Direct and indirect retainers

Vinay Pavan Kumar .K
2nd year P G student
Dept of Prosthodontics
AECS Maaruti College of Dental Sciences

Direct retainers

Definition

Classification

Extracoronal retainers

Types

Principles of design

Requirements

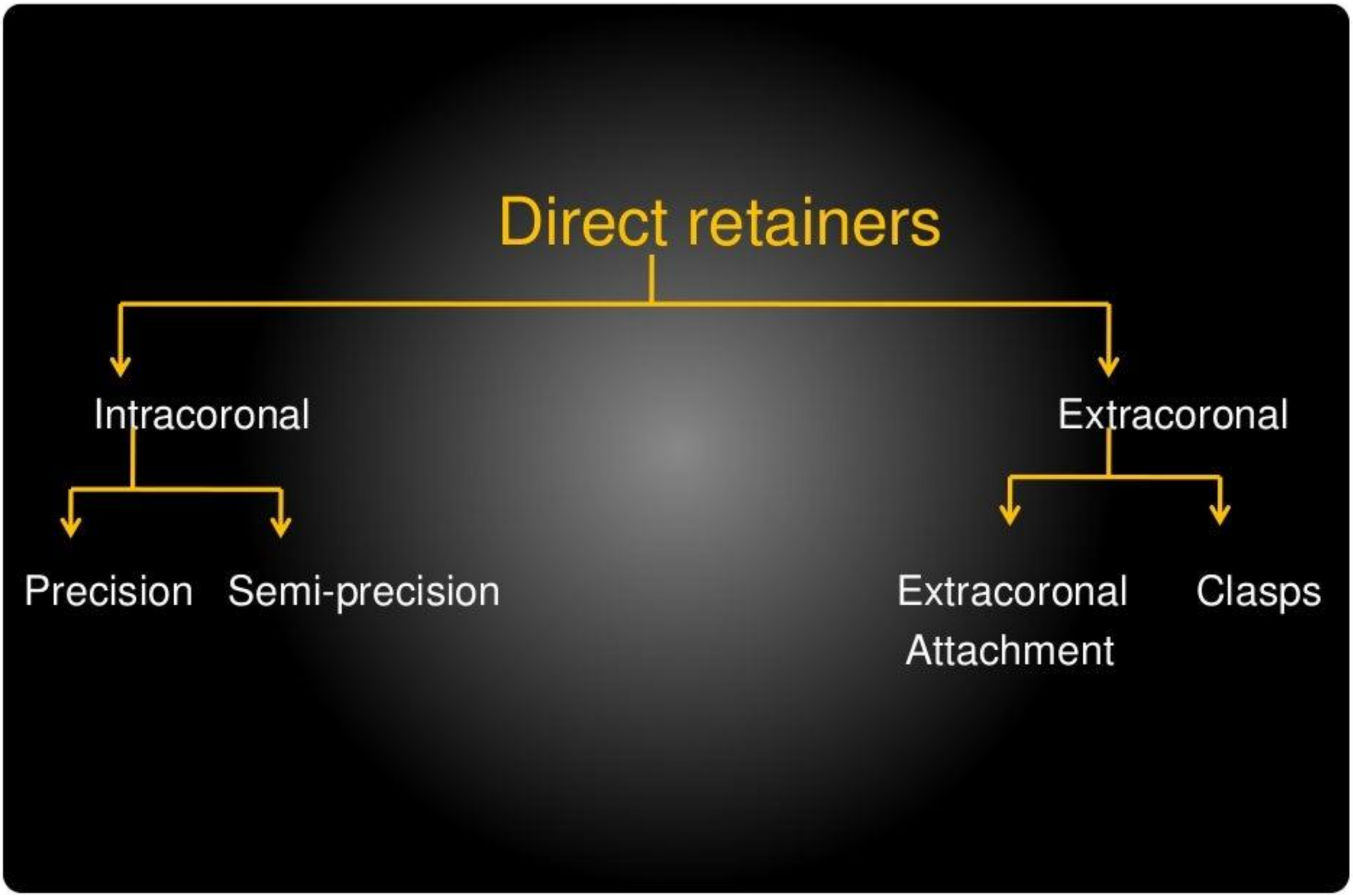
Indirect retainers

Definition

Factors affecting

types of indirect retainers

Direct retainer: It is that component of a removable partial denture that is used to retain and prevent dislodgment, consisting of a clasp assembly or a precision attachment (GPT 8)

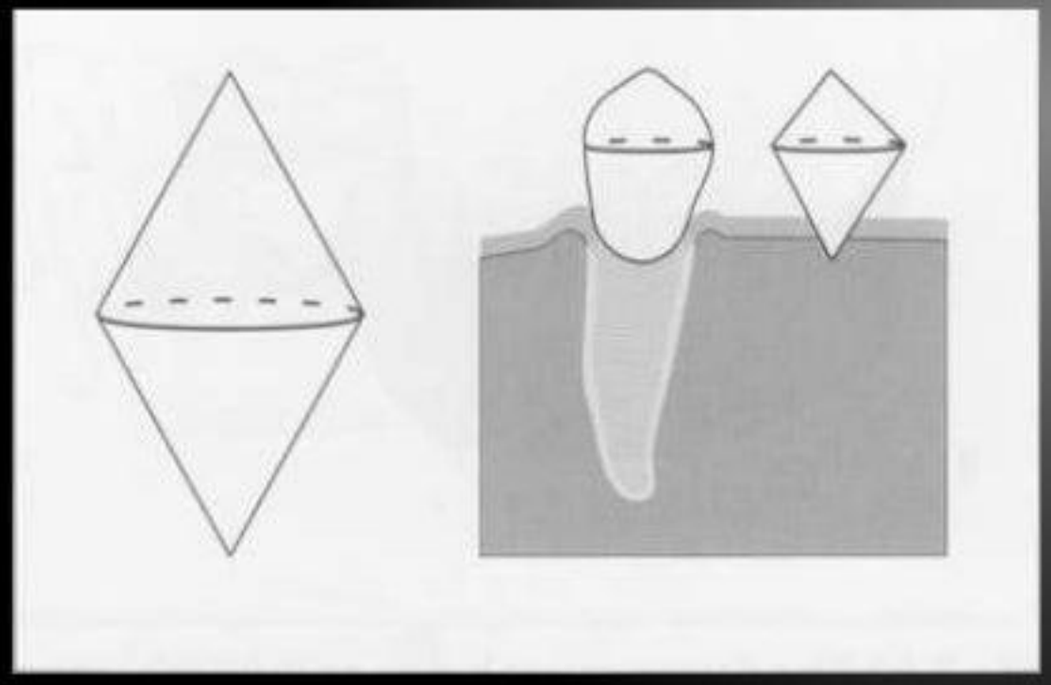

Direct retainers
Intracoronal
Extracoronal
Precision
Semi-precision
Extracoronal Attachment
Clasps

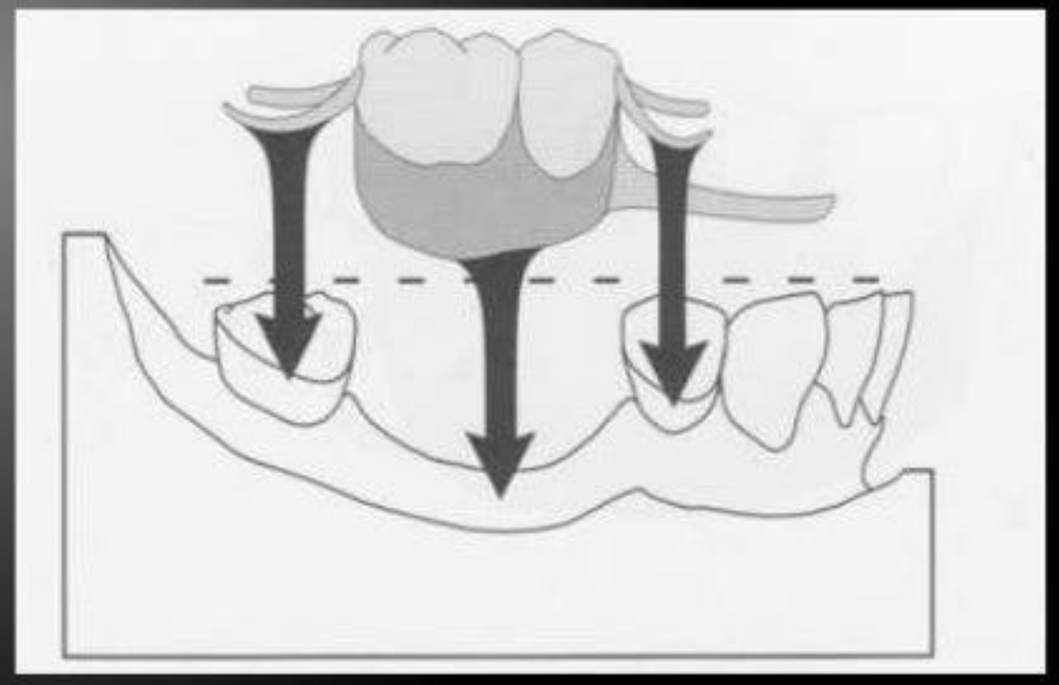
Intracoronal retainers

In 1906 the principle of the internal attachment was first formulated by Dr. Herman E.S. Chayes

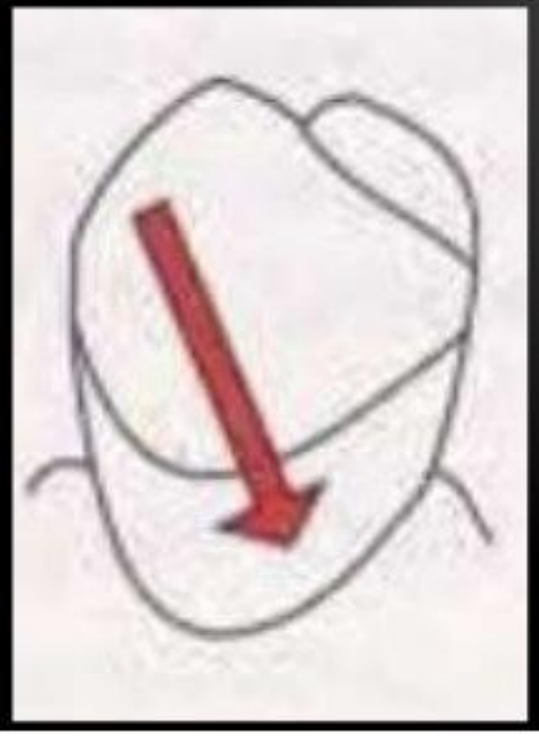
Extracoronal Retainers

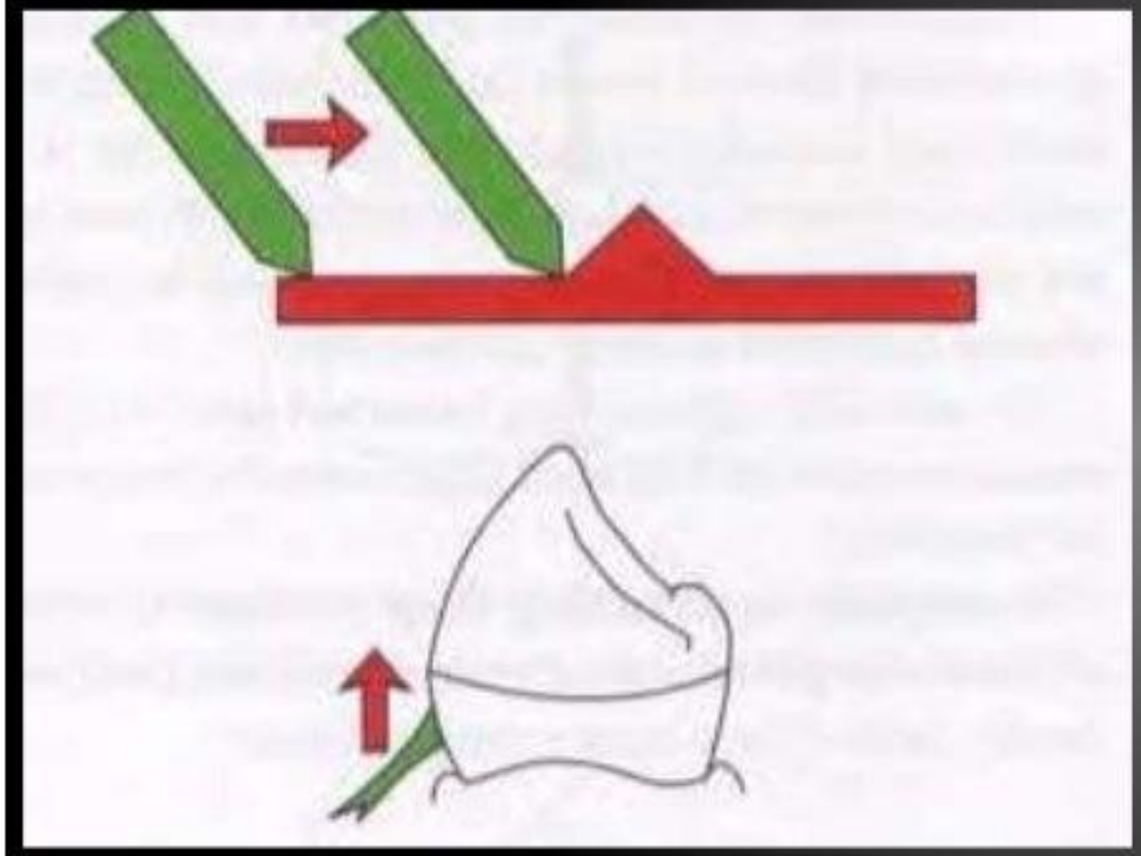
- Prothero provided a Conceptual Basis for mechanical retention

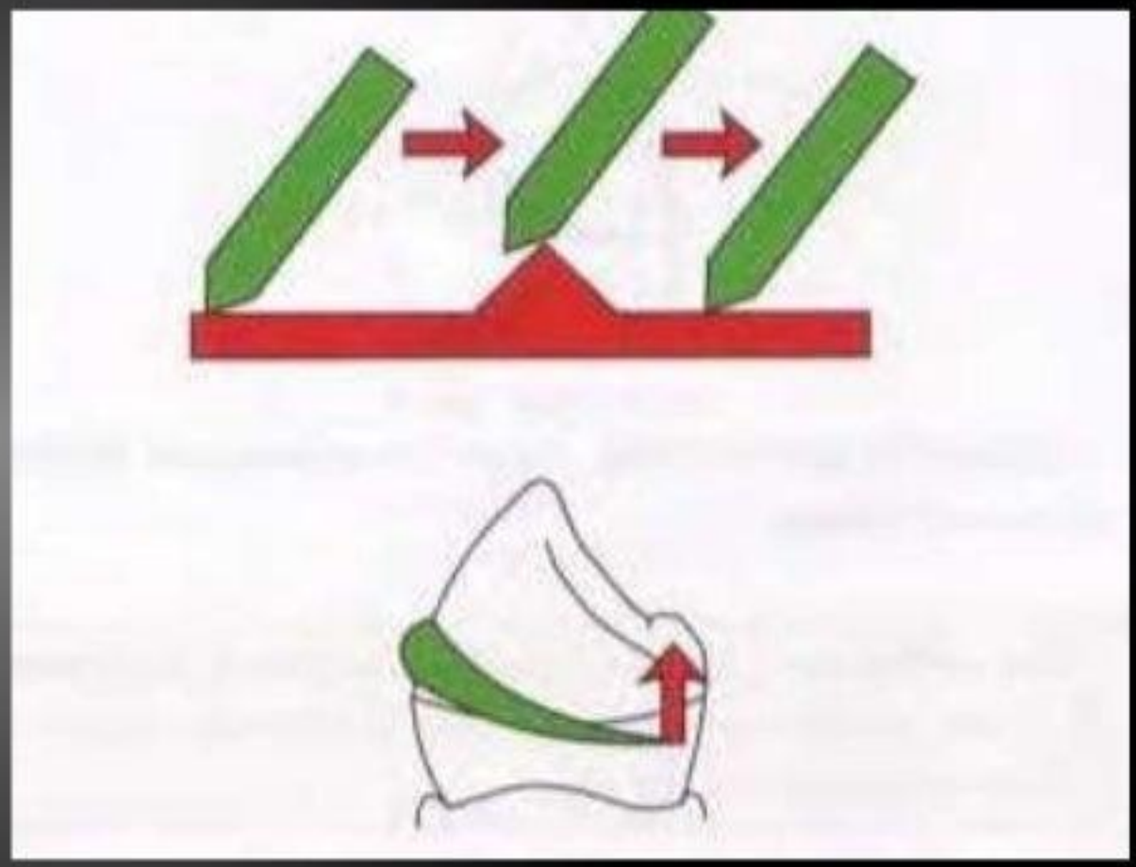




- Clasps mainly divided 2 types
- Occlusally approaching which approach the undercut from the occlusal area and gingivally approaching which enter the undercut crossing the gingival margin.







Clasp Assembly

The part of a removable dental prosthesis that acts as a direct retainer and/or stabilizer for a prosthesis by partially encompassing or contacting an abutment tooth. Components of the clasp assembly include the clasp, the reciprocal element, the cingulum, incisal or occlusal rest, and the minor connector.

Parts of clasp assembly

Circumferential Clasp (Retentive Arm)

Reciprocating (Bracing) Arm

Distal Occlusal Rest Seat

Proximal Plate

Principles of Clasp Design

1. Encirclement- more than 180 degrees in greatest circumference if the tooth engaged by the clasp assembly
2. Occlusal rest - to prevent the movement of the clasp arms cervically.
3. Each retentive terminal should be opposed by a reciprocal component

4. Clasp retainers on abutment teeth adjacent to distal extension bases should be designed to avoid direct transmission of forces to the abutment

5. The amount of retention should always be the minimum necessary to resist reasonable dislodging forces.

6. Reciprocal elements – junction of gingival and middle third

   Terminal retentive arm – gingival third

Functional requirements of the clasp

Retention

Support

Stability

Reciprocation

Encirclement

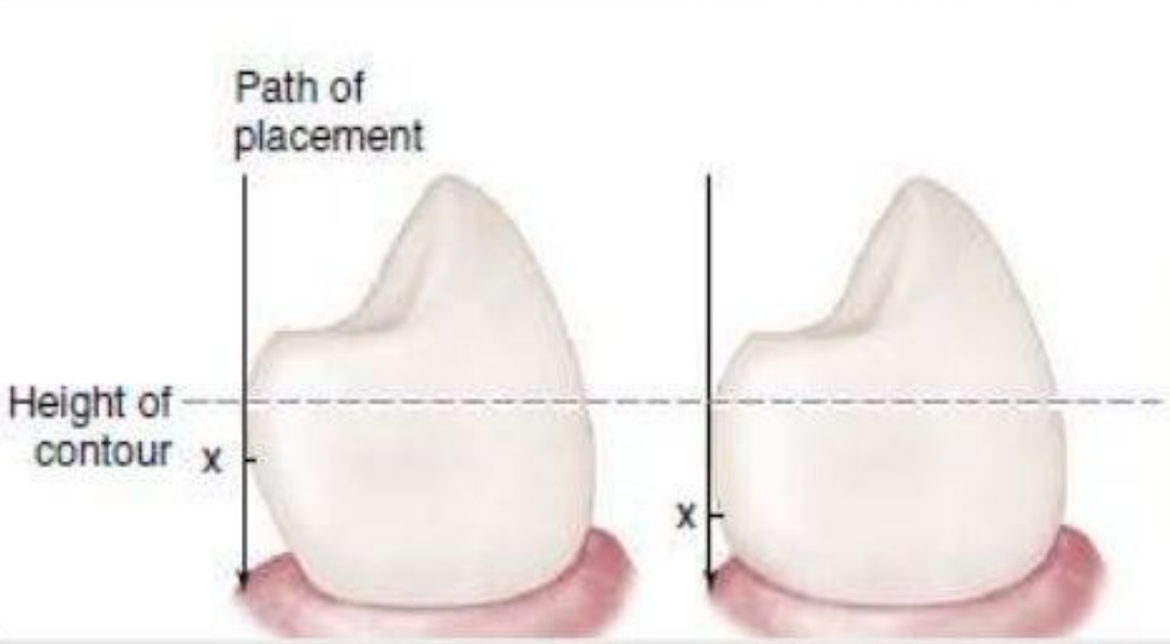
Passivity

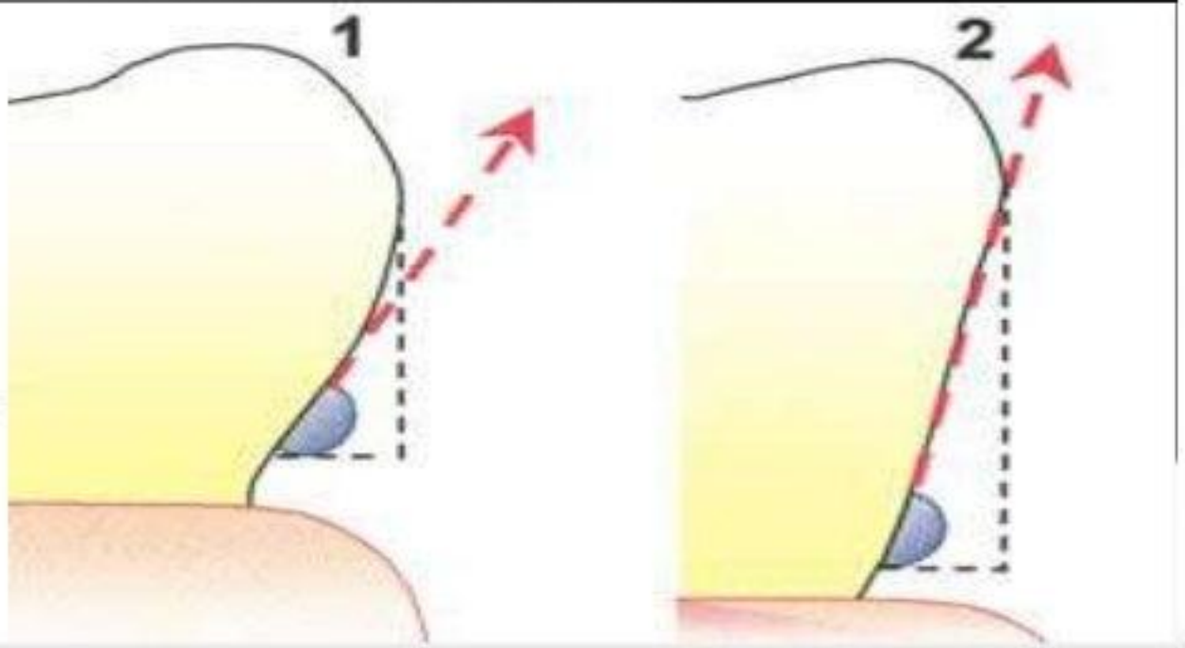
Retention

- Is obtained by the incorporation of a flexible element of the clasp into the undercut.
- Sufficient undercut to be engaged to obtain desired retention.
- Force from the clasp arm on flexing must be within the tolerance of the PDL and must be less to prevent deformation of the clasp arm itself.

Factors affecting retention

- Tooth factors: Size of the angle of cervical convergence
- How far the clasp terminal is placed into the angle of cervical convergence





Clasp arm flexibility

- Material used: cast chrome (0.010”)
  cast gold (0.015”)
  wrought alloy (0.020”)

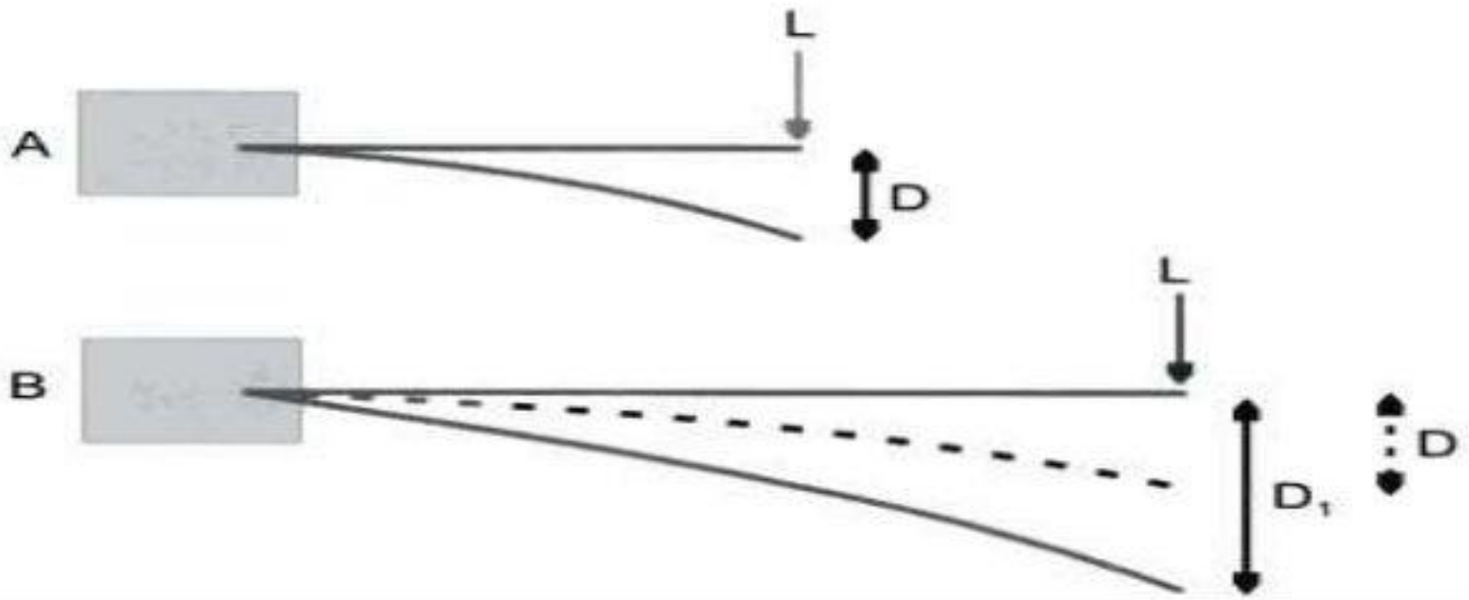
TABLE 7-3. Permissible Flexibilities of Retentive Cast Circumferential and Bar-type Clasp Arms for Chromium-Cobalt Alloys*

Circumferential		Bar-type	
Length (inches)	Flexibility (inches)	Length (inches)	Flexibility (inches)
0 to 0. 3	0. 004	0 to 0. 7	0. 004
0. 3 to 0. 6	0. 008	0. 7 to 0. 9	0. 008
0. 6 to 0. 8	0. 012	0. 9 to 1. 0	0. 012

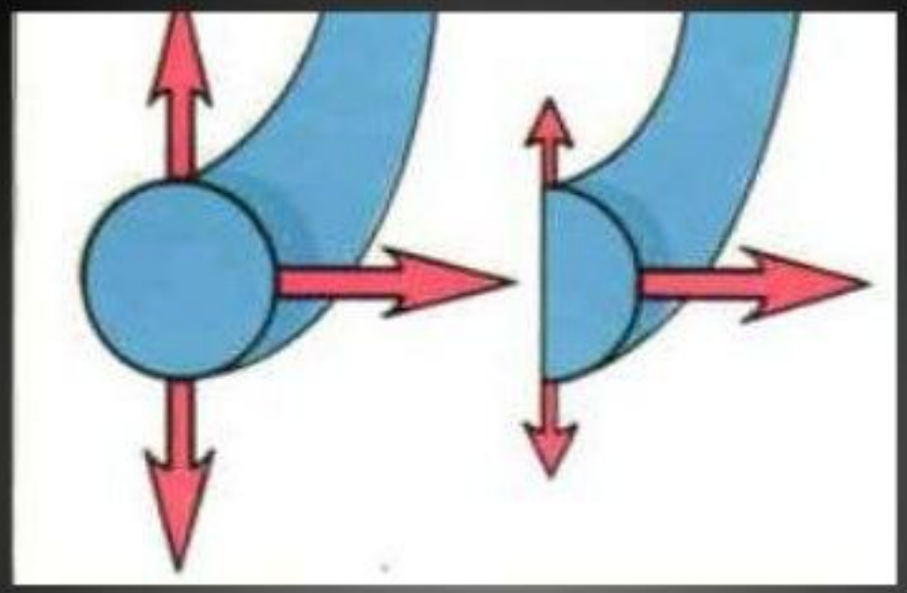
*Based on the approximate dimensions of Jelenko *preformed* plastic patterns, JF Jelenko, New York.

• Length of the clasp

- The longer the clasp arm the more flexible.
- Flexibility is directly proportional to the cube of its length.
- By increasing the length, the horizontal stresses imparted to the abutment during placing and removal is reduced



- Cross section: round > half round

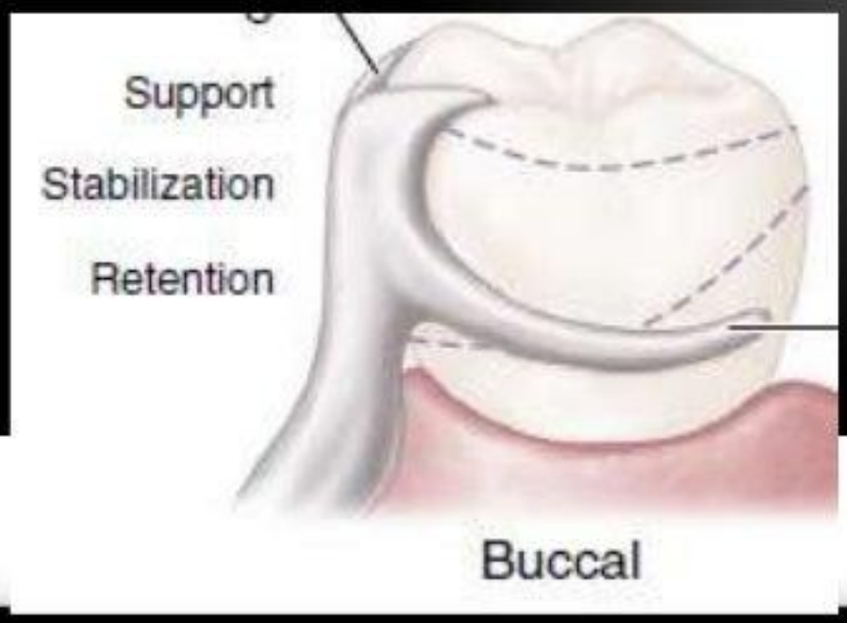


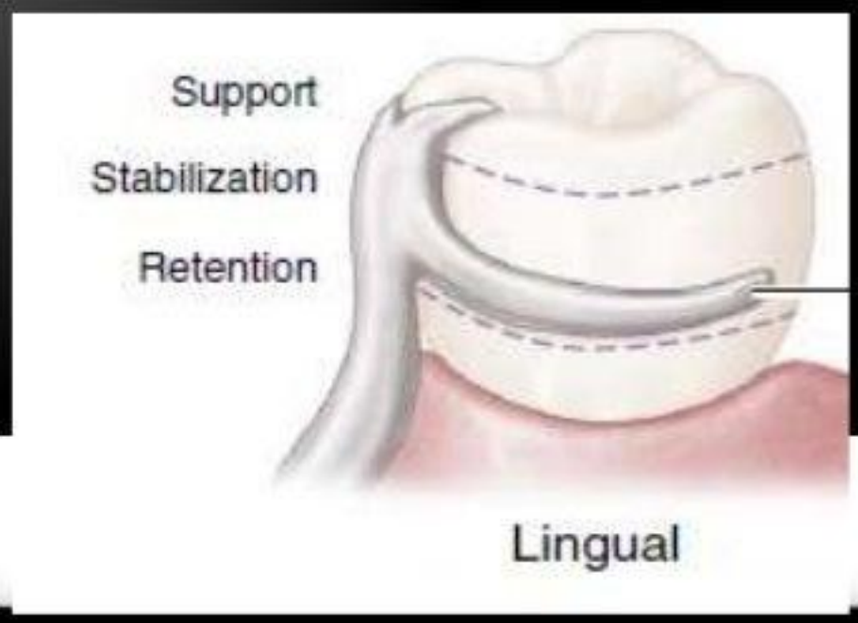
- Modulus of elasticity: more the modulus - less flexibility
- Diameter of clasp: flexure inversely proportional to the diameter.
- Alloy: wrought > cast

Support

- Support is the quality of the clasp assembly to resist displacement of the prosthesis in the apical direction.

- a rest must contact the surface of the abutment tooth at a properly prepared surface- rest seat





- A properly prepared rest will prevent the tissueward movement of the prosthesis.
- maintains the position of the clasp assembly in relation to the abutment.
- Transmits forces along the long axis of the abutments