INTRODUCTION & CLASSIFICATION OF RPD

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DEFINITION- PROSTHODONTICS

- Defined as the “branch of dentistry pertaining to the restoration and maintainence of oral function, comfort, appearance and health of the patient by restoration of natural teeth or the replacement of missing teeth and contiguous oral and maxillofacial tissues with the artificial substitution.

BRANCHES

3 major divisions:

-fixed prosthodontics

-maxillofacial prosthetics

-removable prosthodontics

complete

partial

extracoronal

intracoronal

REMOVABLE PROSTHODONTICS

- It is devoted to replacement of missing teeth & contigous tissues with prosthesis designed to be removed by the wearer.It includes two disciplines: removable complete denture prosthodontics and removable partial denture prosthodontics. A RPD may be extracoronal or intracoronal depending on what type of retention is used to keep it in the mouth.

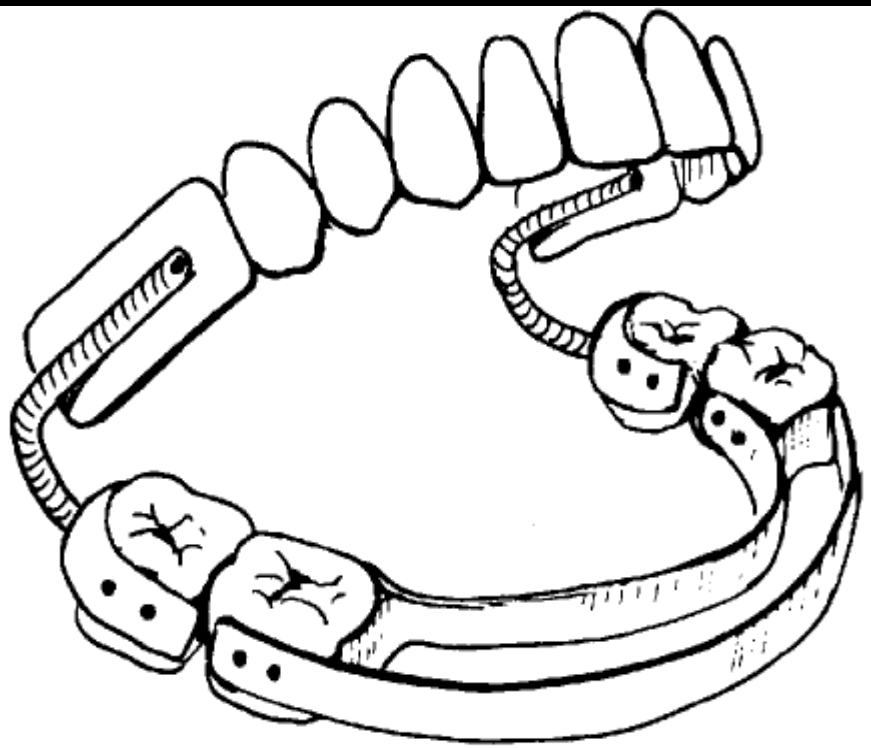


Figure 2. Drawing of an early RPD, circa 1728.

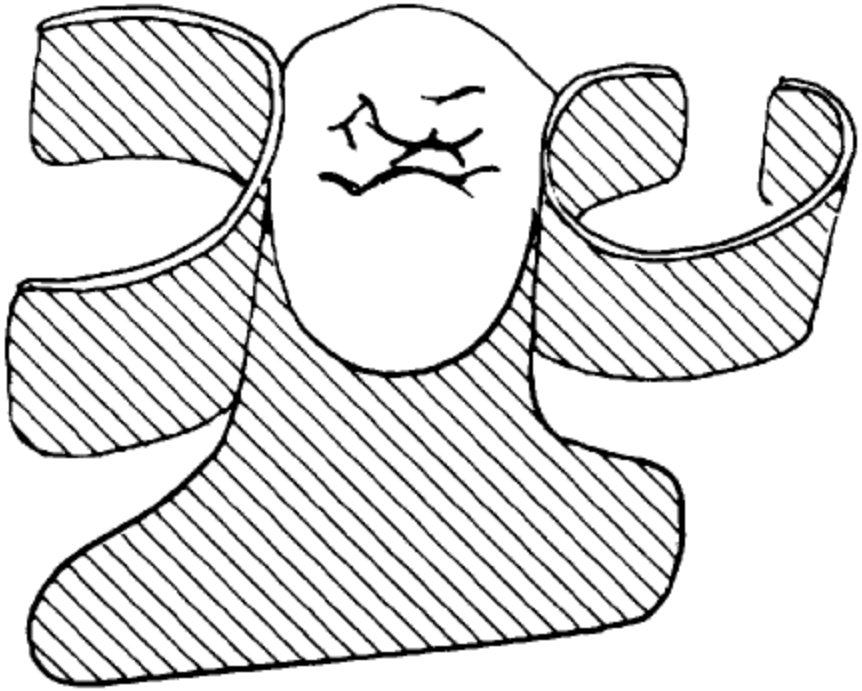


Figure 3. Drawing of an RPD using the broad wrought band clasp made popular by Gardette and Bonwill in the early 1800s.

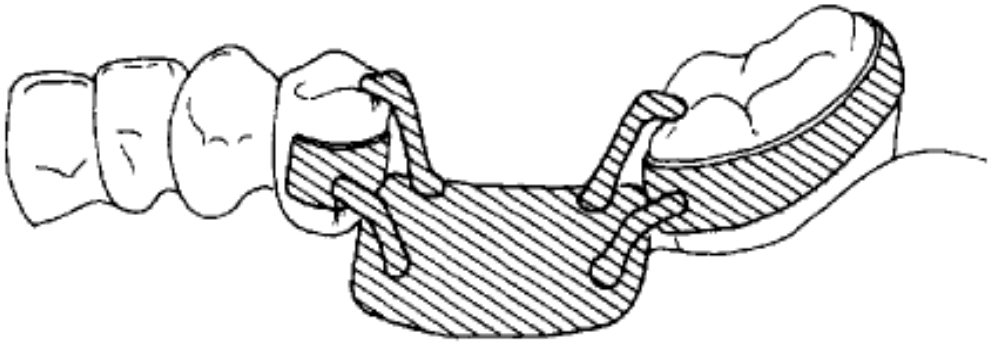


Figure 4. Drawing of an RPD using rests and circumferential clasps as advocated by Bonwell, circa 1899.

TERMINOLOGIES USED IN RPD

- ***Appliance***

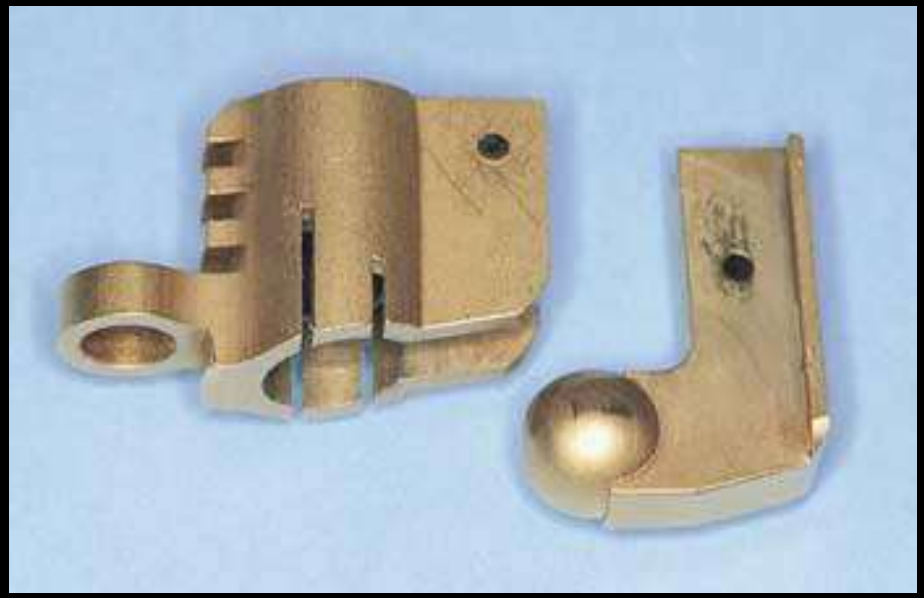
  it is a device worn by a patient in the course of treatment. e.g. orthodontic appliance,surgical ,space maintainer.

Abutment

" Tooth,portion of a tooth ,or that portion of a dental implant that serves to support & or retain a prosthesis."

Retainer

“The fixation device ,or any form of attachment applied directly to an abutment tooth & used for the fixation of a prosthesis, is called retainer”



Tooth supported RPD

A partial denture that receives support from the natural teeth at each end of the edentulous space or spaces.

Tooth tissue supported RPD

The denture base that extends anteriorly/ posteriorly and is supported by teeth at one end and tissue on the other end – distal extension partial dentures.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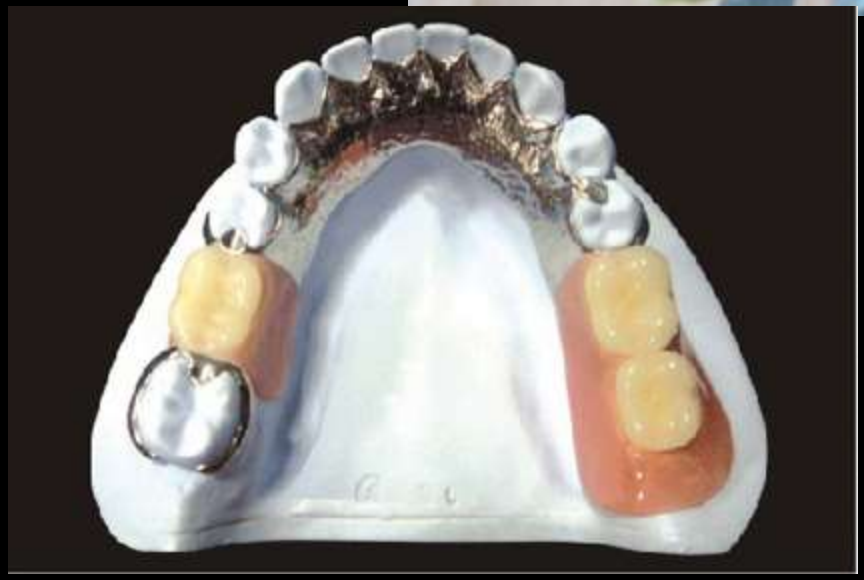


Temporary removable partial denture

they are used in patient where tissue changes are expected, where a permanent prosthesis cannot be fabricated till the tissues stabilaize.

1. Interim denture (Gum strippers)

It is a temporary partial denture used for a short period to fulfill aesthetics, mastication or convenience until a more definite form of treatment can be rendered.

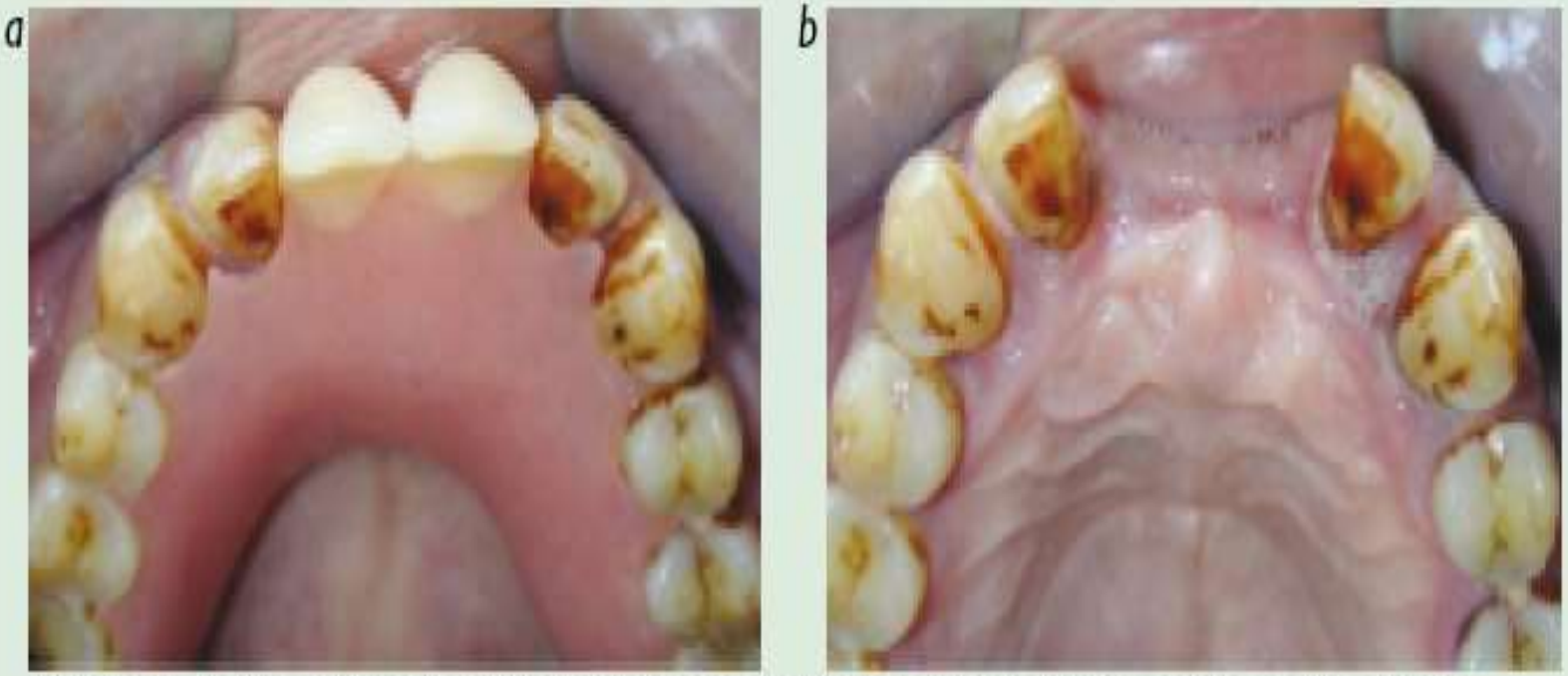


Figure 3. *(a) The upper acrylic denture covers the palatal gingival margins and has been finished below the survey line. It is an example of a 'gum stripper'.* **(b)** *The gingival margins are inflamed. It is interesting to note that oral hygiene instruction did not feature highly on the treatment planning for this patient!*

2. Transitional denture

May be used when loss of *additional* teeth is inevitable but immediate extraction is not advisable or desirable. Artificial teeth may be added to the transitional denture as and when the natural teeth are extracted.

3. Treatment denture

It is used as a career for treatment material. It is used when the soft tissues have been abused by ill -fitting prosthetic devices.

Fig. 1. Cleft palate patient with a Class III malocclusion.

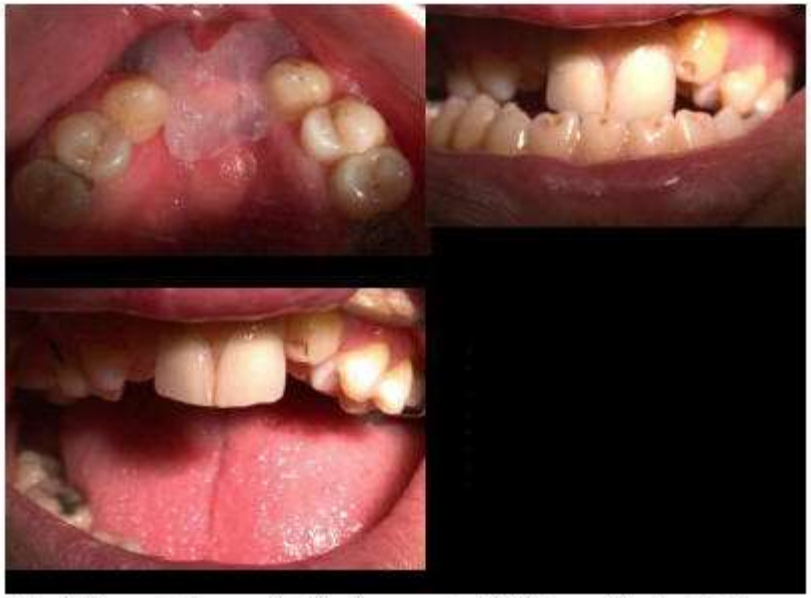
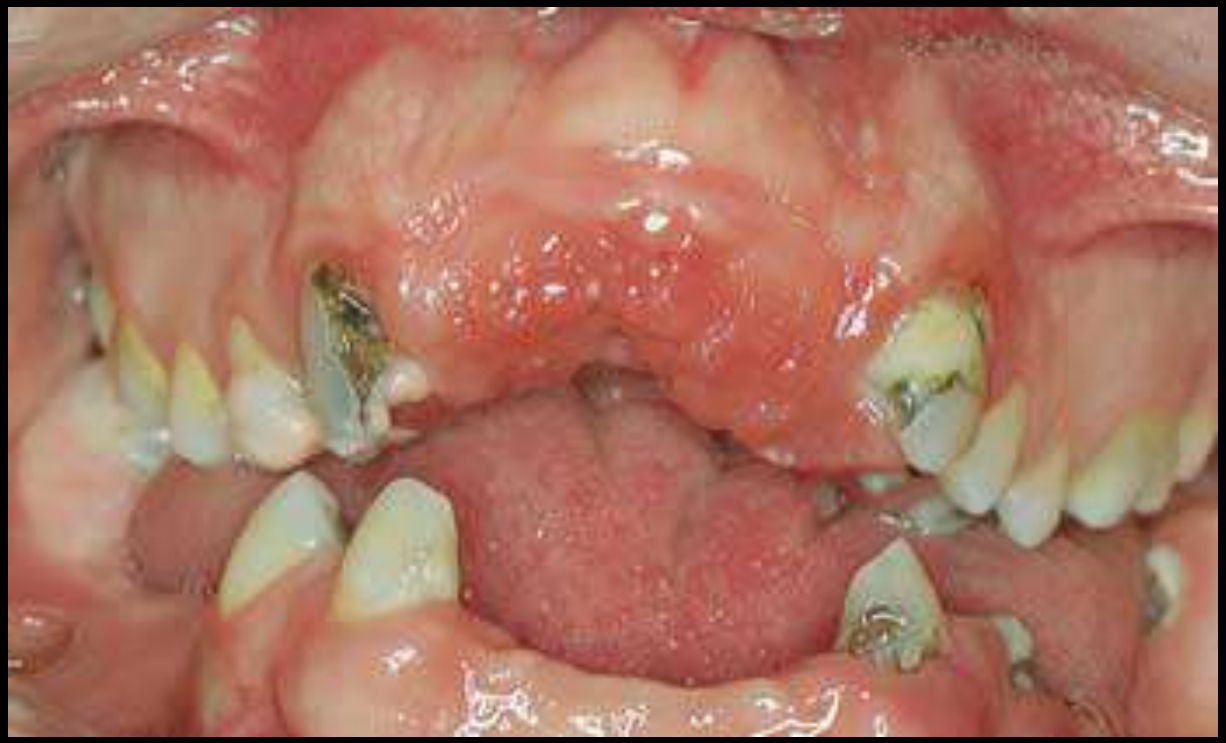
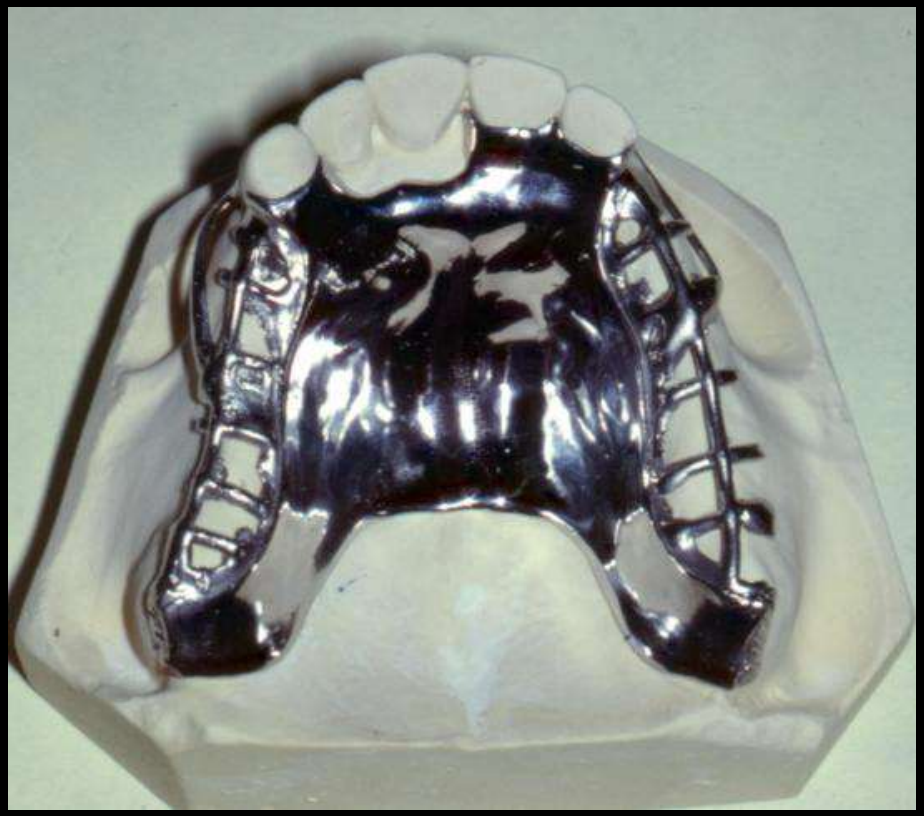
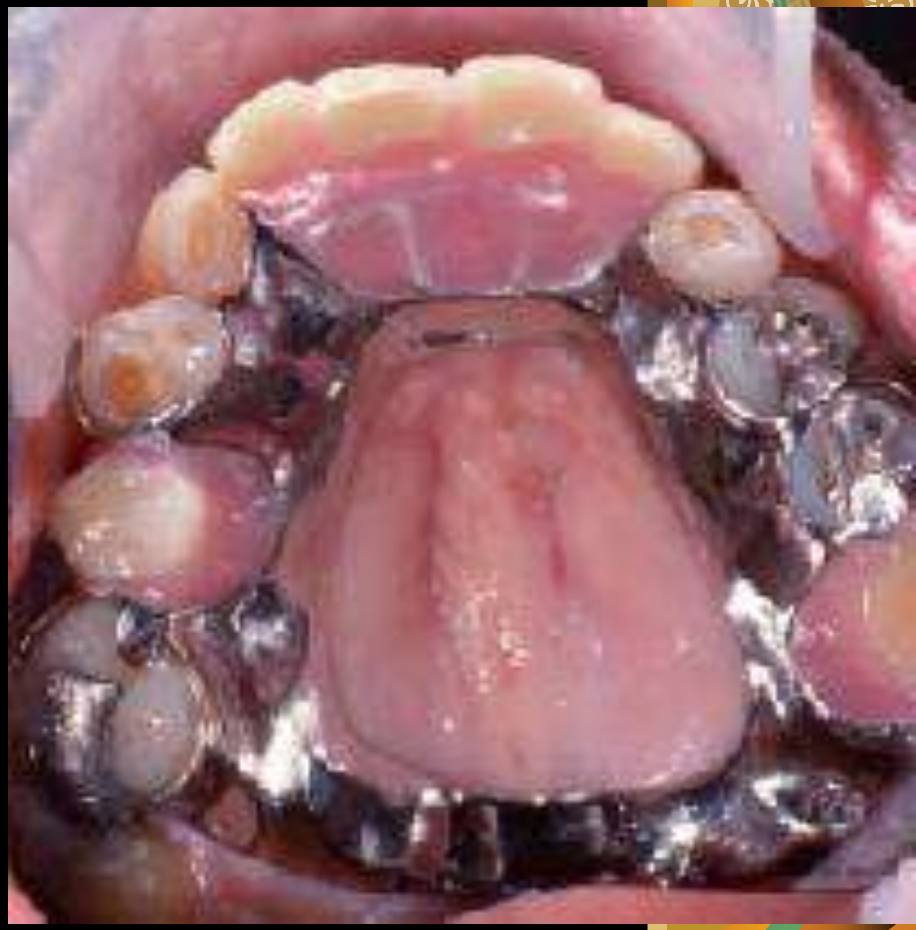


Fig. 2. Oro-nasal comunication in pre-maxilla that must be treated.



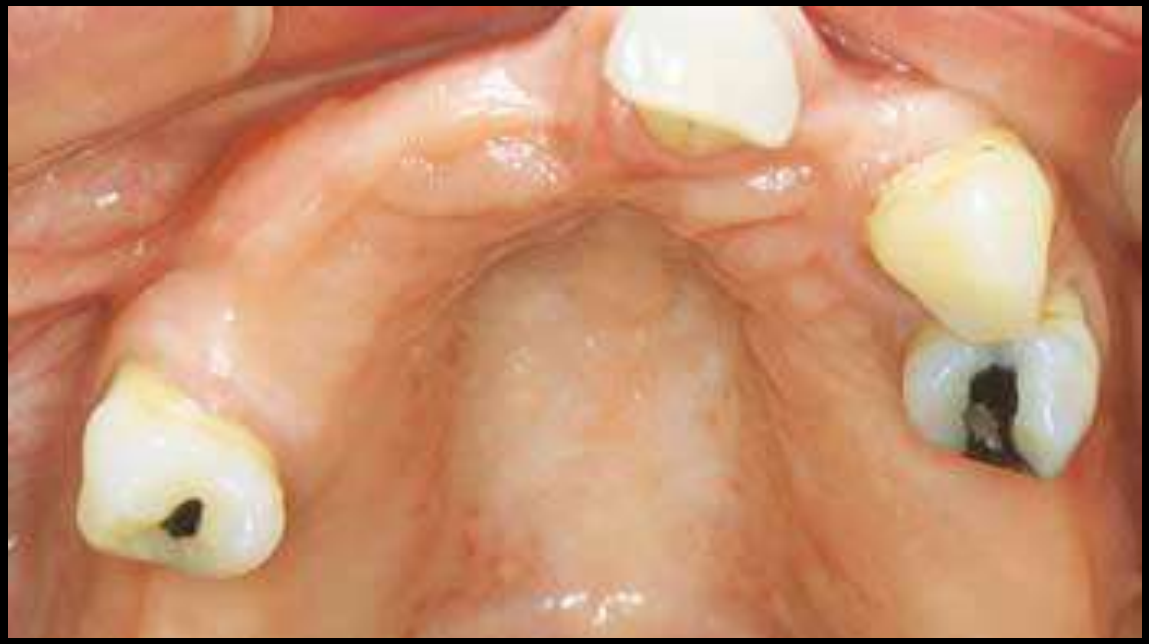
Definitive prosthesis



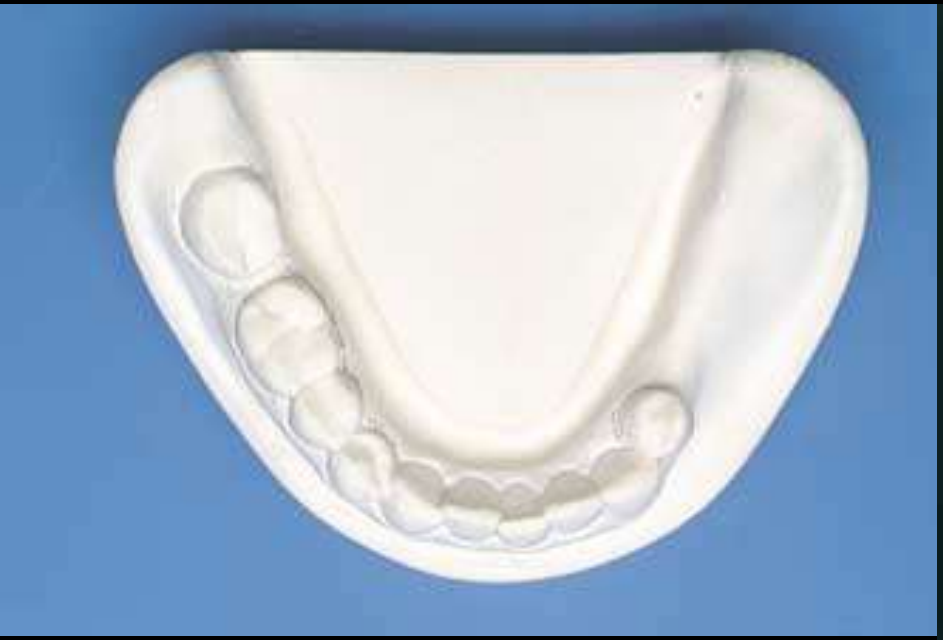


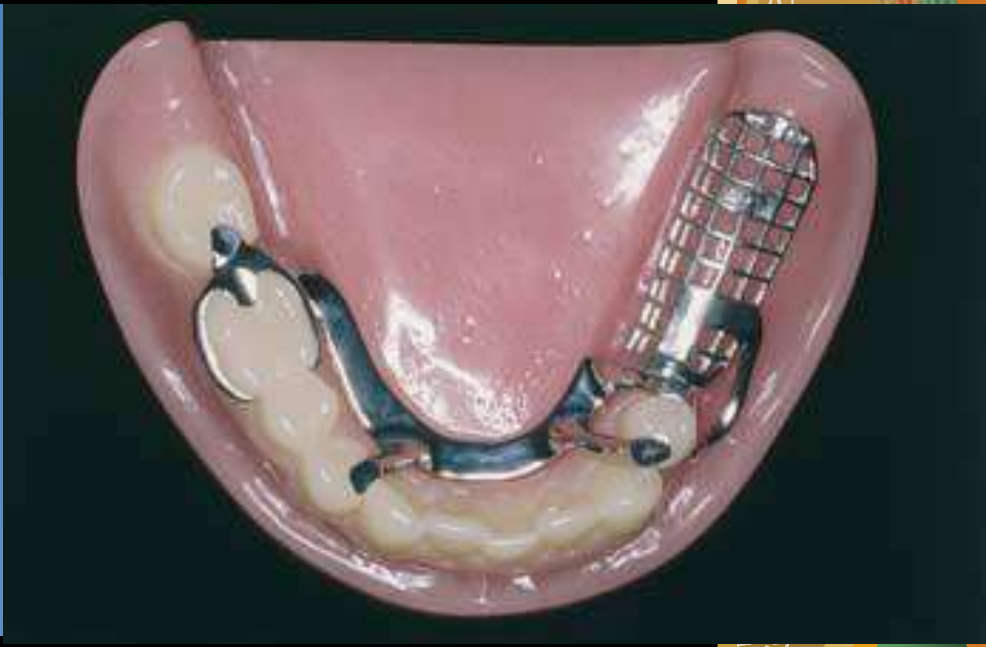
Indications for RPD

- Length of edentulous: RPD preferred for longer edentulous arches.
- Age:

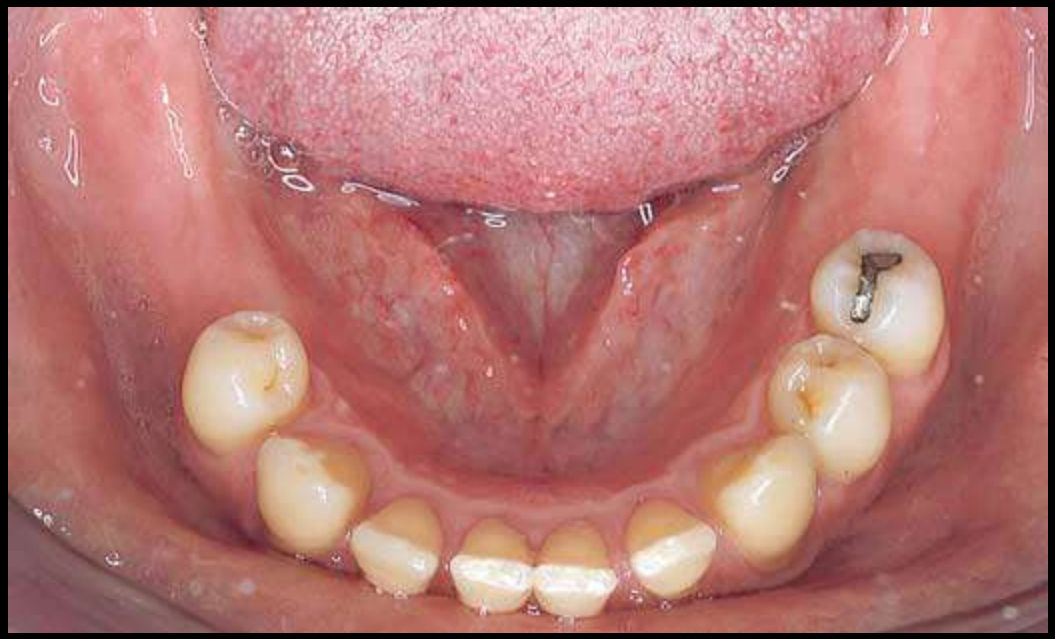


Cross arch stabilization: when a remaining teeth have to be stabilized against lateral and anterior-posterior forces, a RPD is indicated.

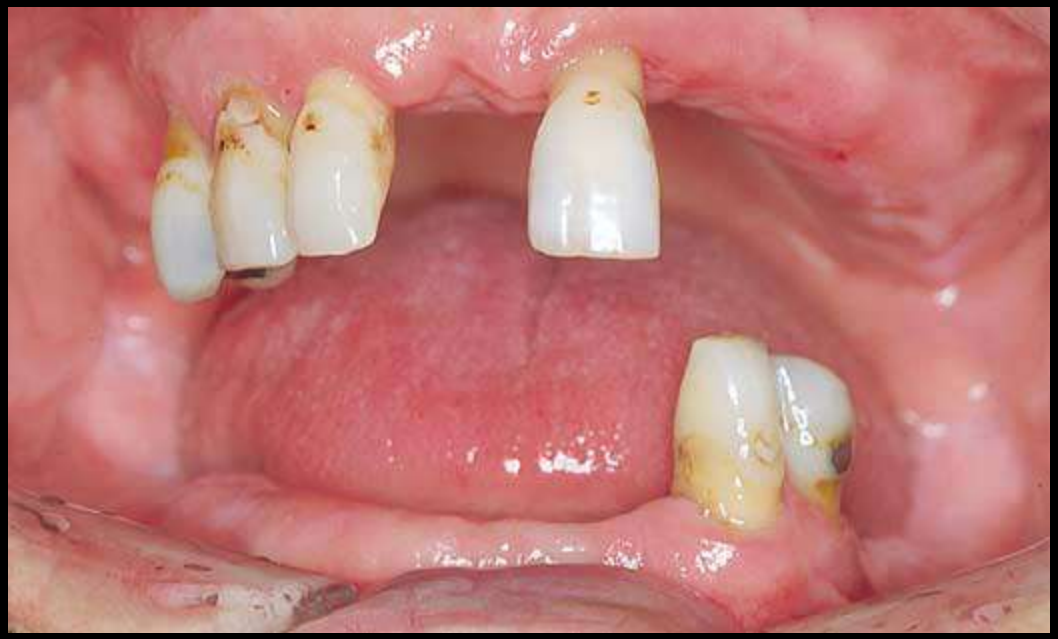




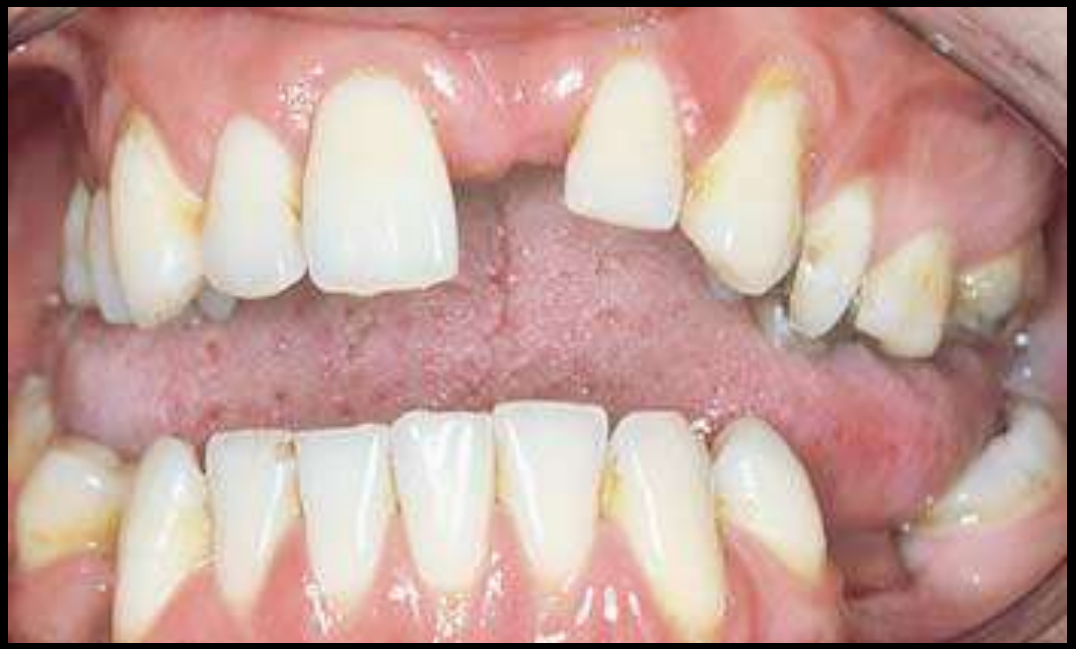
Abutment tooth: when there is no tooth posterior to the edentulous space
to act as an abutment, a RPD is preferred.



Periodontal support of remaining teeth: when it is poor RPD is preferred because it requires less support from the abutment teeth.



- Aesthetics.
- Immediate tooth replacement after extraction.
- Emotional problems
- Patient desires



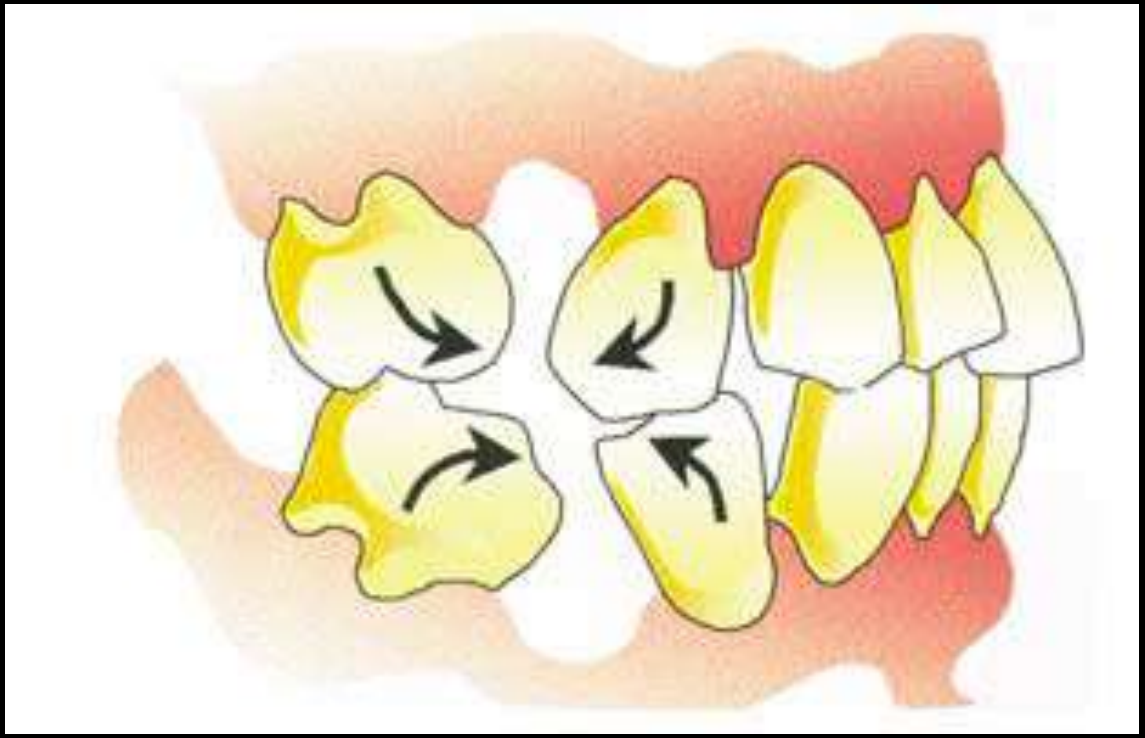
Excessive bone loss.

RPD is generally preferred in the following conditions:

- When more than 2 posterior teeth or 4 anterior teeth are missing.
- If the canine & two of its adjacent teeth are missing.
- When there is no distal abutment tooth.
- Presence of multiple edent.spaces.
- If periodontally weakened teeth are present near the edent.spaces.

- Teeth with short clinical crowns.
- Insufficient no:of abutments
- Severe loss of tissue on the edent.space.
- Old patients

If the teeth adjacent to edent.spaces are tipped ,they cannot be used as an abutment for a fixed prosthesis.



Avoidance of RPD

- Poor oral hygiene
- Mentally retarded patient
- Patient with large tongue.

Advantages	Disadvantages
Cheap	Weak material
Relatively easy to construct	Non-rigid
Easy to modify (i.e. additions to denture)	Must be bulky for strength
	High potential for damage to soft tissues

Requirements of an acceptable method of classification .

- It should permit immediate visualisation of the type of partially edent.arch that is being considered.
- It should permit immediate differentiation b/w the tooth supported & the tooth and tissue supported RPD.
- It should be universally acceptable.
- Serve as a guide for type of design to be used.

CLASSIFICATION

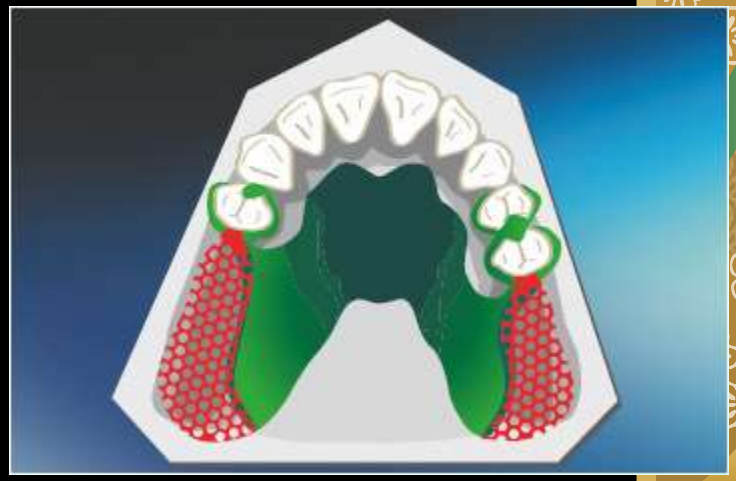
Kennedy's classification

Dr. Edward Kennedy proposed this classification in 1923.

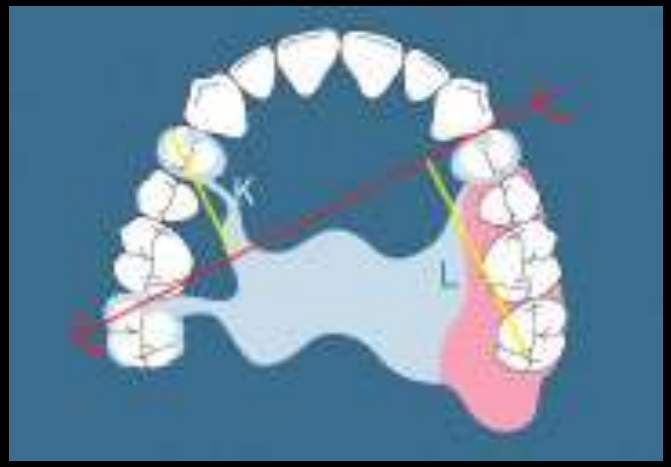
- most popular classification.
- give a positional picture of the teeth present but little information of the exact no of teeth absent or present.

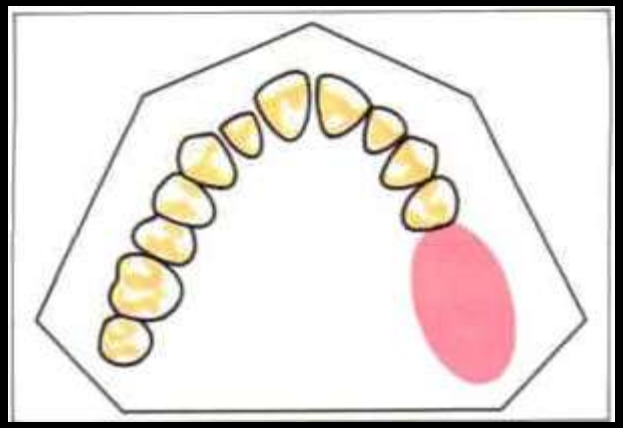
Kennedy Class I

This type is for people who are missing some or all of their teeth on both sides in a single arch and there are no teeth posterior to the edentulous area.

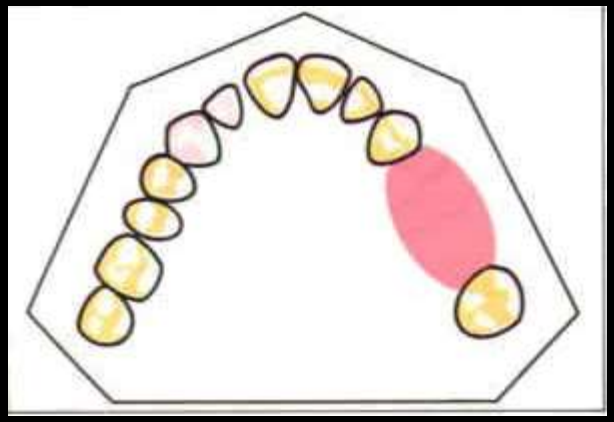


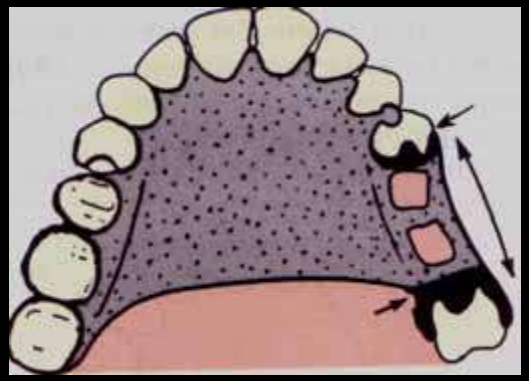
- Class II
  - **Unilateral edentulous** area posterior to the remaining natural teeth
  - Also known as **unilateral distal extension**



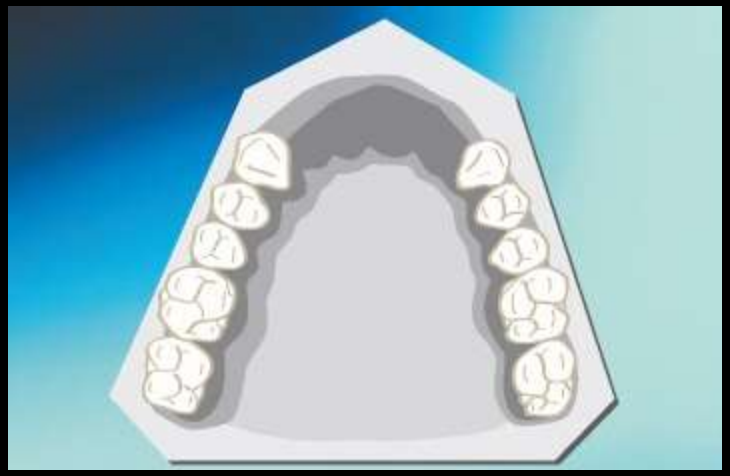


- Class III
  - A **unilateral edentulous** area with natural teeth anterior and posterior to it
  - Also known as **toothborne** - supported by remaining natural teeth only





- Class IV
  - A single, **but bilateral** (crossing the midline), edentulous area **anterior** to the remaining natural teeth
  - Also known as **anterior extension**
  - **There is no modification for this.**



Applegate's rules

- Rule 1: classification should follow rather than precede extractions that might alter the original classification.
- Rule 2: if the third molar is missing and not to be replaced, it is not considered in the classification.
- Rule 3: if the third molar is present and is to be used as an abutment, it is considered in the classification.
- Rule 4: if the second molar is missing and is not to be replaced, it is not considered in the classification.

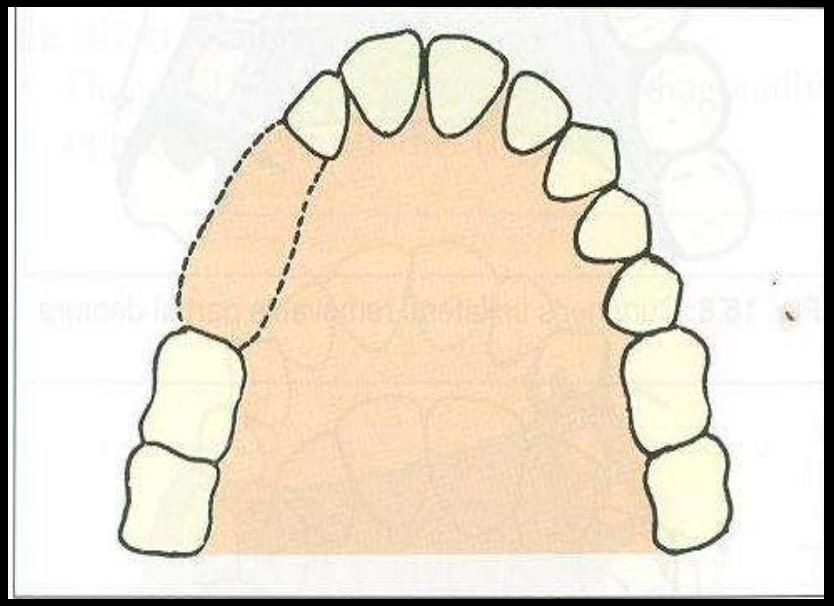
- Rule 5: the most posterior edentulous area or areas always determine the classification.
- Rule 6: edentulous areas other than those, which determine the classification, are referred to as modification spaces and are designated by their no:
- Rule 7: the extend of the modification is not considered, only the no: of edentulous areas, i.e. the no: of teeth missing in the modification spaces is not considered only the no: of additional edentulous spaces are considered.

- Rule 8: there can be no modification areas in class IV. Because any additional edentulous space will definitely be posterior to it and will determine the classification.

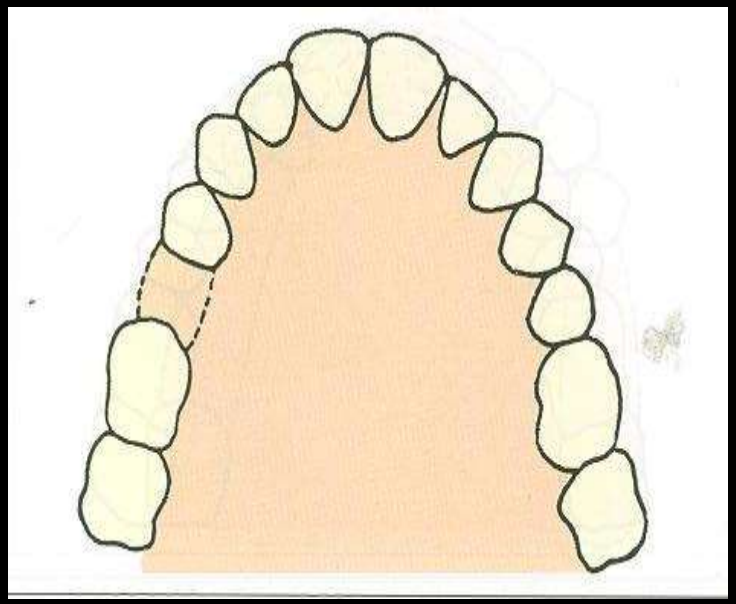
Applegate's modification (1960)

- Applegate modified the above classification based on the condition of the abutment to include 2 or more additional groups:

- Class V: edent. area bounded anteriorly and posteriorly by natural teeth but in which the anterior abutment (e.g. LI) is not suitable for support. It is basically a class III situation for the anterior abutment cannot be used for any support.



- Class VI: edent. area in which the teeth adj.to the space are capable of total support of the required prosthesis. This denture hardly requires any tissue support. Most of the RPDs are tooth tissue supported. Hence this condition is classified as a separate group.



Procedures in the dental office and in the laboratory for fabricating a removable partial denture

- Medical and dental history; extra-and intraoral examination; Xray analysis; classify the dental condition (Kennedy)
- Treatment planning
- Primary impresion taking

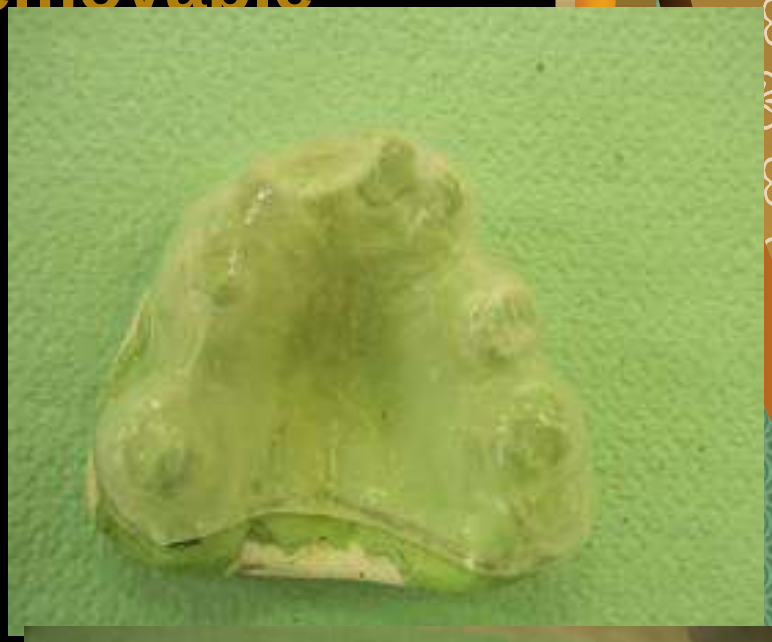
Procedures in the dental office and in the laboratory for fabricating a removable partial denture

- Materials used for primary impression taking:
  - alginate
  - silicones

Taken by a stock tray !

Procedures in the dental office and in the laboratory for fabricating a removable partial denture

- After pouring out the primary impression in the laboratory, we get the diagnostic cast
- On the diagnostic cast we outline the borders of the special tray



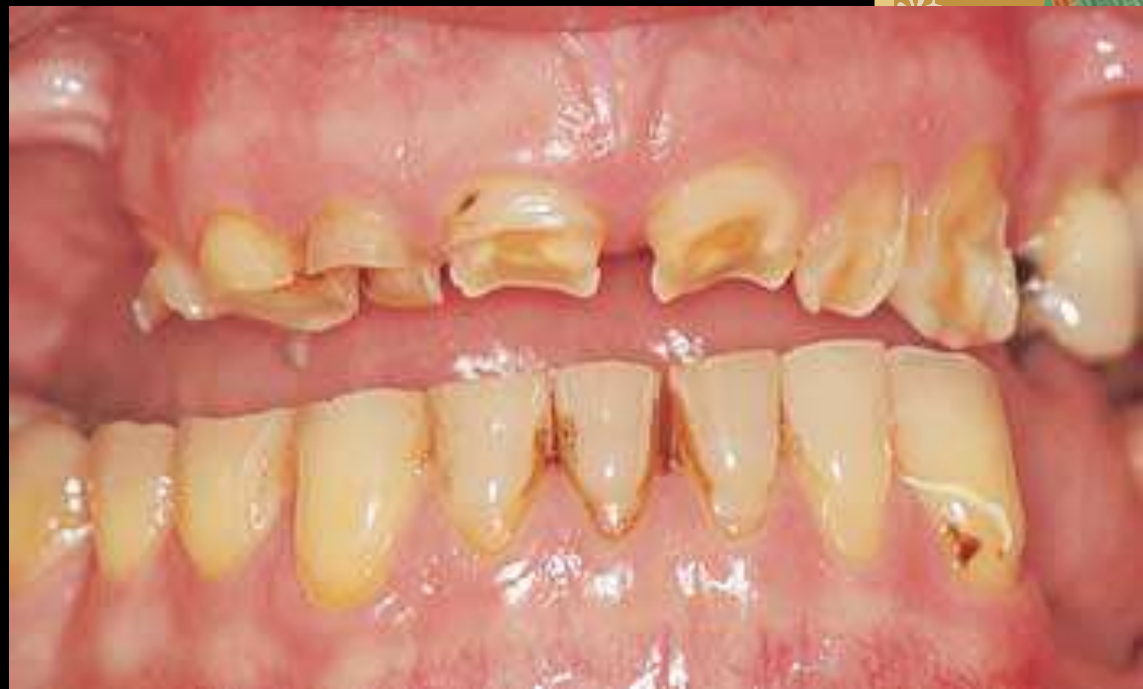
Diagnostic cast surveying

- Mouth preparation follows the preliminary diagnosis and the development of a tentative treatment plan.

  - Final treatment planning may be deferred until the response to the preparatory procedures can be ascertained.
  - In general, mouth preparation includes following categories:-

1. **Oral surgical preparation,**
2. **Conditioning of abused and irritated tissue,**
3. **Periodontal preparation,**
4. **Correction of Occlusal plane.**
5. **Preparation of abutment teeth.**

  - The objectives of the procedures involved in all four areas are to return the mouth to optimum health and to eliminate any condition that would be detrimental to the success of the removable partial denture.



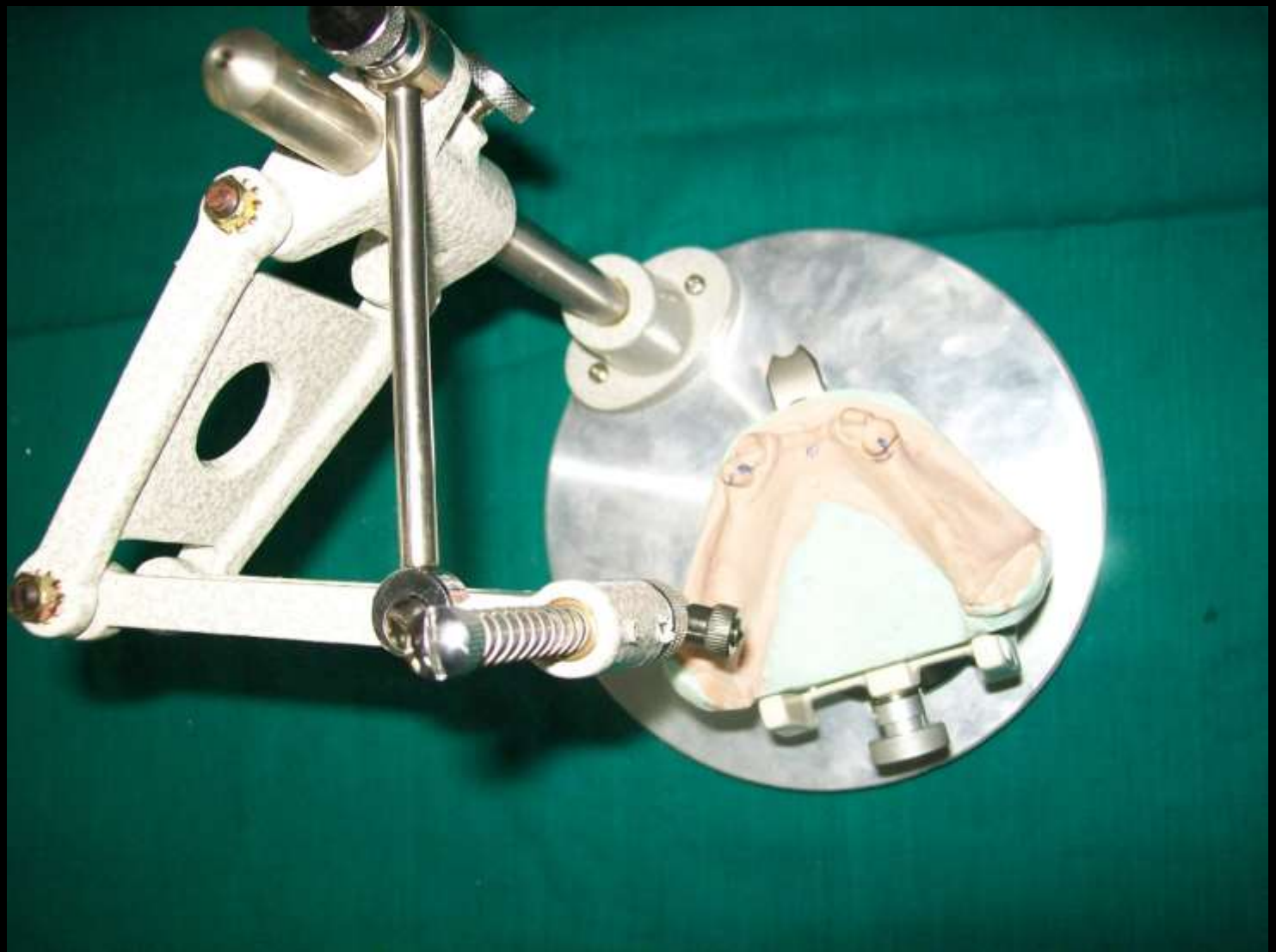
Procedures in the dental office and in the laboratory for fabricating a removable partial denture

- secondary impression taking by the dentist with special tray (silicones)

Procedures in the dental office and in the laboratory for fabricating a removable partial denture

- On the secondary cast at the dental office we design the removable partial denture, outline the saddle areas, occlusal rests and the retainers
- The secondary cast is the **mastercast** (made of stone or precise die stone)

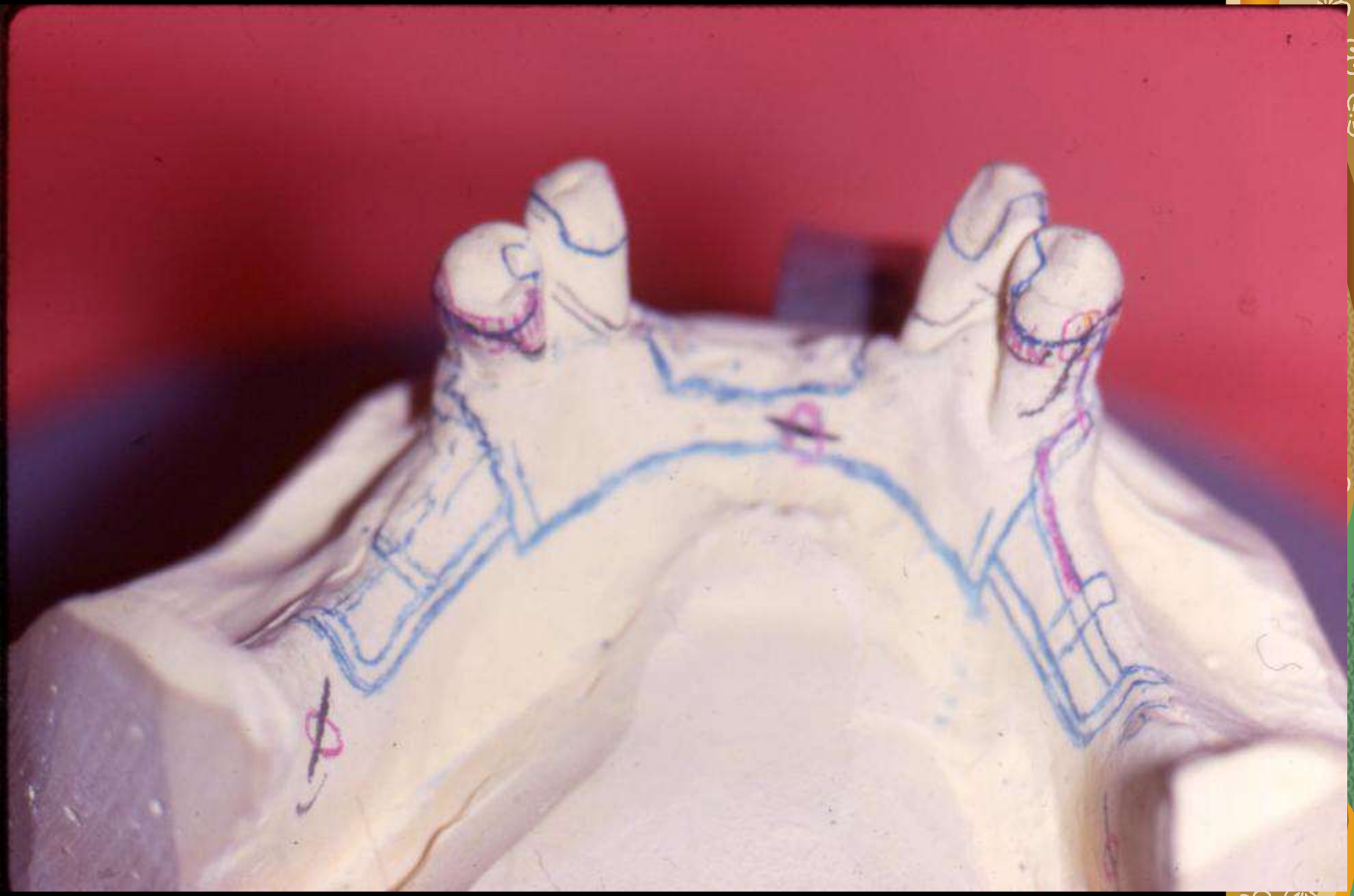
Designing & secondary cast surveying



Procedures in the dental office and in the laboratory for fabricating a removable partial denture

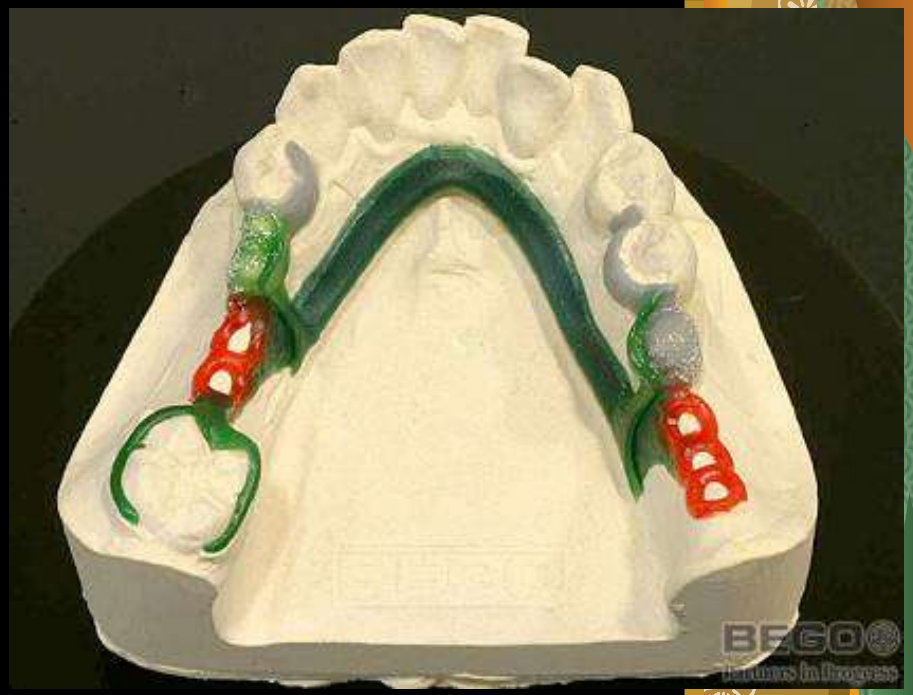
- With the duplicaton of the mastercast we get the **working cast** for making the wax pattern and investing
- Materials used for duplicating the mastercast:
  - duplicating gels
  - silicones

Images from Bego Virtual Academy



Procedures in the dental office and in the laboratory for fabricating a removable partial denture

- On the surface of the working cast the dental technician makes the wax pattern from prefabricated wax elements



Procedures in the dental office and in the laboratory for fabricating a removable partial denture

- After sprueing the working cast is ready for investing

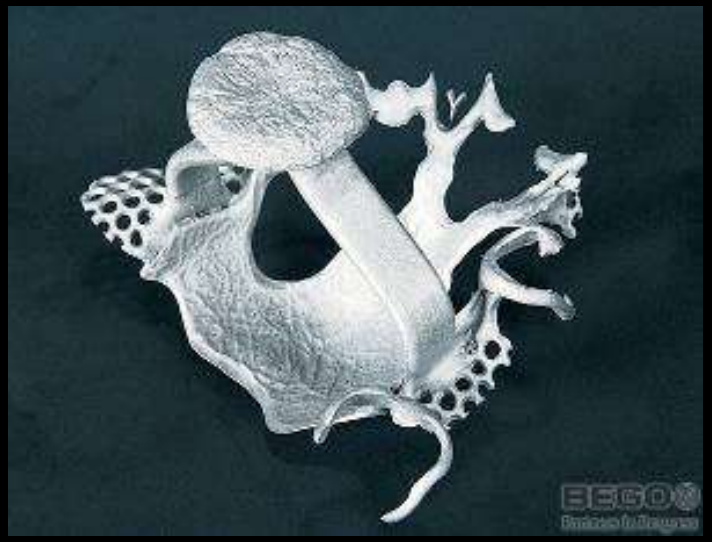
Images from Bego Virtual Academy

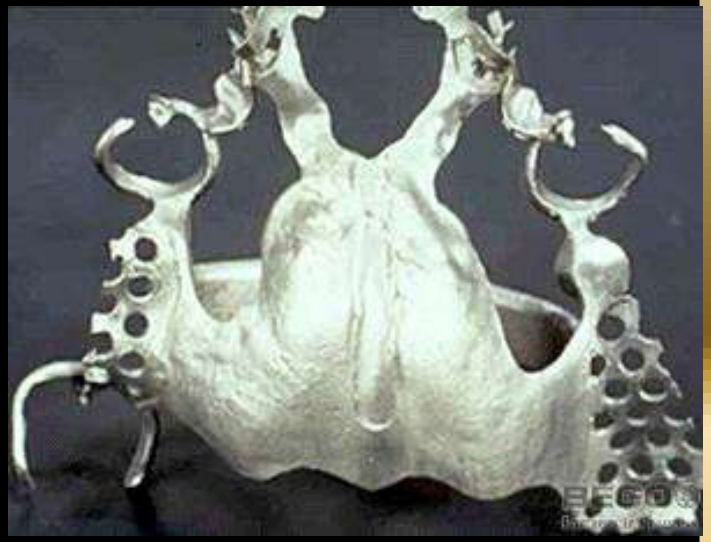
- Investing with flask
- Investment materials used for cobalt-chromium alloys:
  - Phosphate bonded
  - Silica bonded
  - Gypsum bonded

Investing is carried out by vibration.

Images from Bego Virtual Academy

- Divestment

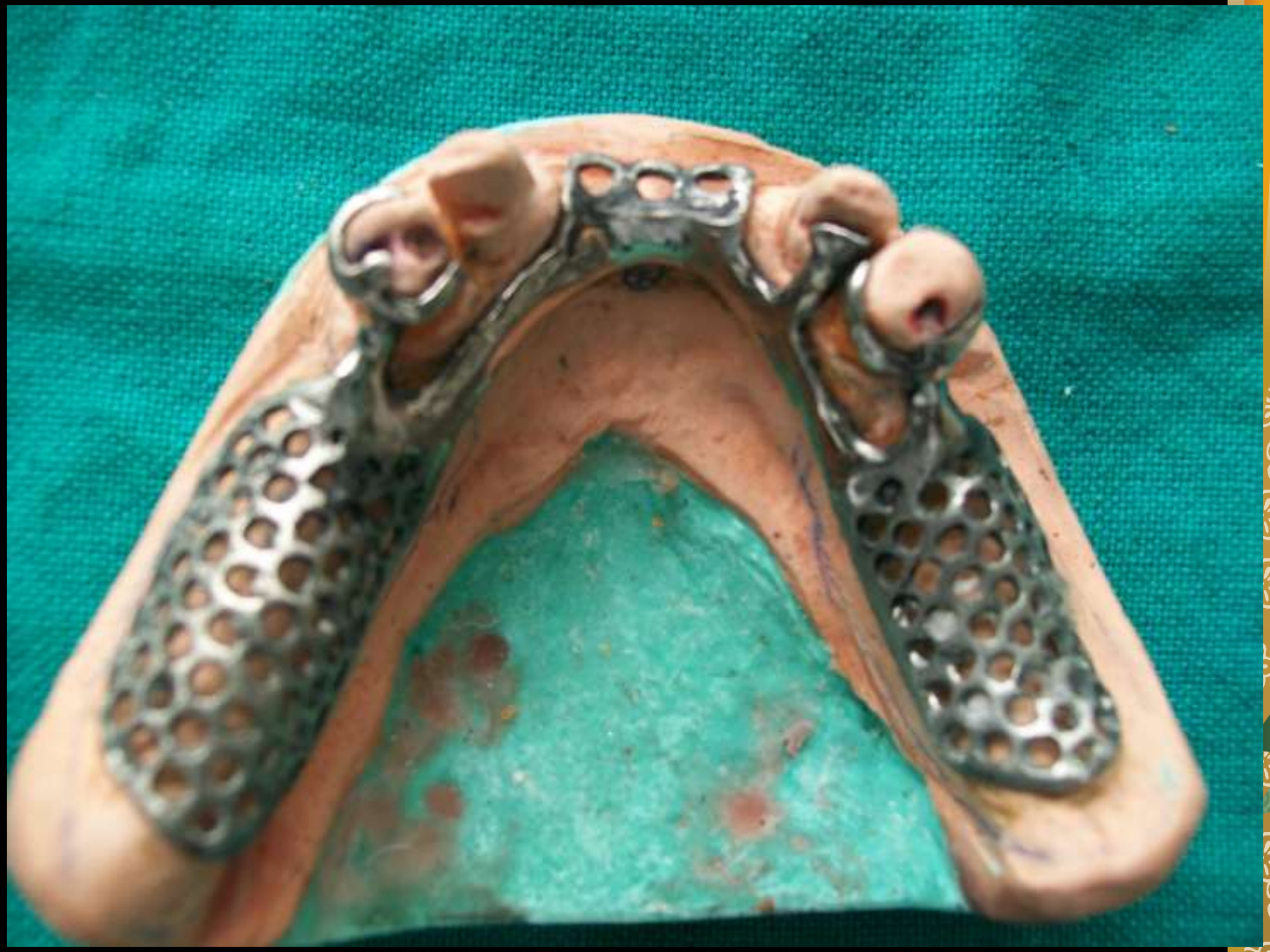




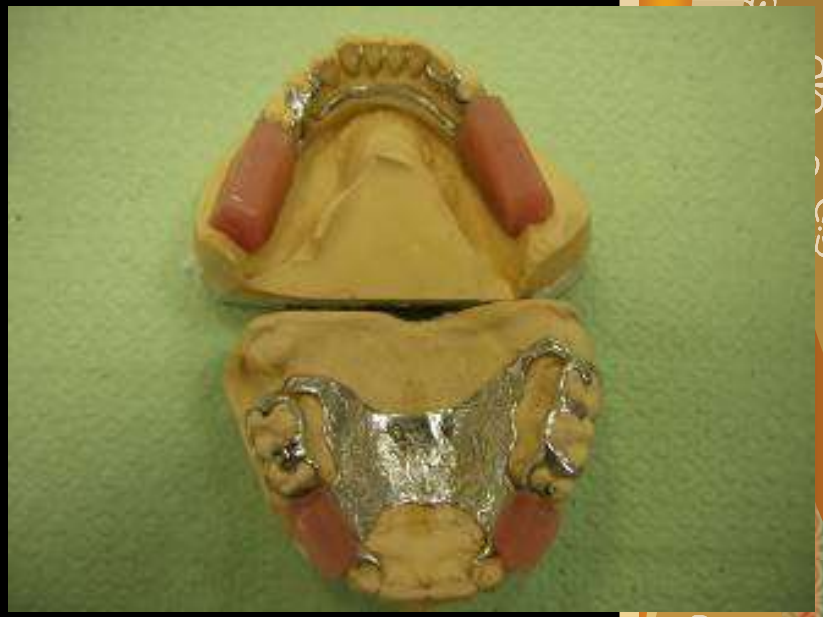
finishing of the ready metal frame

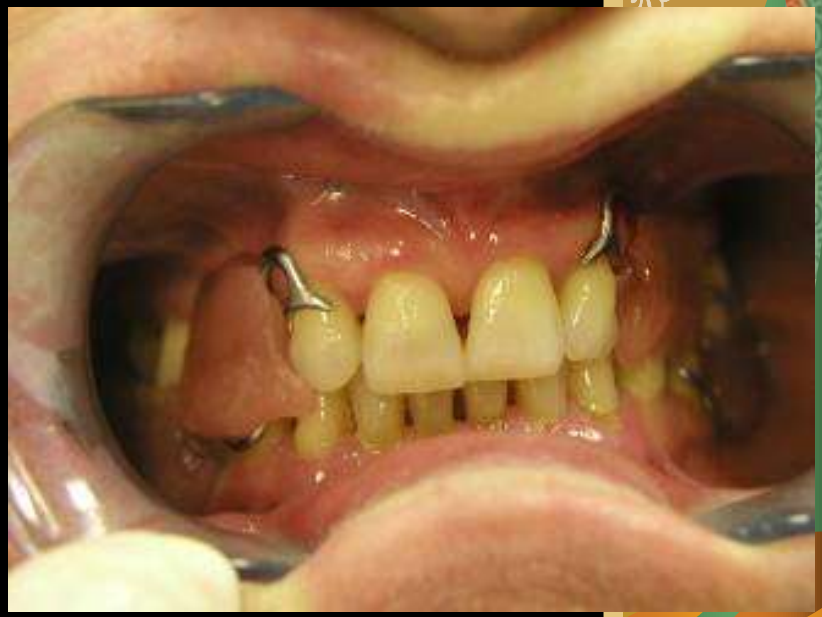
(sandblasting, trimming, polishing)

Images from Bego Virtual Academy



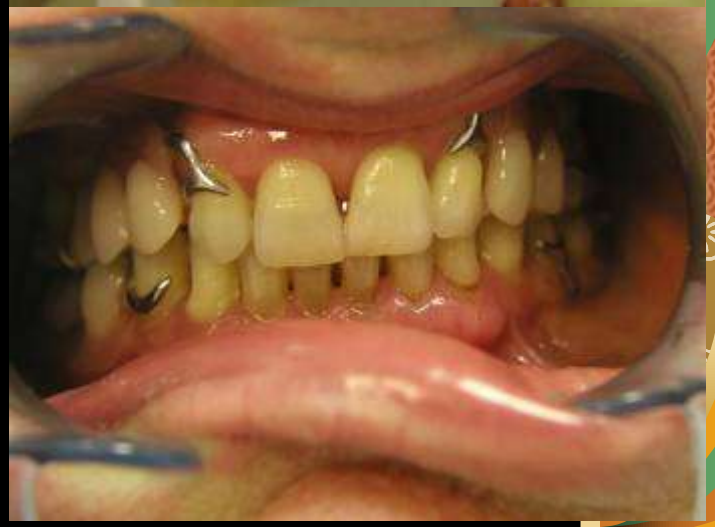
- At the dental office we check the ready frameworks and determine the jaw relationship with wax occlusal rim and choose the sade
- At the laboratory they set up the teeth





Procedures in the dental office and in the laboratory for fabricating a removable partial denture

- After setting up the teeth we try in the trial denture at the office
- Check up the occlusion, articulation, shade
- Processing



Insertion