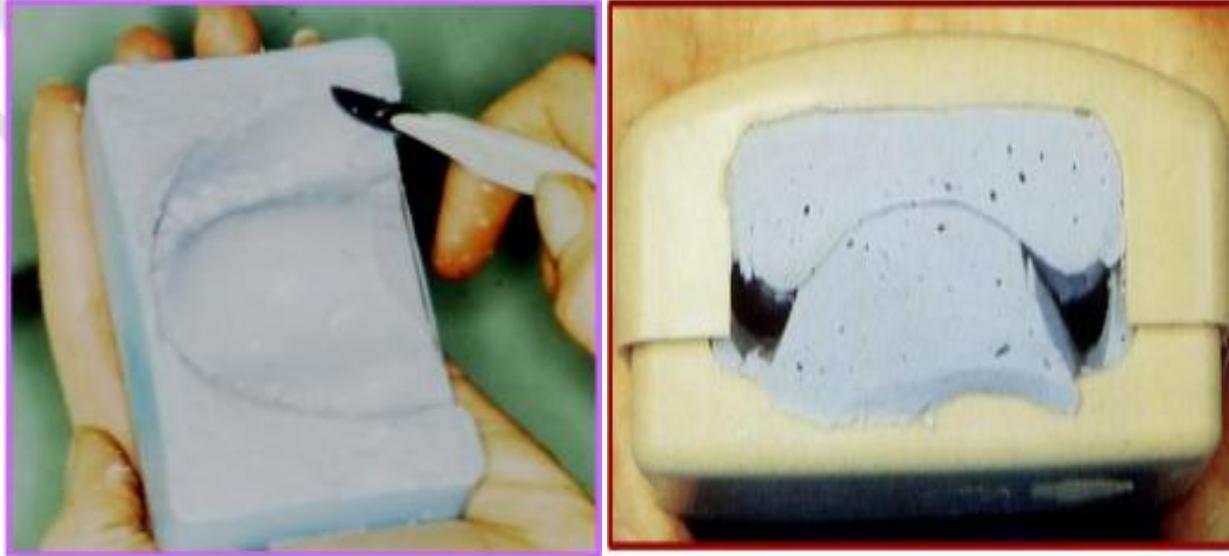
Second pour of alginate to complete the investment procedure – the soap container should be pressed from the sides to avoid its distortion.



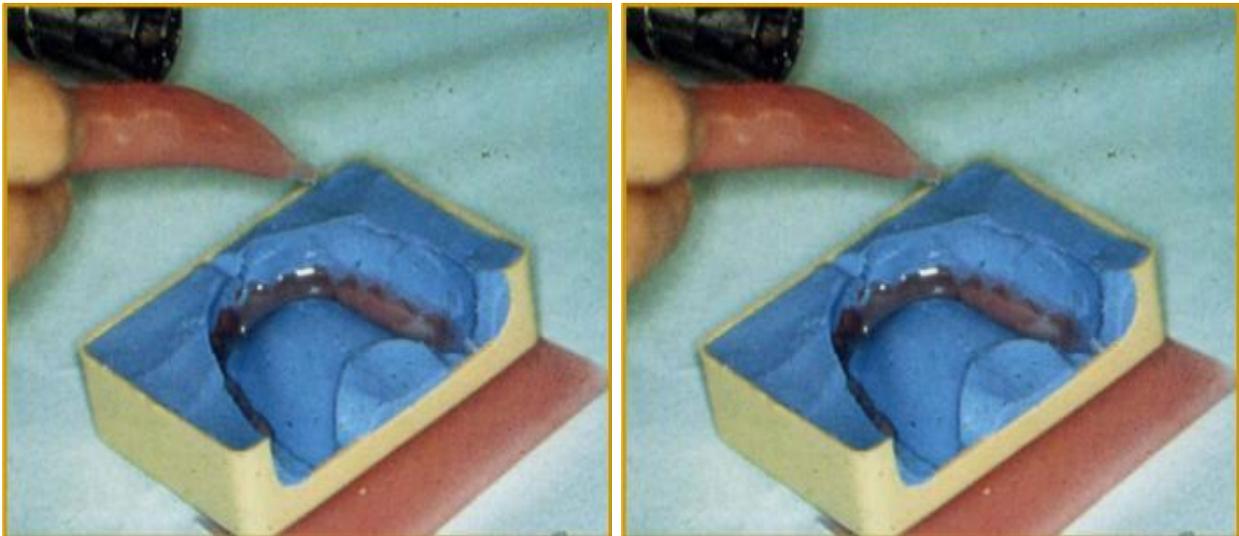
Line drawing showing the mould components



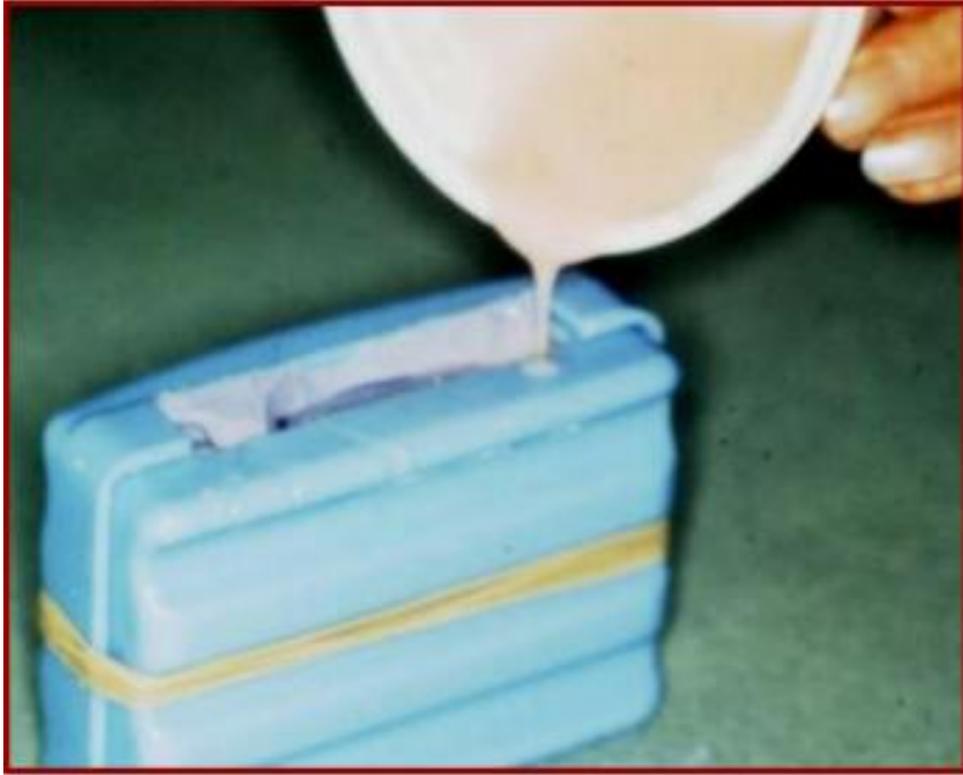
Two halves are then opened and the sprue holes (diameter of a pencil) are cut with a sharp knife. The halves are then re-assembled and can be held together with elastic bands.



Replication of teeth in Wax. Wax horse shoe representing the teeth

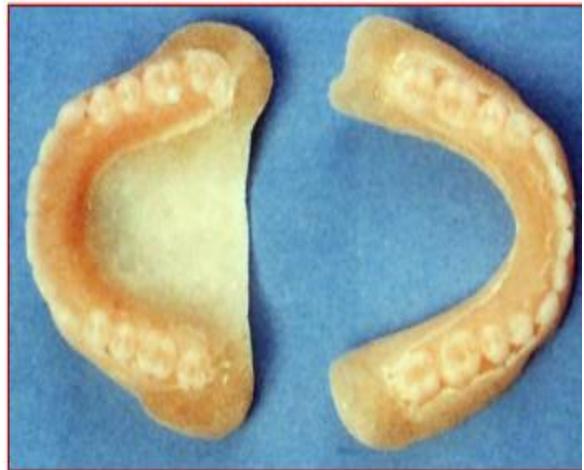


Two halves together – self cure resin is being poured down one of the holes with light vibrations, while air escapes from the other. Place the container with the sprue holes upright in a pressure pot that contain water at 110°F and process the resin under 15- 30 psi pressure for 30 minutes.



The Waxed or Auto-polymerized duplicate dentures are then recovered from the molds





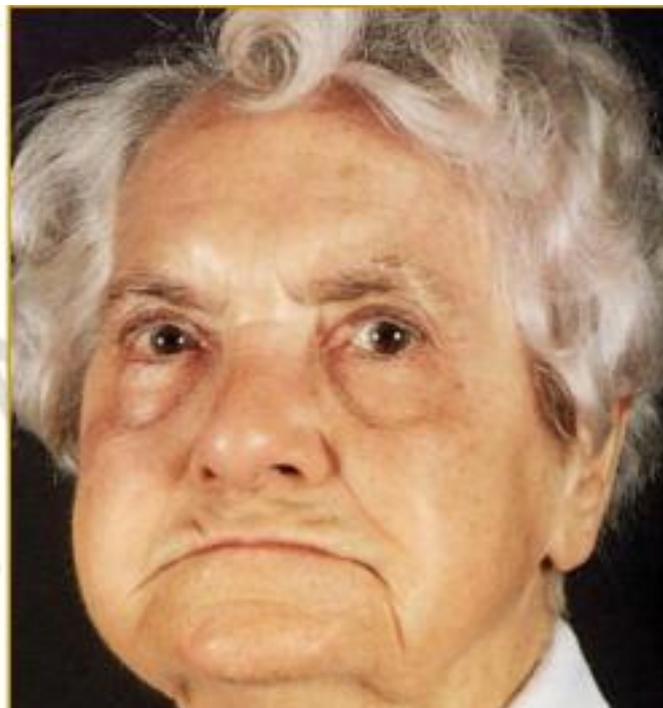
Centric relation record is obtained after adjusting the waxed teeth for the OVD. The wax teeth on one of the dentures are replaced with the identical mould of the resin teeth. The opposing denture guides then set up in identical position to the original denture





- **Denture Duplication Technique ‘The Silicon Putty’**

An 80 years old patient wearing 25 years old dentures. Note a marked reduction in the OVD. However, the patient is satisfied with the appearance of her old dentures and wants to have similar features in the new dentures as well – Hence the template or duplicate dentures are indicated.



The intra oral occlusion of her old dentures suggests anterior cross bite – indicative of alveolar ridge resorption. However, extra-orally the dentures can be occluded in normal centric occlusal contacts.

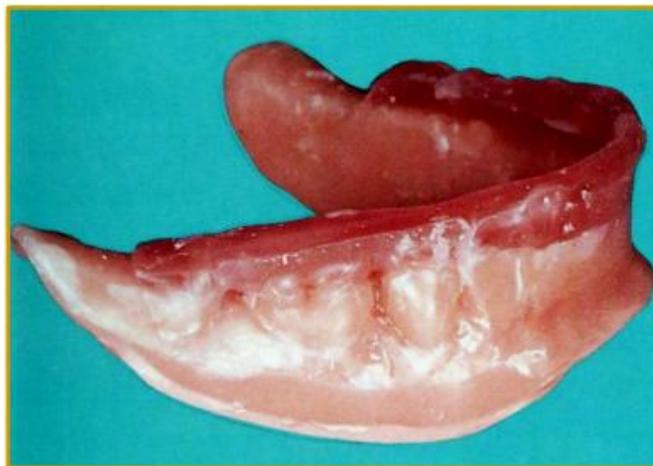


Silicone putty molds are produced and shellac record bases are adapted on the impression of the fitting surface. The molds are then closed and filled with molten pink wax to produce the replica of teeth.





Manipulation of the wax replica dentures is then carried out to correct any errors in the old dentures, e.g., OVD.



Upper relining impression is obtained after adjusting the occlusal plane level and the OVD of the wax replicas.



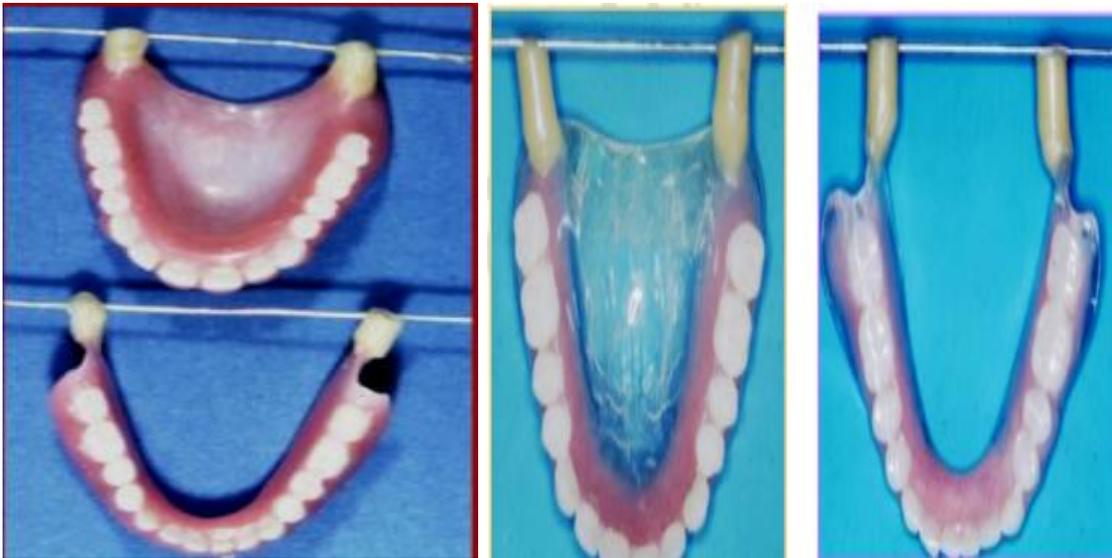
The duplicate dentures are then mounted on a suitable articulator to replace the wax teeth with the selected mould of the teeth. The tooth arrangement is guided by the old dentures. The relation of the ridges allow the new tooth arrangement to follow the original pattern.



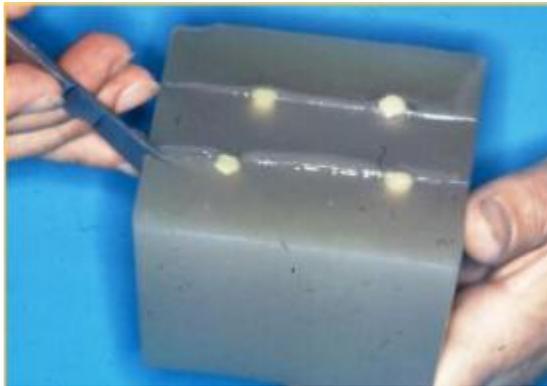
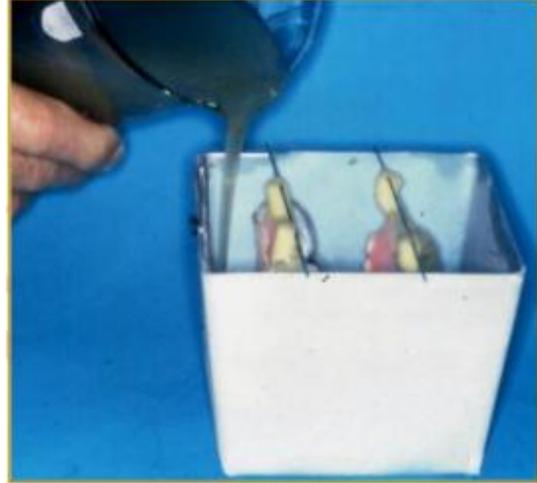
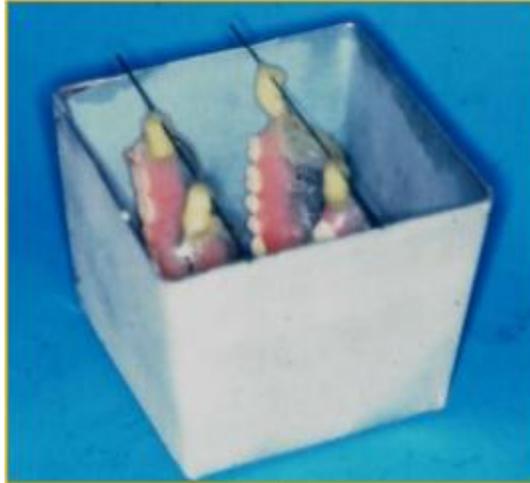
Intra-oral Wax try-in is essential to verify esthetic and phonetic virtues of the modified duplicate dentures



- Denture Duplication Technique ‘the Agar-Agar’



Dentures are suspended with a metal rod through the sticky wax sprues



Both Dentures are suspended in the agar container. Molten Agar is being poured in the container. Once Agar is set, the mold is sectioned through the sprue holes to retrieve the dentures. The mold space after removal of the denture.



Auto-polymerized acrylic resin is then poured in the mold space to produce template dentures for modifications.

- **Denture Duplication Technique Modifications / Further application**

1. **Addition of a labial flange to the open-face denture**



2. **Production of Temporary dentures** Teeth are fabricated with dentin colored self-cured acrylic resin before adding tissue colored pink denture base resin



- **Problem Areas in Fabrication & Solutions**

1. **Rigidity of the Box** The container used for fabricating the alginate mold must be rigid to avoid distortion of the alginate and subsequently the self-cured acrylic resin template. Precautions must be taken so as the rubber bands used to hold two halves of the mold must not distort the soap container.
2. **Distortion of the Alginate ridge** Immediately after pouring the wax to form template teeth, the mold should be reassembled to check that the alginate impression of the ridge does not indent the soft wax. Wax is removed if necessary to avoid any possible distortion of the alginate ridge and production of a base plate without an intact all-acrylic resin impression surface.
3. **Impression & Jaw relation records** These steps should be performed with utmost care. Silicone impression material is recommended for obtaining the reline impressions as the template dentures have to be re-inserted in the mouth for recording the OVD and Centric Relation.
4. **Tooth position and Tissue contours** Since the spatial positioning of the teeth and the resin contours of the polished surfaces are important for neuromuscular control, the selection and placement of the stock (readymade) teeth on the templates must be undertaken with great care