



# BUGEL DENTURES – TYPES OF FIXING ELEMENTS, VARIANTS OF LOCALIZATIONS OF ARCHES ON MAXILLA AND MANDIBULAR. PLANNING OF BUGEL CONSTRUCTION. PARALLELOMETRIA.

Lecture  
3

Lecturer: PhD, assistant professor of the  
department  
of prosthetic dentistry and orthodontics

Viun Ganna



# Content

- Definition of the bugel denture
- Types of fixing elements
- Ney's clasps
- Variants of localizations of arches on maxilla and mandibular.
- Planning of bugel construction
- Surveying

# Full cast denture (bugel)

- is a construction that restores partial edentulous areas and allows to regulate the distribution of masticatory force between abutments (supporting teeth) and denture foundation area (tooth and mucosa – borne denture).
- German word "hügel" – translated as "arc" or "arch"





# Main benefits:

1. The possibility to transfer of a part of masticatory load to abutments that considerably reduce the load application to the mucosa.
2. High functional efficiency, easy to clean, good esthetic properties.
3. It is possible to share the vertical component of masticatory load between abutments and mucosa of denture foundation area.
4. Good splint for the remaining teeth.
5. Absence of gingival margin trauma.
6. Preservation of the taste, temperature and tactile sensations, tongue articulation and diction.

# Classification of the methods of fixation

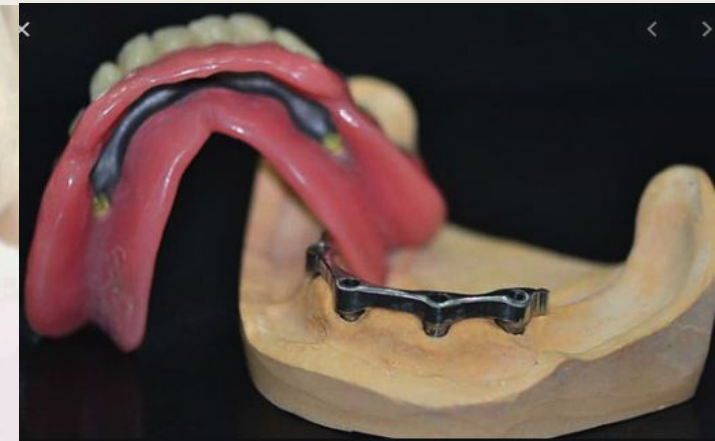
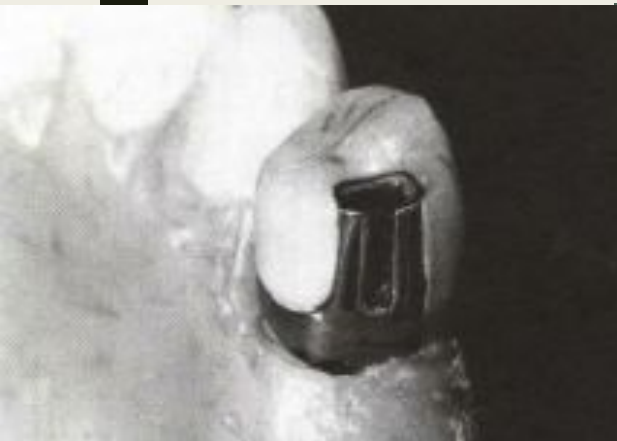
## **B.K. Boyanov**

### ► Mechanical methods

clasps

attachments

(intracoronal and extraconal), telescopic crowns, bar.



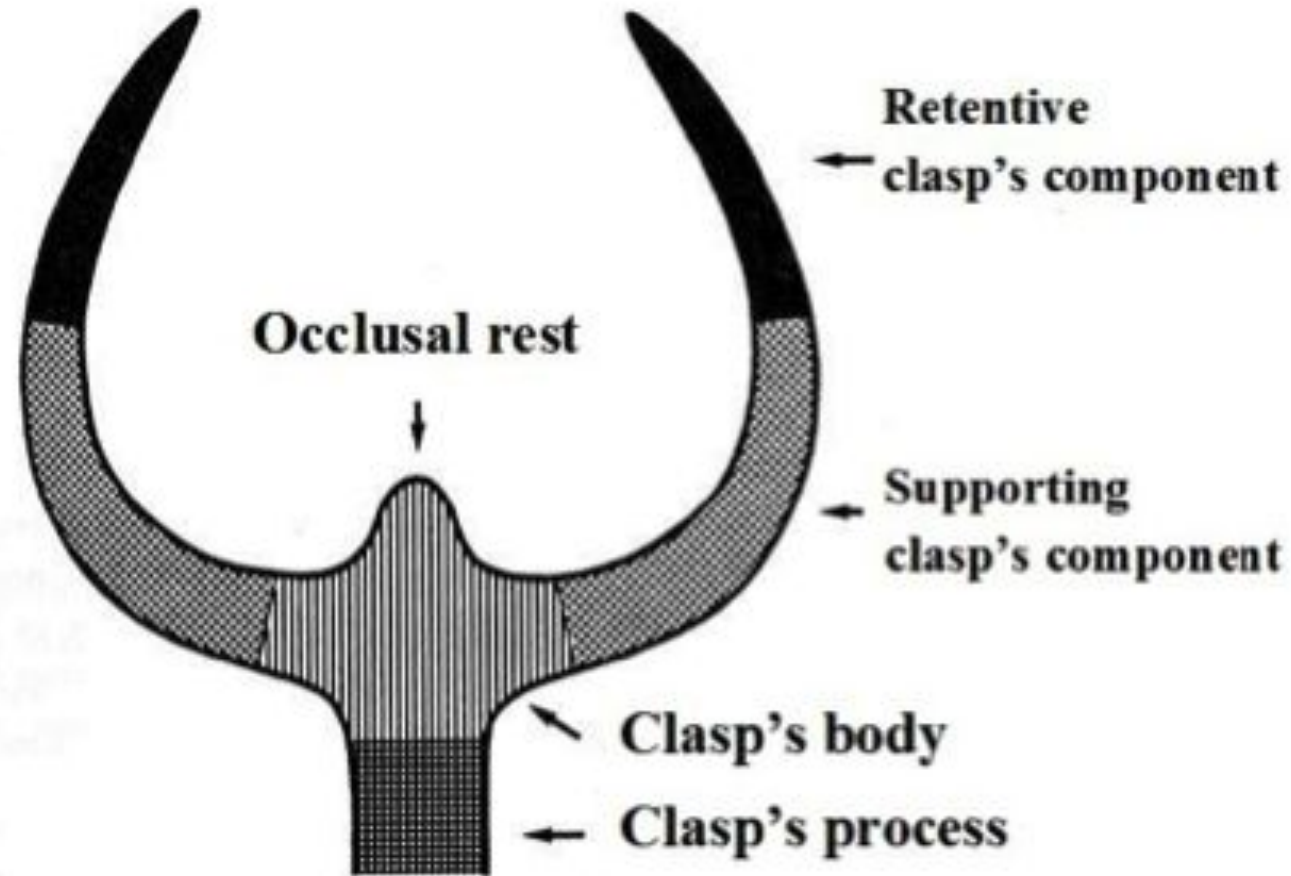
# Three main functions

**Support** – is a resistance to forces, which dislodge denture to oral mucosa.

**Retention** – is a resistance to forces, which try to remove denture in vertical direction.

**Encirclement** – resistance to dislodging forces in horizontal and slanting directions and also in vertical direction.

# Components of clasp



# Types of fixing elements

**extracoronal**  
(clasps)

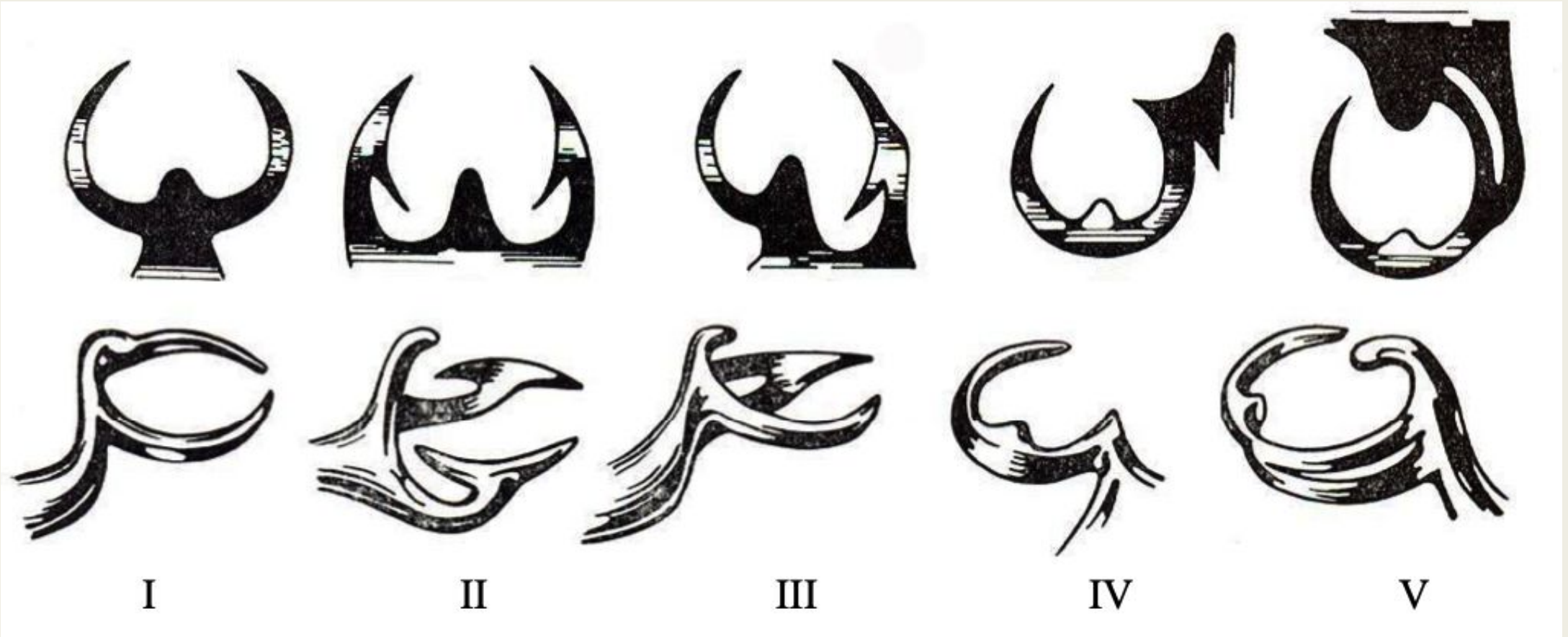


**intracoronal**  
(attachments)



# Ney's clasps

- were designed in the USA in 1949.





- **I clasp type** by Ney (**Aker's** clasp) is a classical clasp. It has occlusal rest and two retentive arms (vestibular and oral). The arms' length depends on tooth and height of contour sizes.
- **II clasp type** by Ney ( **Roach** clasp) consists of 3 main elements: occlusal rest and two "T- shape" retentive arms with good elastic properties.
- **III clasp type** by Ney is a **combination** of I and II clasps types.
- **IV clasp type** by Ney (**back action clasp**) is semi – ring clasp that originates with retentive arm in on the oral (vestibular) surface, transfers to mesial located occlusal rest and continues with retentive arm on vestibular (oral) surface. This clasp has good retention and bracing.
- **V clasp** type by Ney (**circumferential clasp**) is usually used on single molars. The clasp originates on mesial ( or distal) surface with occlusal rest then transfers in double bracing arm on oral (or vestibular) surface after that it continues with occlusal rest on distal (or mesial) surface and ends with retentive arm on buccal (or oral) surface.

# Bounded defects – III and IV class by Kennedy



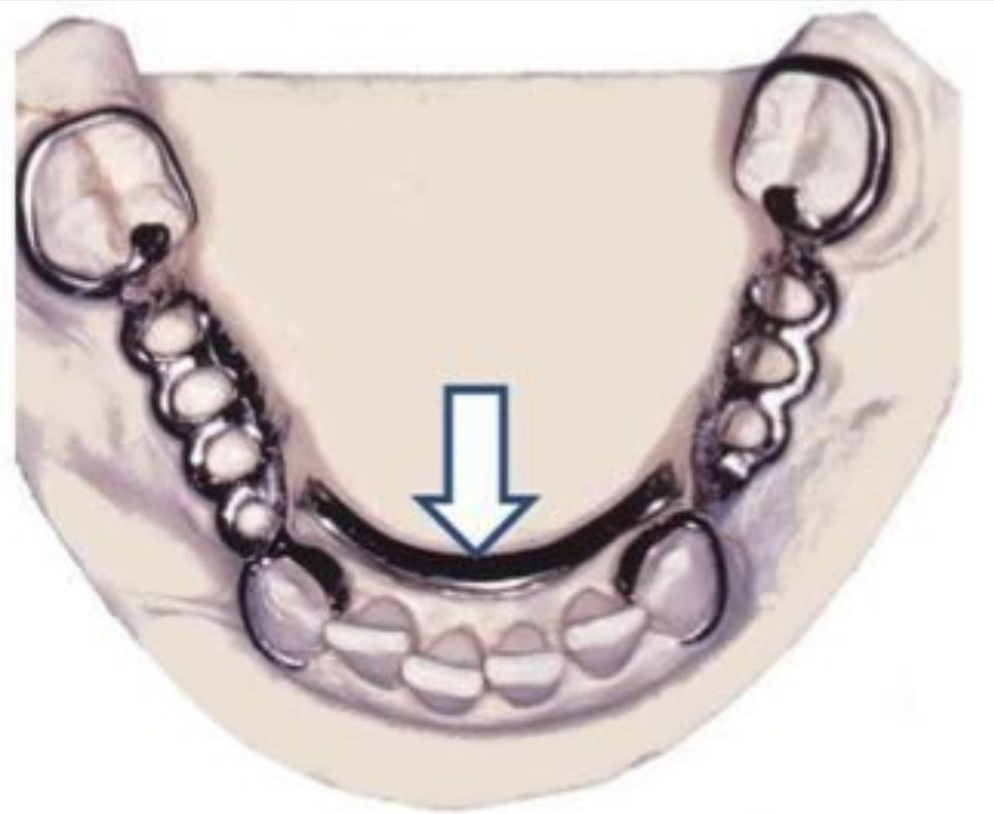
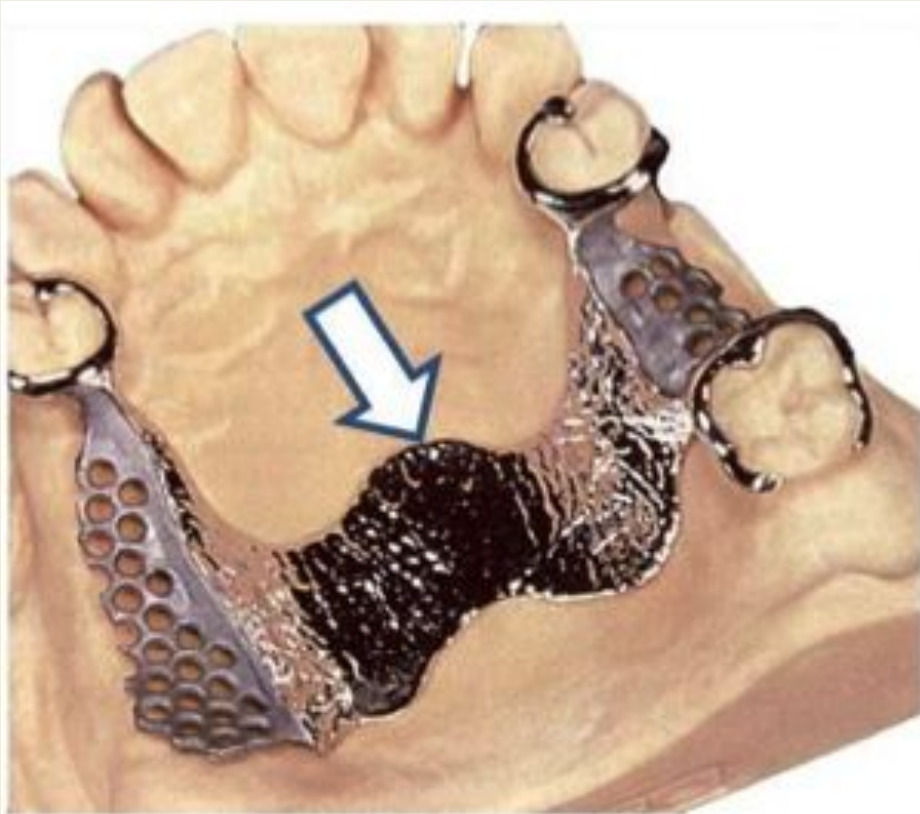
# ■ Terminal defects – I and II class by Kennedy



# Major Connectors in Cast Partial Dentures.

(arch, buge, bar, cast plate)

join saddles and retainers in a single framework. There are two types of major connectors according to their construction and position: maxillary connector and mandible connector

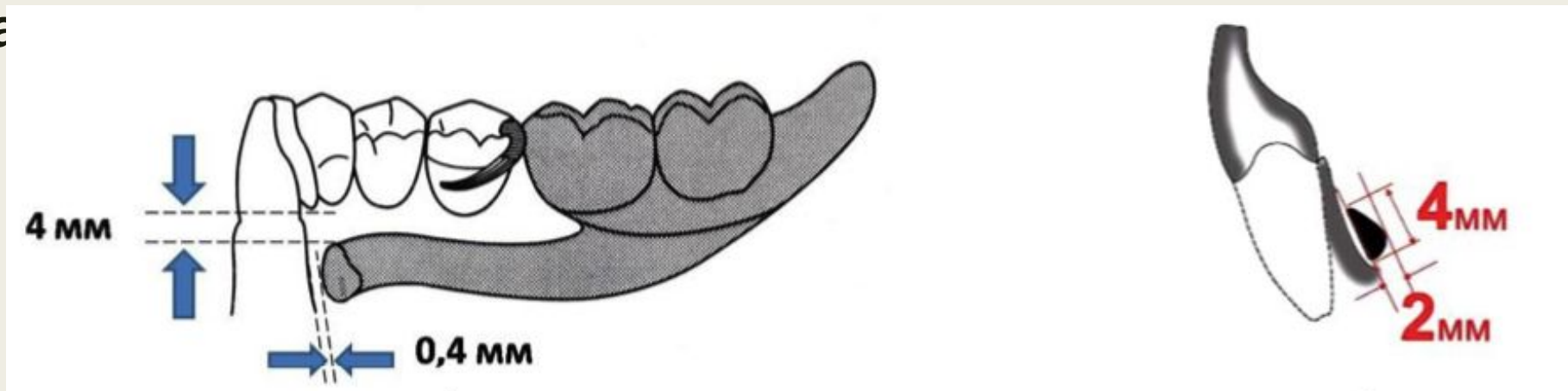


# Variants of localizations of arches on maxilla.

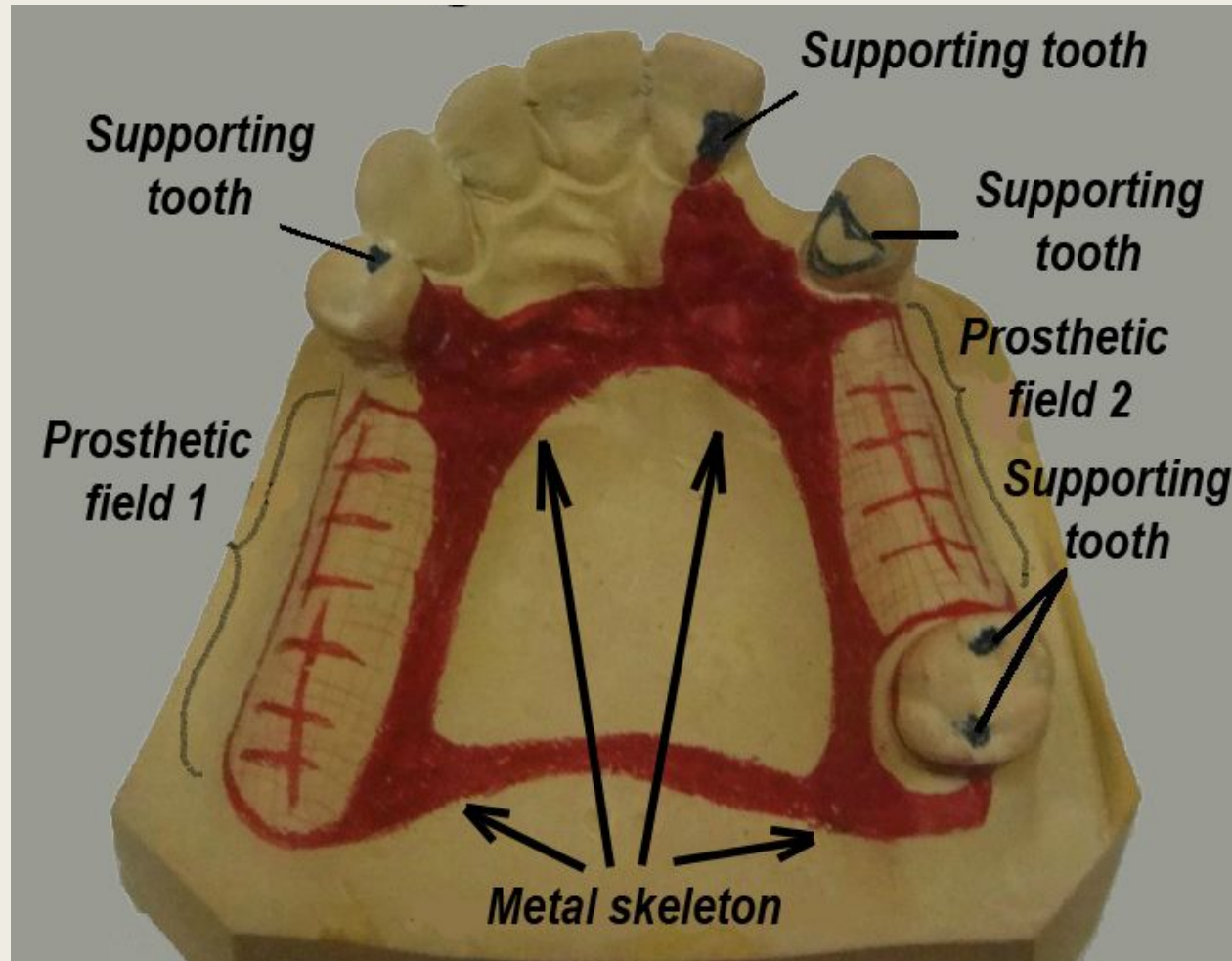
- **The thickness of cast plate is 0,5 – 0,7 mm.** It is located on the mucosa of hard palate. The dimension and position of cast plate depend on the dimension and location of edentulous area. The more dimension of edentulous area the more surface of cast plate should be. According to location of edentulous area, the location of cast plate can be **anterior** (in the area of palatal rugae), **middle** (in the area of middle third of hard palate), **posterior** (in the distal third of hard palate).
- Palatal bar is located between middle and distal thirds of hard palate, **10 – 12 mm before line “A”** (this line passes through the palatine fovea which is located between soft and hard palate).
- Bar (bugel) on maxilla should follow the details of hard palate and it should be also a **gap of 0,4 – 0,7 mm between denture and mucosa**. The shape of bar in cross-section is **semi-oval with width of 5-10 mm and thickness of 1,5 – 2 mm and with rounded edges**.

# Variants of localizations of arches on mandibular.

- On mandible the borders of cast partial denture the same as in partial removable dentures. The upper border should be 2-3 mm above the gingivums, lower border is placed above lingual sulcus with a **gap of 0,1 -0,2 mm between denture and mucosa.**
- Bar on mandible should follow the details of alveolar process it should be also a **gap of 0,4 mm between denture and mucosa.** The shape of bar in cross – section is **semi-oval with width of 4 mm and thickness of 2 mm and with rounded edges.** Lingual bar locates **4 mm below the necks of rema**



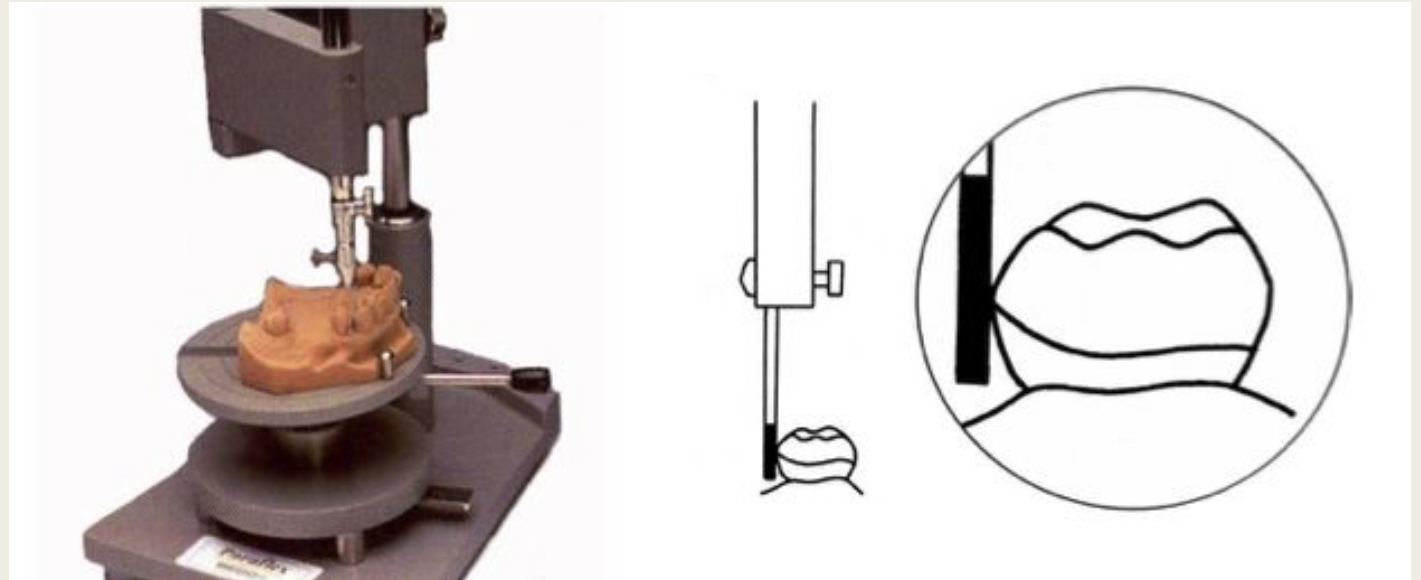
# Planning of bugel construction





# Surveying

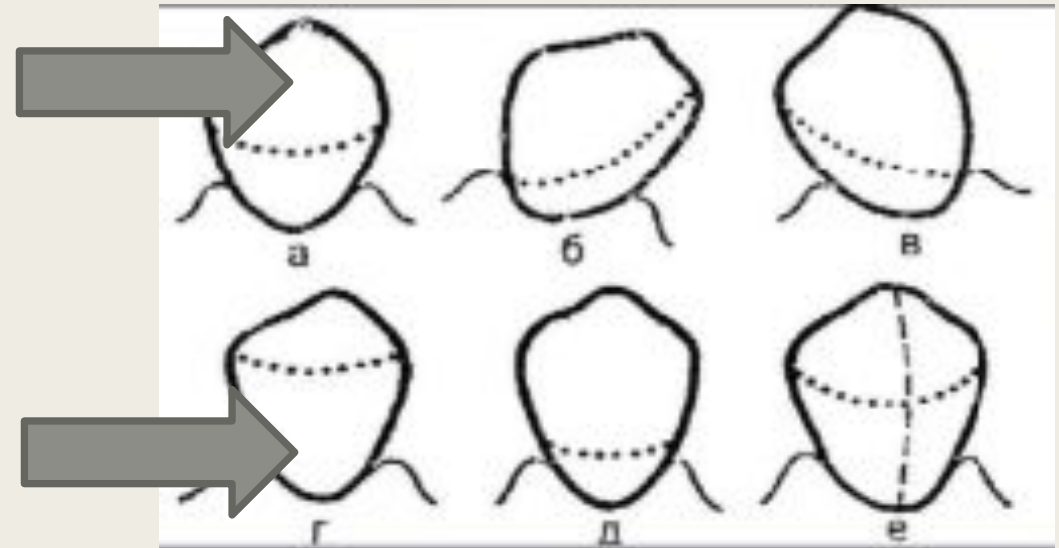
- **Surveyor** is used to determine **survey (boundary) line**, position of clasps' components. Surveying helps to create a path of insertion (or removal/displacement) of the cast partial denture.
- With surveyor it is possible to detect the greatest abutment's **convexity** (bulge) – survey line (clinical height of contour)



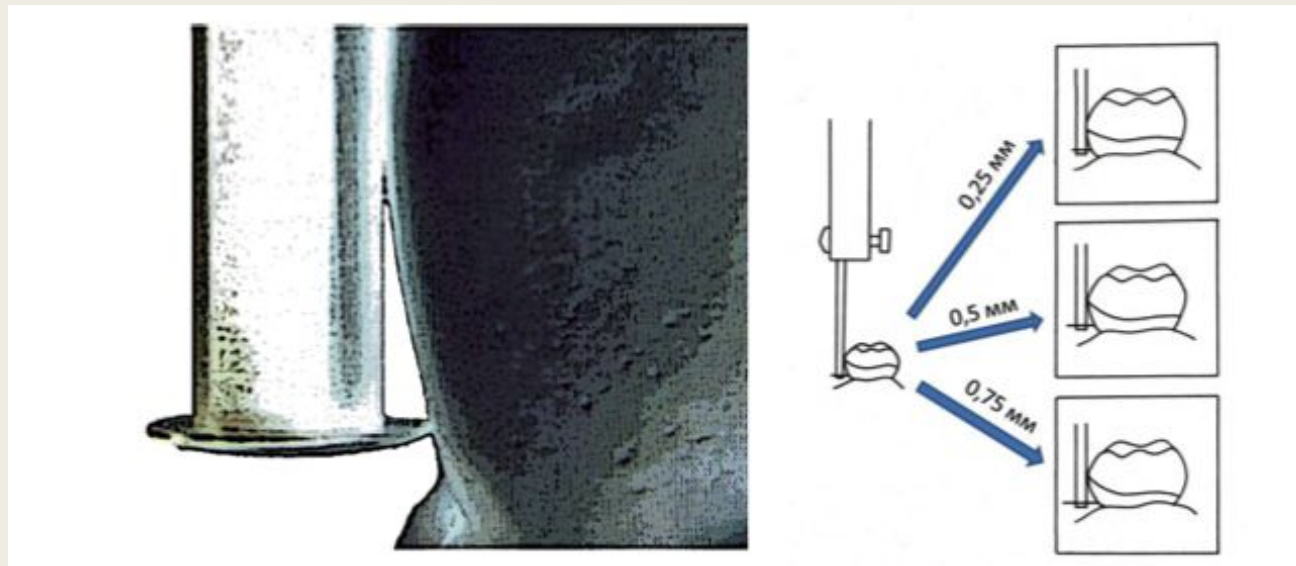
- The tooth crown has an anatomical height of contour – the most convex tooth part. When analyzing rod of surveyor corresponds with abutment's long axis survey line matches with an anatomical height of contour.
- Survey line divides abutment's surface in two areas: supporting (suprabulge area) and retentive (infrabulge area). All portions of a direct retainer that are **rigid** (including occlusal rest) must be located **in occlusional (suprabulge, abutment) area**. The **retentive** portions of direct retainers are located in **retentive (infabulge, supragingival)** area.

**Occlusional (abutment)  
zone**

**Retentive (supragingival)  
zone**



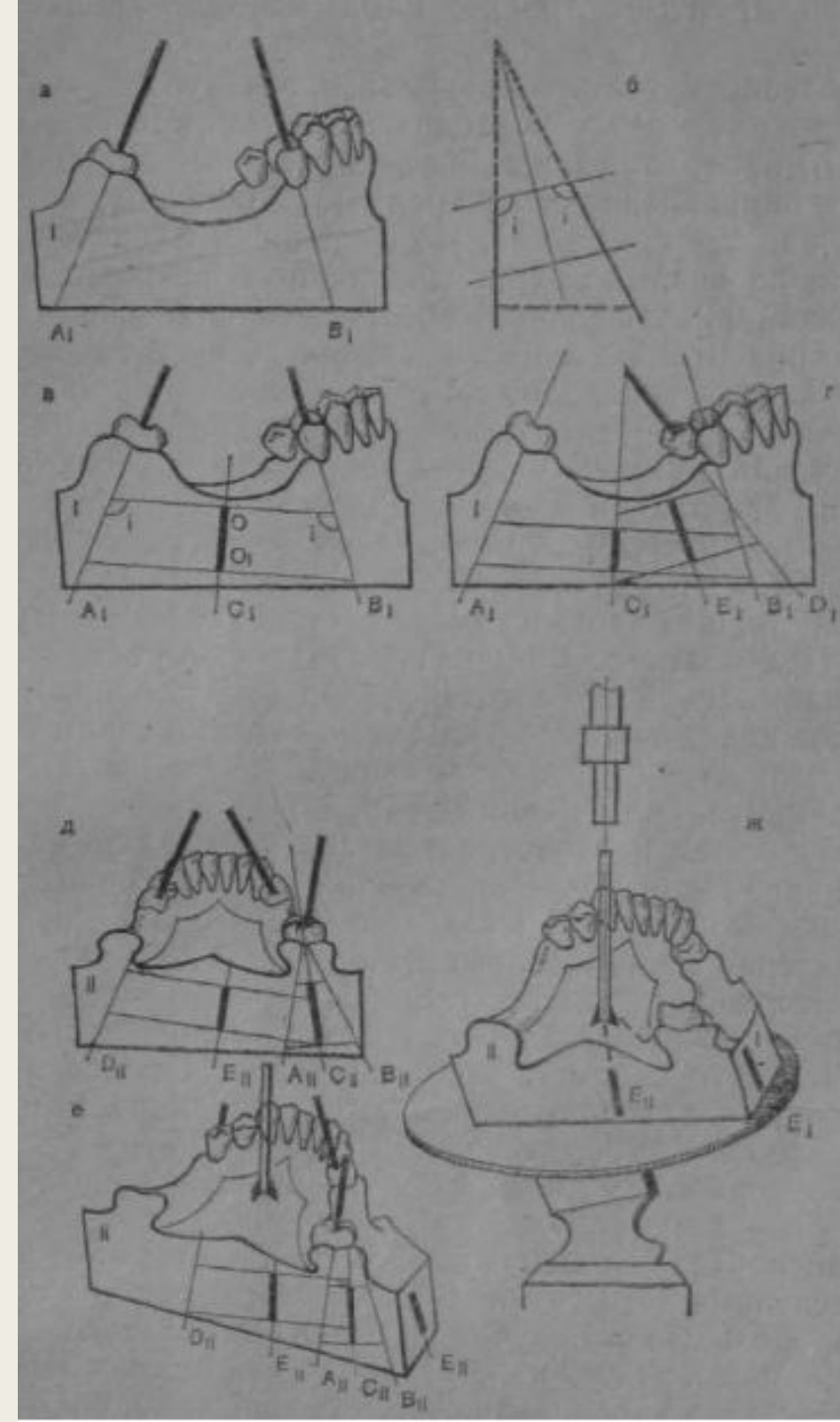
- Retentive part is considered to be the most important in denture fixation. The main characteristic of this area is a presence of undercut. **Undercut** is a space between analysing rod and abutment's surface below survey line.
- To determine the undercut's special measuring undercut **gauges** (surveyor's tool) are used. They have shank (rod) with perpendicular head on the tip. This head protrudes beyond the diameter of the rod to 0.25; 0.5 and 0.75 mm.
- Clasp position in undercut area influences on its holding properties. The deeper into the undercut area is holding part of the clasp, the more pronounced the effect of retention. Too deep position of the clasp holding part makes denture's insertion and removing more difficult.



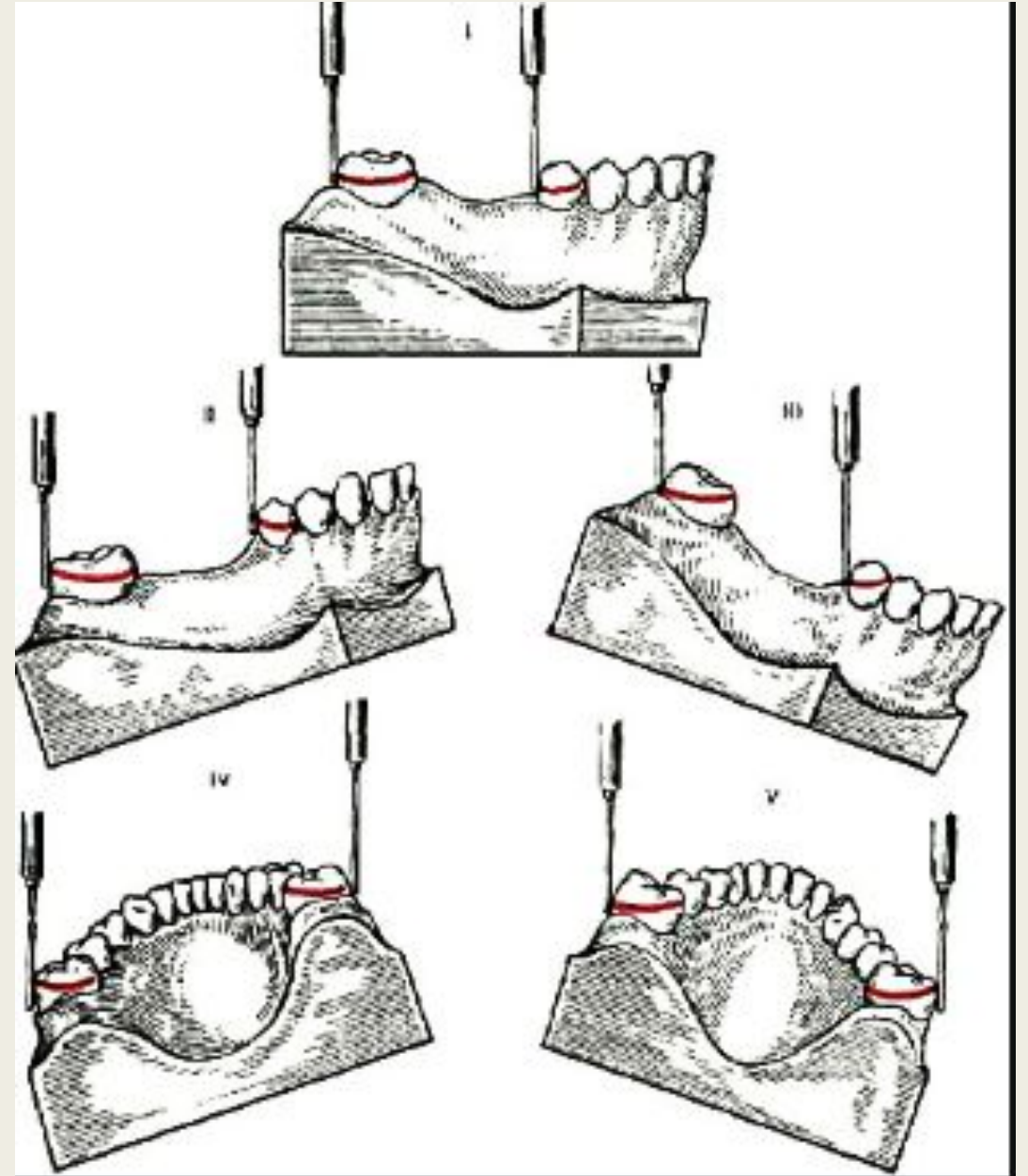
# Methods of surveying

- 1. Arbitrary;
- 2. The method of determining the average inclination of the longitudinal axes of the abutment teeth (Novak method);
- 3. Model tilt method (selection method, or "logical" method).

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Model tilt method  
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The **greatest enemy of knowledge** is not ignorance, it is the illusion of **knowledge**

~~Stephen Hawking~~

**Daniel Joseph Boorstin**

- gannaviun@gmail.com
- Instagram, Facebook: doctorviun

