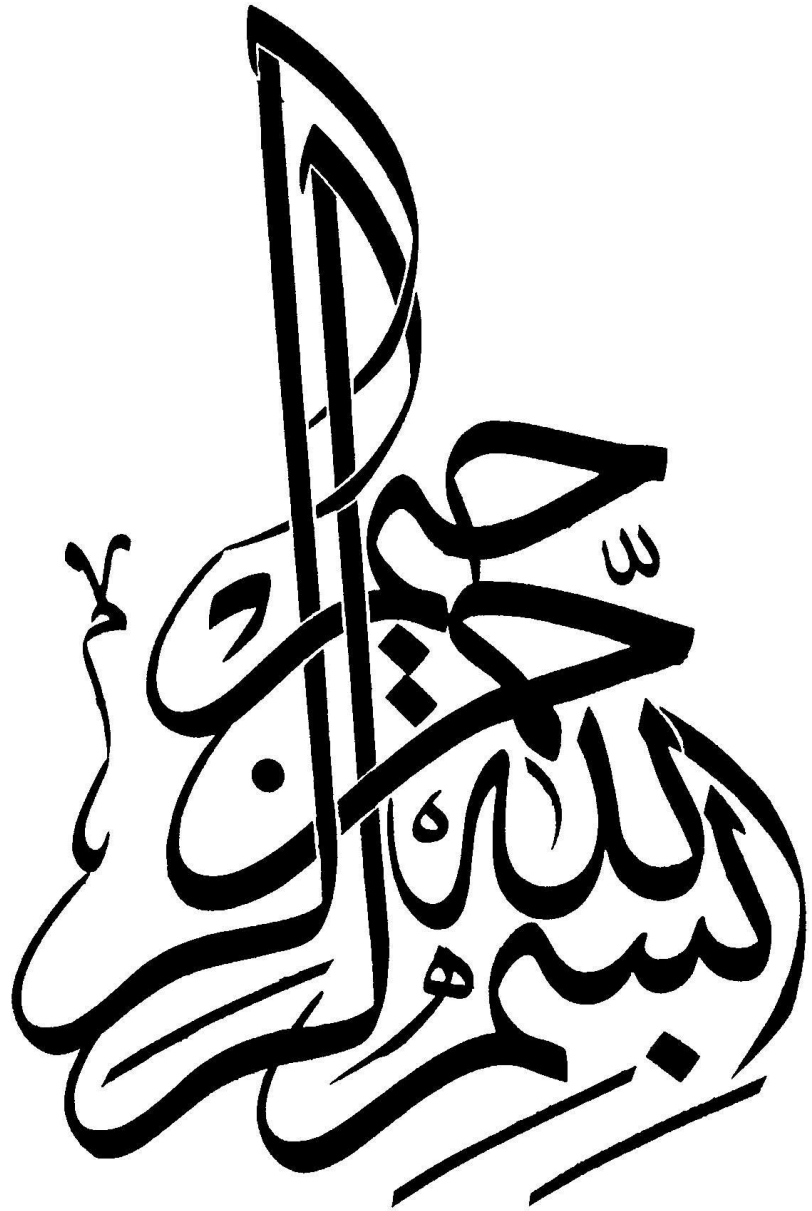
بسم الله الرحمن الرحيم

Esthetic Onlays

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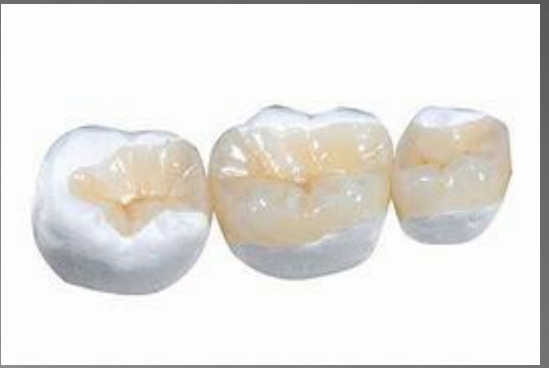
Inlay

An inlay is defined as a restoration which has been constructed out of the mouth and then cemented into the prepared cavity of the tooth

An alternative to class I or II

Onlay



The onlay is essentially an inlay that covers one or more cusp and adjoining of occlusal surface of the tooth.

Vital and non vital tooth

An onlay is a more conservative option than crown

Overlay vs. Crown

Inlay and onlay can be composed of various materials :

- **Metal**
- **Composite resin**
- **Porcelain**

Resin Composite Onlay

Advantages over direct resin composite restorations

- Improper proximal contour and open contact
- Problems with polymerization shrinkage
- Lower microleakage
- Higher strength

Disadvantages over direct resin composite restorations

- Higher cost
- Remove more tooth structure
- Problems in bonding

Posterior Bonded Porcelain Restorations

Indications

- Indications for direct and indirect posterior resin composite restorations
- When one cusp of posterior tooth is being covered with an esthetic bonded onlay
- Endodontically compromised teeth
- In the restoration of a molar with a short occlusogingival dimension
- Teeth where it is difficult to develop retention form

- All margin should be on enamel
- Supra erupted tooth
- When metal allergy is a factor
- Restoration of teeth in an arch opposed by already present porcelain restorations

Contraindications

- Bruxism patient
- Excessive tooth destruction with very little *dentin* remaining
- Technique -sensitivity

Advantages

- Color: Most porcelain systems use well- established techniques of effectively blending in with the adjacent natural dentition.
- Periodontal health: accumulate less plaque
- Resistance to abrasion: The wear-and abrasion-resistance of these restorations is high, although they have the potential to create wear in the opposing arch.

- The marginal integrity: when ceramic restorations are combined with resin bonding and a composite resin luting agent, is excellent with the result that *microleakage* is decreased to an absolute minimum
  - More conservative than crown
  - Reduced polymerization shrinkage
  - Support of remaining tooth structure
  - More precise control of contours and contacts
  - Biocompatible

Disadvantages

- Moisture contamination and placement procedures
- technique-sensitivity

- The strength of the individual unbonded restoration is relatively nominal, so that the try-in procedures can result in fracture of the porcelain
- Low potential for repair

- laboratory fee
- The potential wear of the teeth in the opposing arch, particularly during Para functional habits, is a contraindication

Failure

Bulk fracture

Bruxers and clenchers

Area of cuspal coverage (↓ 2mm thick)

At the isthmus adjacent to marginal ridges (porcelain poorly supported by tooth structure)

Marginal breakdown

resin cement not be heavily filled → wear more quickly than the adjacent restorations or tooth structure , poor marginal adaptation

Ceramic Inlay versus Resin Composite Inlay

- Leaks less
- Fits better
- Adhesion of luting resin is more reliable and durable to etched ceramic material
- fragile subject to fracture during the try-in
- Removed proximal contact can be easily replaced

Ceramic onlay versus Resin Composite onlay

- Has same disadvantages as porcelain inlay.
- It is a cuspal coverage restoration cause

wear of opposing enamel But provide long-term occlusal stability

Strong bonding of resin cement to porcelain so better occlusal force transmission

Ceramic Materials

1. Conventional ceramics

2. Glass ceramics

   Castable glass ceramic (Dicor)

   Pressed glass ceramics (IPS Empress)

   CAD-CAM ceramics