

Prosthetic Dentistry

PARTIAL DENTRUE : LEC 10

DIRECT RETAINER

Dr. Azhar Alawadi

In general, a removable partial denture should have these requirements:

1. Support: standing against vertical forces directed towards the bases of the denture can be gained from the rests well placed on abutment teeth, and well fitted denture bases.
2. Stability: Resisting rotational and horizontal movements may be achieved through the use of rigid components (reciprocal arm of the clasp assembly, minor connectors, indirect retainers ...etc.)
3. Retention: resisting dislodgement can sufficiently be achieved through the use of mechanical retention on abutment teeth, and through the intimate contact of proximal plates, denture bases and major connectors.

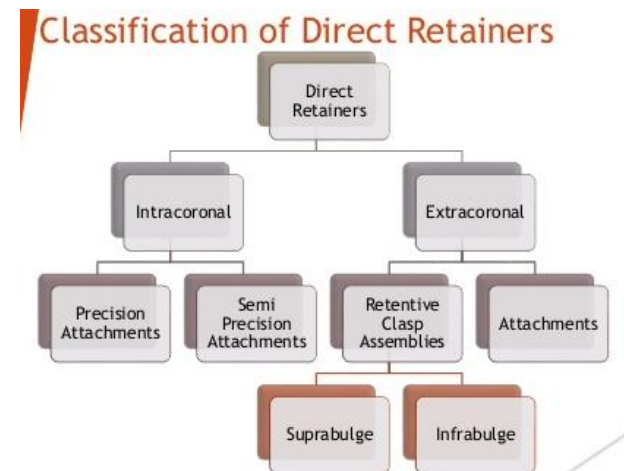
Retainers are either:

1. Direct retainer.
2. Indirect retainer.

Direct retainers

THE EXTRACORONAL RETAINER (CLASP-TYPE)

The extracoronary retainer is the most commonly used retainer for removable partial dentures, which uses mechanical resistance to displacement through components placed on or attached to the external surfaces of an abutment tooth.



AMOUNT OF RETENTION

- 1- Size of and distance into the angle of cervical convergence.

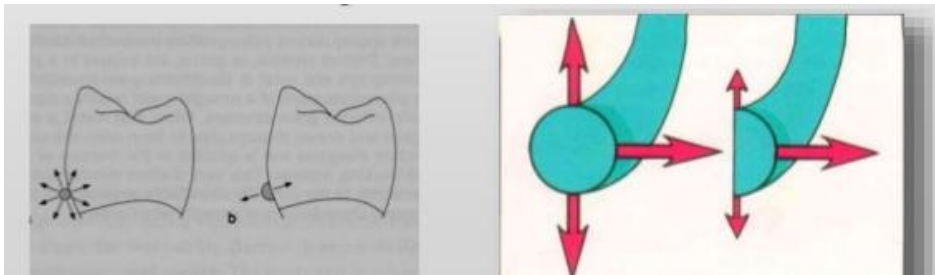
To be retentive, a tooth must have an angle of convergence cervical to the height of contour.

2- Length of clasp arm.

The longer the clasp arm the more flexible it will be.

3- Cross-sectional form of the clasp arm.

Flexibility may exist in any form, but it is limited to only one direction in the case of the half-round form. The only universally flexible form is the round form, which is practically impossible to obtain by casting and polishing.



4- Diameter of clasp arm.

The greater the average diameter of a clasp arm the less flexible it will be.

5- Material used for the clasp arm.

6- Relative uniformity of retention.

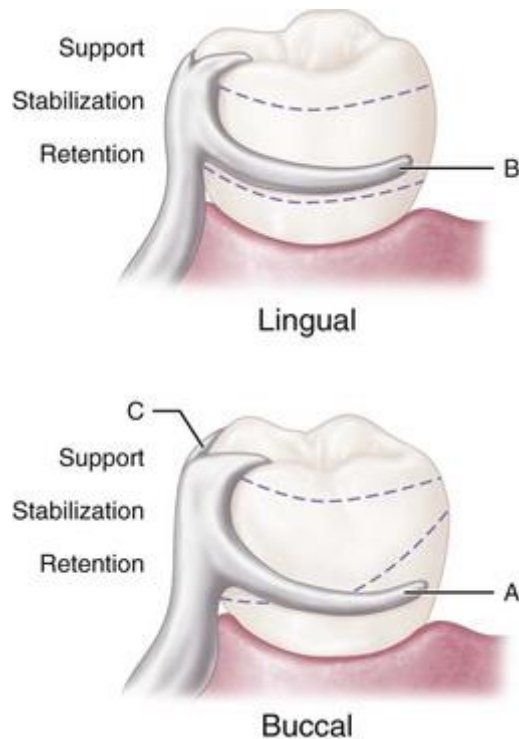
Having reviewed the factors inherent to a determination of the amount of retention from individual clasps, it is important to consider coordination of relative retention between various clasps in a single prosthesis.

7- Stabilizing-reciprocal cast clasp arm.

When the direct retainer becomes active, the framework must be stabilized against horizontal movement. This stabilization is derived from either cross-arch framework contacts or a stabilizing or reciprocal clasp in the same clasp assembly. To provide true reciprocation, the reciprocal clasp must be in contact during the entire period of retentive clasp deformation. This is best provided with lingual-palatal, guide-plane surfaces.

Its average diameter must be greater than the

average diameter of the opposing retentive arm to increase desired rigidity.



THE BASIC PRINCIPLE OF CLASP DESIGN

1- ENCIRCLEMENT

The principle of encirclement means that more than

180 degrees in the greatest circumference of the tooth, must be engaged by the clasp assembly.

The engagement can be in the form of continuous contact, such as in a circumferential clasp, or discontinuous contact, such as in the use of a bar clasp.

Both provide tooth contact in at least three areas encircling the tooth: the occlusal rest area, the retentive clasp terminal area, and the reciprocal clasp terminal area.

2- SUPPORT

The occlusal rest must be designed to prevent the movement of the clasp arms toward the cervical.

3- RECIPROCATATION

Each retentive terminal should be opposed by a reciprocal component capable of resisting any transient pressures exerted by the retentive arm during placement and removal.

4- Clasp retainers on abutment teeth adjacent to distal extension bases should be designed so that they will prevent direct transmission of tipping and

rotational forces to the abutment. In effect, they must act as stress-breakers either by their design or by their construction.

5- Retentive clasps should be bilaterally opposed, i.e., buccal retention on one side of the arch should be opposed by buccal retention on the other, or lingual on one side opposed by lingual on the other.

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

7- Reciprocal elements of the clasp assembly should be located at the junction of the gingival and middle thirds of the crowns of abutment teeth. The terminal end of the retentive arm is optimally placed in the gingival third of the crown; these locations permit better resistance to horizontal and torqueing forces because of a reduction in the effort arm.

8- PASSIVITY

When the clasp is in its place on the tooth surface, it should be at rest, the retentive tip of the clasp arm must be passive and remain in contact with the tooth

ready to resist vertical dislodging force, so when a dislodging force is applied the clasp arm should immediately become active to engage tooth surface resist vertical displacement.

The key to selecting a successful clasp design for any given situation is to choose one that will:

- (1) Avoid direct transmission of tipping or torqueing forces to the abutment.
- (2) Accommodate the basic principles of clasp design by definitive location of component parts correctly positioned on abutment tooth surfaces.
- (3) Provide retention against reasonable dislodging forces (with consideration for indirect retention).
- (4) Be compatible with undercut location, tissue contour, and esthetic desires of the patient.