Ashur University College
Crown and Bridge
2nd year Prosthodontics
Technology dept.
Lect 1&2

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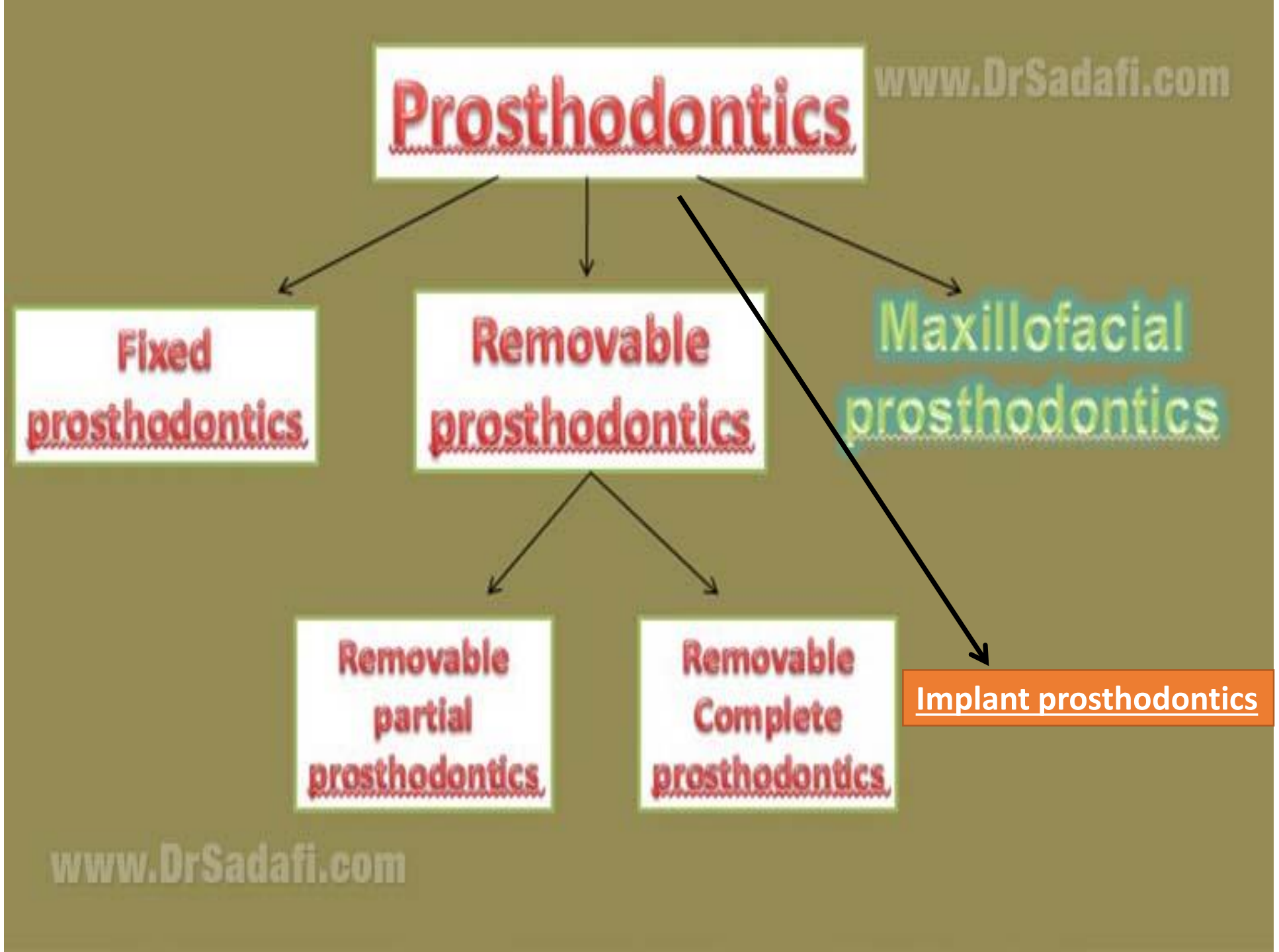
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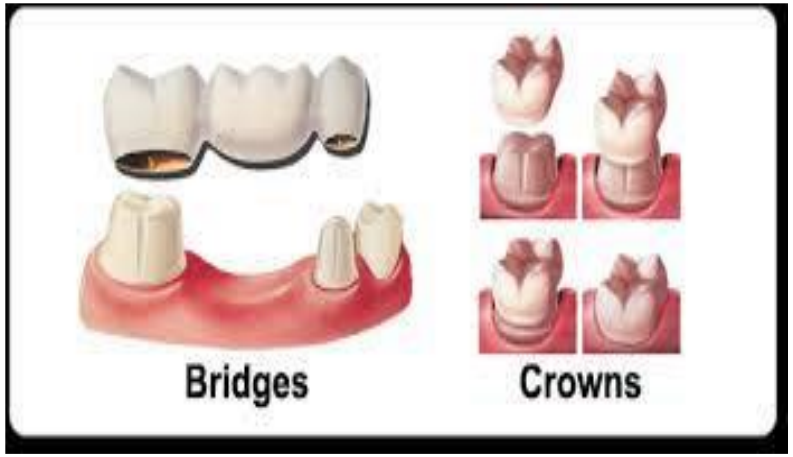
Prosthodontics: It is the dental specialty concerned with the making of artificial replacements for missing parts of the mouth and jaw. It is also named "Prosthetic Dentistry" or "Prosthodontic".

Types of fixed prosthesis:

1. **Crown and Bridge**: It's a branch of dental science that deals with replacement and restoration of the natural teeth by artificial substitutes that are not readily removable from the mouth.

2. Crown: is a fixed extra coronal restoration that covers the outer surface of the clinical crown. It should restore the morphology, contours and the function of the same tooth and should protect the remaining tooth structure.



3- Dental implant: type of fixed prosthesis to restore missing tooth composed of 2 parts, fixture which implanted in the bone and represent the tooth root, and the superstructure that represent the crown.

Dental implant



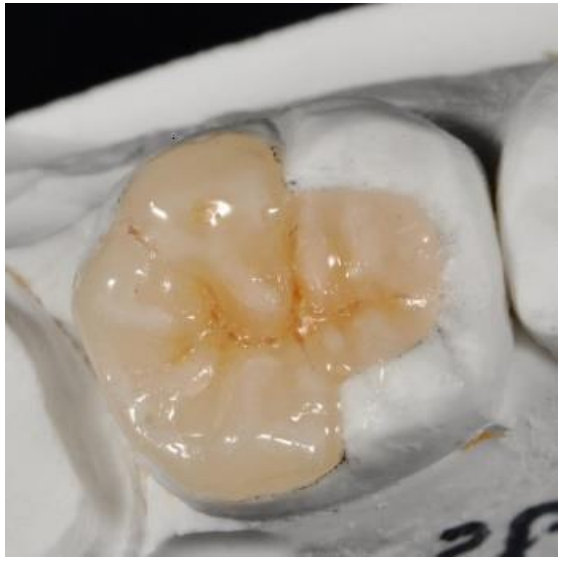
Crown





Bridge

4. Onlay : a partial coverage restoration that restore one or more cusps and adjoining occlusal surfaces and is retained by adhesive.



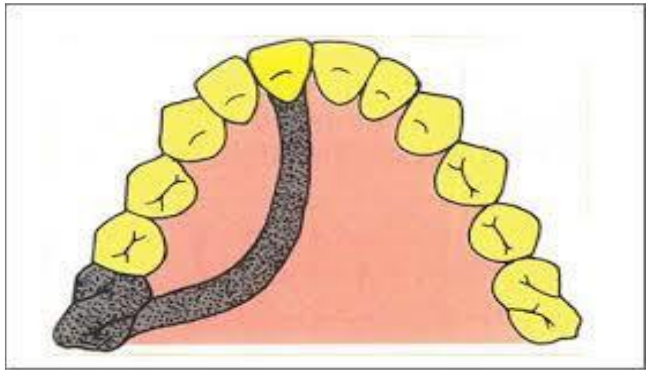
5. Resin bonded prosthesis (Maryland bridge) :a fixed partial denture that is luted to tooth structure, primarily enamel which has been etched to provide micro mechanical retention for the resin luting agent.





6. Cantilever bridge: a bridge supported by one abutment.





7. Spring cantilever : The abutment away from the pontic.

8. Inlay retained bridge:

This is minimally invasive alternative for full coverage fixed dental prosthesis.

Require good oral hygiene and a minimum coronal tooth Height of 5mm.



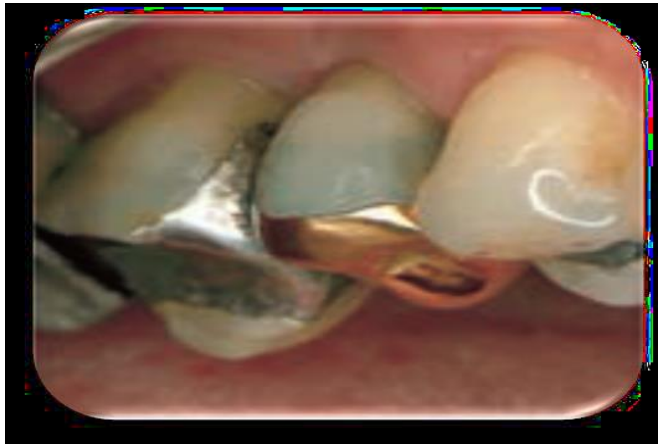
Types of crowns (classification):

a) according to coverage area:

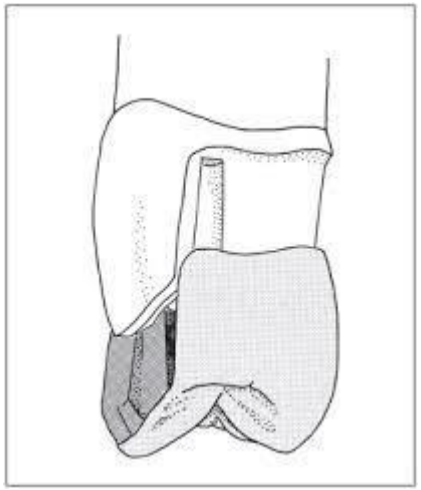
1. ***Complete coverage (full veneer crown)***: It covers all the coronal portion of the clinical crown such as full metal crown, porcelain fused to metal crown, Jacket crown that is fabricated entirely of plastic material.



2.*Partial coverage(partial veneer Crown*): only portions of the clinical crown are veneered such as 3/4 Crown, 7/8Crown .

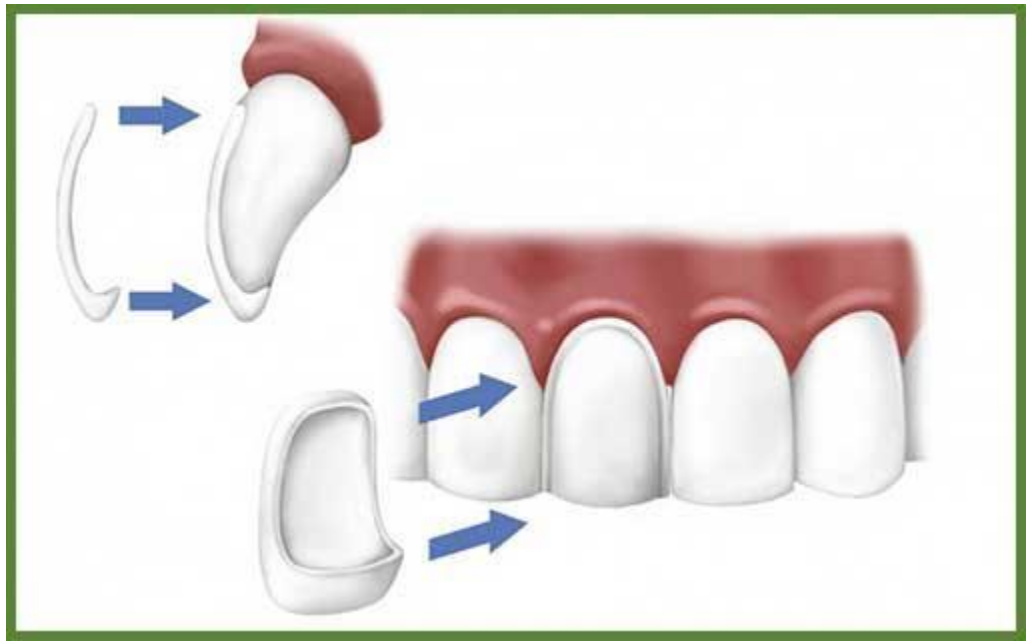


¾ crown



Partial coverage restoration

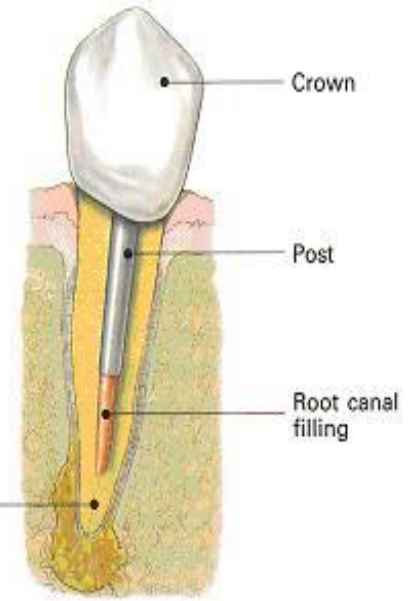
Laminate veneer



3. *Complete replacement* (Post crown): it restores the clinical crown entirely and retains it self by means of a post extended inside the root canal space of the tooth such as post crown.

Post crown





b) According to materials:

According to materials used in the construction of crown and bridge. Crown restorations could be made of:

1. *Metal Crowns* (Gold alloy and its alternatives) as in full metal Crown and 3/4 Crown,
2. *Non metal crowns*: Such as acrylic resin or porcelain as in jacket crown.
3. *A combination* of metal and plastic materials as in PFM crown (porcelain fused to metal).



Indications of crown

1. Badly broken teeth: to restore the grossly damaged tooth, fractured tooth or a tooth with a heavy filling [amalgam or Composite].



2. To alter the occlusion and restore the masticatory function and speech.
3. Improve the appearance such as:

a. Tooth wear.



b. Hereditary conditions like Peg-shaped upper lateral incisors, Dentinogenesis imperfecta ,amelogenesis imperfecta.



c. Large central diastema.



d. Sever tetracycline staining.



4. As a retainer for the bridge.

Bridge (*fixed partial denture)*: It's a fixed prosthesis constructed to replace the missing [one or more] tooth or teeth (**cannot** removed by the patient).

Components of the bridge:

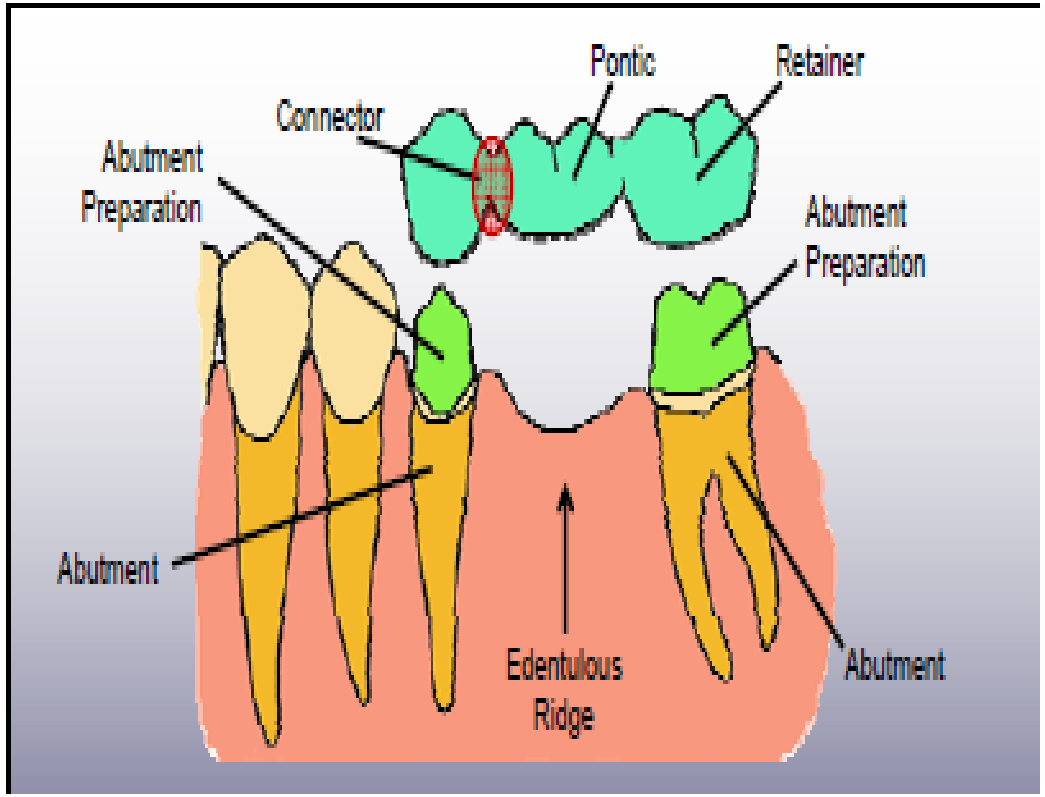
1. Retainer: It's the part that seat over (on or in) the abutment tooth Which could be major or minor, connecting the pontic to the abutment

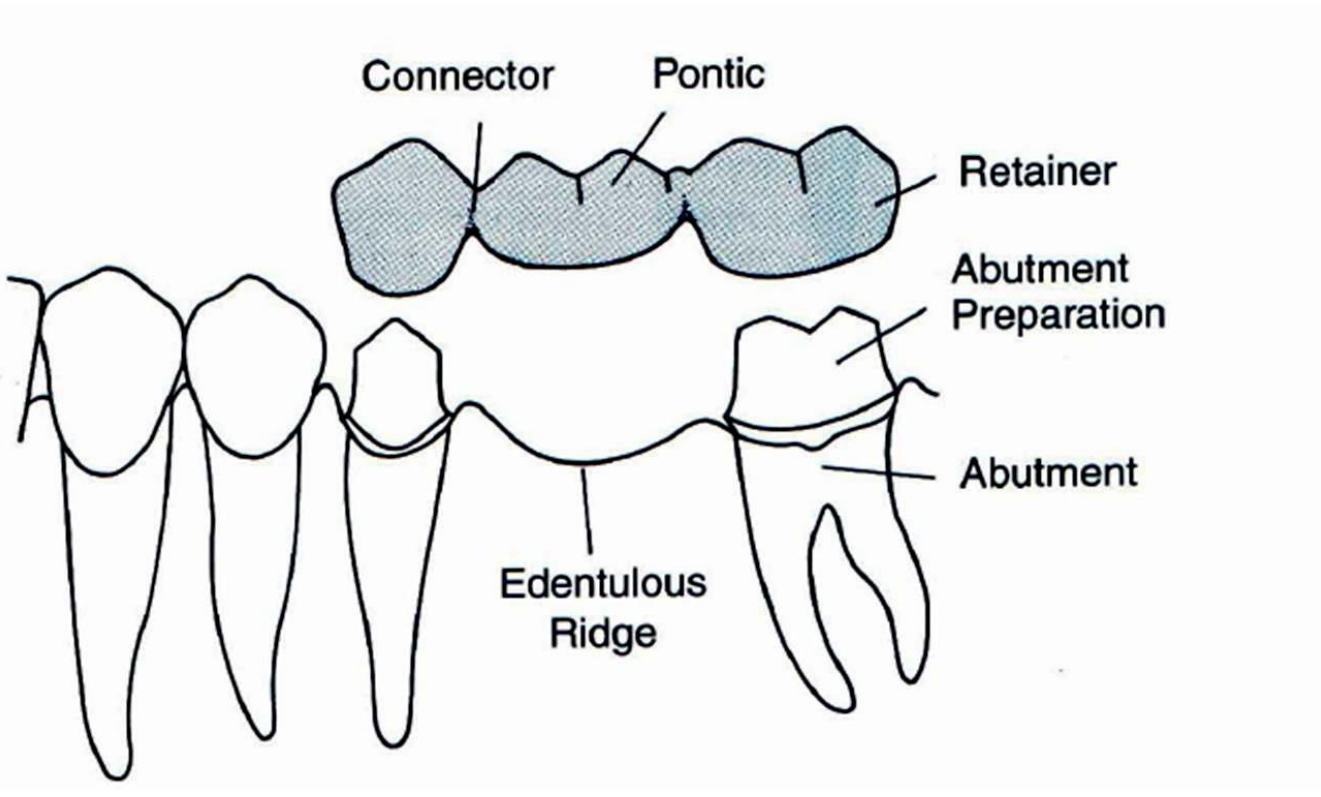
2. Pontic: It is the suspended member of fixed partial denture that replaces the missing tooth or teeth; usually it occupies the position of the missing natural tooth.

3. Connector: It Part of F.P.D that join the individual components of the bridge together (retainer& pontics), which could be fixed (rigid) or movable (flexible) connector. When the retainer is attached to a fixed connector it's called a **major retainer**, but when it is attached to a flexible (movable) Connector it is called a **minor retainer**.

Abutment tooth: is the natural tooth to which retainer is cemented, it gives support to the bridge or part of the bridge).

Component of the bridge





Span: The length of the alveolar ridge (space) between the natural teeth where the bridge will be placed.

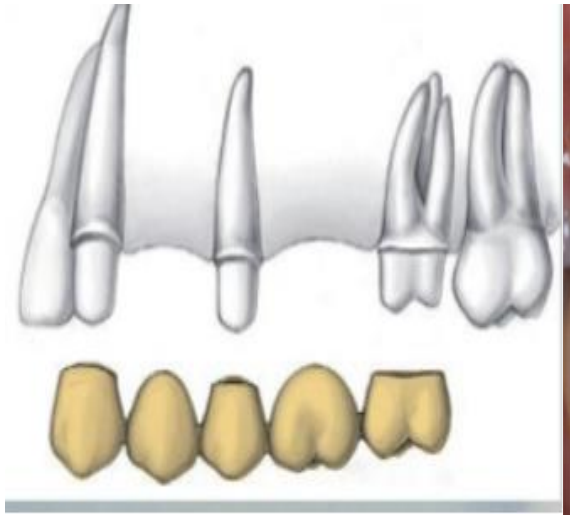




Saddle: The area on the alveolar ridge which is edentulous where at least one missing tooth (pontic)is to be placed



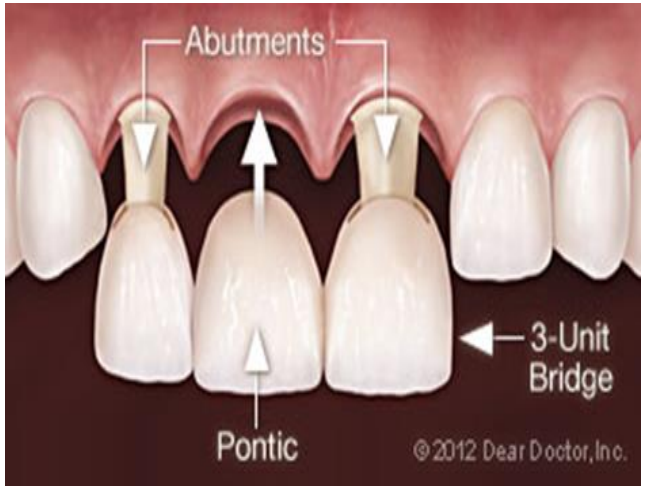
Pier abutment also known as an intermediate abutment is defined as a natural tooth located between terminal abutments and supporting two pontics.





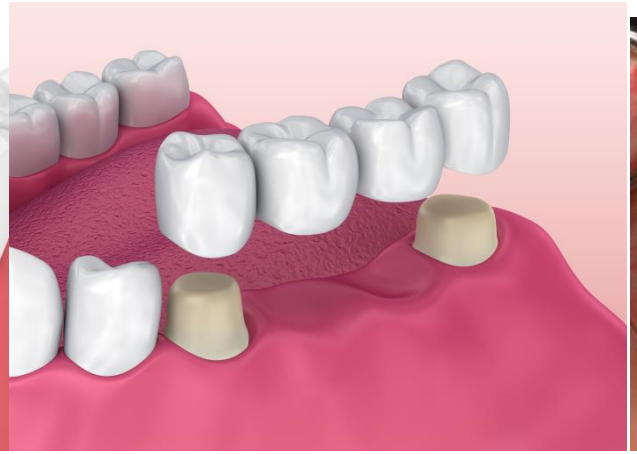
Unit: Pontics and abutment teeth are referred to as units.

The total number of units in a bridge is equal to the number of pontics plus the number of abutment teeth





3 unit bridge

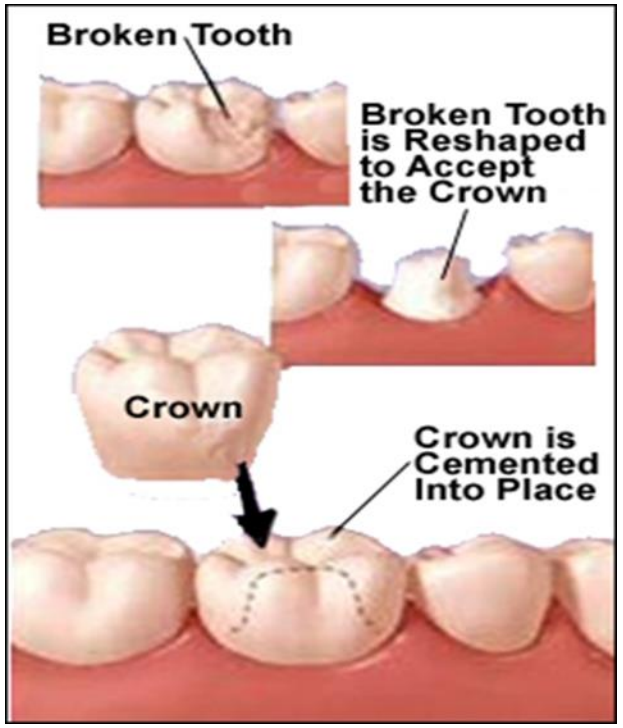


4 unit bridge



8 unit bridge

- **<u>What is the difference between a crown and a bridge?</u>** ... Essentially, a crown is a cap used to restore a tooth to its original appearance and prevent further damage or decay. A bridge, unlike a crown, utilizes existing teeth to fill in an area left vacant by a missing tooth.





Steps in crown construction:

1. Diagnosis: The first step of crown construction is diagnosis of the tooth and surrounding structures.

a) Periodontal examination: good oral hygiene should be available to ensure that no plaque accumulation is formed on the crown margins which might lead if left to caries.

b) Dental examination:

- Visual: The occlusion, Crowding, Spacing, Rotation of teeth are examined. The condition of remaining tooth structure and future treatment is also analyzed.
- Radiographic: The radiographic film reveals the condition and shape of the roots and surrounding structures. A lesion in the bone, root canal, treatment, fracture in the tooth, bone loss, unerupted teeth, size and number of teeth etc ...These Information affects the prognosis of the treatment.

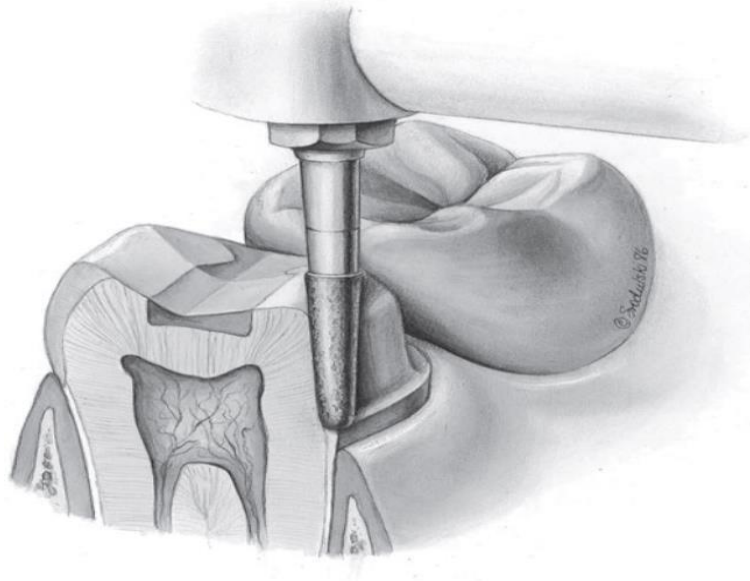
2. Primary impression and making study model.

3. Tooth Preparation: The cutting or instrumentation procedure carry on the tooth during crown construction.

Prepared tooth: "It's the final form or shape of a tooth after cutting (Preparation) procedure.

The tooth is prepared so the cast restoration can slide into place and be able to withstand the force of occlusion.

- Rotary instruments are used to reduce the height and contour of the tooth and prepare the gingival margin.



Objectives of tooth Preparation

1. To eliminate undercuts from the axial surface of the tooth.

2. To provide enough space for the crown restoration to withstand the force of mastication, this space depends on the material used, so the metal material needs little space while the plastic material needs more space.

3. Not to enlarge the size of the tooth.

4. To provide good esthetic.

Steps in crown construction (continue.)

4. Final impression.
5. Temporary restoration.
6. Construction of working model.
7. Waxing.
8. Investing.
9. Wax Elimination.
10. Casting.
11. Finishing and polishing.
12. Try-in &Cementation Of the restoration.

Disadvantage of crowns

1. Heat generation during cutting procedure of the teeth, might affect the health of the pulp and may lead to pulp necrosis, Therefore water coolant must be used during preparation procedure.

2. Excessive tooth preparations weaken the tooth structure or cause traumatic pulp exposure.

3. Periodontal problems, food impaction and secondary caries might develop.