

**PARTS OF FIXED
DENTAL
PROSTHESES
(F.D.P.)**

FDP

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graph TD; FDP[FDP] --- RETAINER[RETAINER]; FDP --- PONTICS[PONTICS]; FDP --- CONNECTORS[CONNECTORS];
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RETAINER

PONTICS

CONNECTORS

RETAINERS IN FIXED DENTAL PROSTHESIS

RETAINER

Any type of device used for stabilization or retention of a prosthesis. (GPT)

CLASSIFICATION

Tylman classified retainers as

Class I

Type 1 – Anterior Extracoronary Retainer

Type 2 – Posterior Extracoronary Retainer

Class II

Type 3 – Anterior Intracoronary Retainer

Type 4 – Posterior Intracoronary Retainer

Class I Extracoronaral restorations

- Complete crowns

The preparation of the tooth and its cast retainer lies externally to the body of the coronal portion of the prepared tooth and restores a tissue-compatible contour for the crown.

- Complete gold crown
- Complete porcelain crown
- Complete porcelain fused – to metal crown
- Complete gold crown with acrylic resin facing

• **Partial crown :**

The retention and resistance to displacement depend on the internal surfaces and the auxiliary retentive means such as grooves, boxes and pins.

Division – anterior

• **Three quarter crown**

• **Variations of three-quarter crown, such as the Selberg crown**

Division 2 posterior

• **Mesial one-half crown**

• **Three-quarter crown**

• **Seven-eight crown**

Class II Intracoronal restorations :

It is within the body of the coronal portion of the tooth and also within the contour of the crown.

Retention and resistance are developed between the casting and the internal walls of the prepared cavity.

1)Inlays

2)Onlays

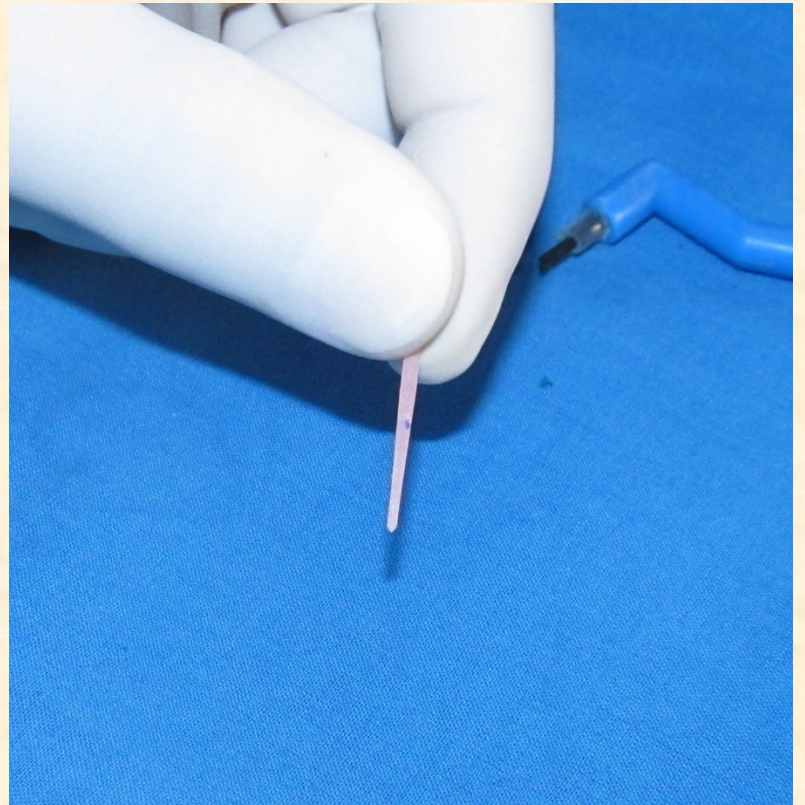
3)Pin ledge

4)Combinations

Class III radicular retainers:

- The dowel types of retention is confined to the root portion
- Retention and resistance to displacement is developed by the extension of an attached metal dowel into the radicular portion of the tooth.







Class II –

Type 1 – complete crown; metal alloy, porcelain or combination, without dowel

Type 2 – complete crown with metal dowel; used on endodontically treated teeth

THE IDEAL RETAINER - qualities

- ✓ Should be constructed and retained in mouth without injury to the pulp or adjacent tissues.**
- ✓ It should protect the pulp against thermal, galvanic shocks**
- ✓ Should involve the least amount of tooth reduction and change of contour of the tooth while providing mechanical advantages**
- ✓ Should be capable of resisting distortion and displacement by forces of mastication and at the same time protect the tooth against fracture**

THE IDEAL RETAINER - qualities

- ✓ Should have margins that are capable of being finished in areas which will prevent irritation of soft tissues and occurrence of caries**
- ✓ Should be self cleansing**
- ✓ Should not tarnish or corrode in oral environment**
- ✓ Should not discolour the abutment**
- ✓ Should provide an esthetic restoration**

Selection of retainer:

Poor oral hygiene of the patient contraindicates the use of intracoronal retainer with long finish lines; complete coverage extracoronal retainers are indicated in such situations

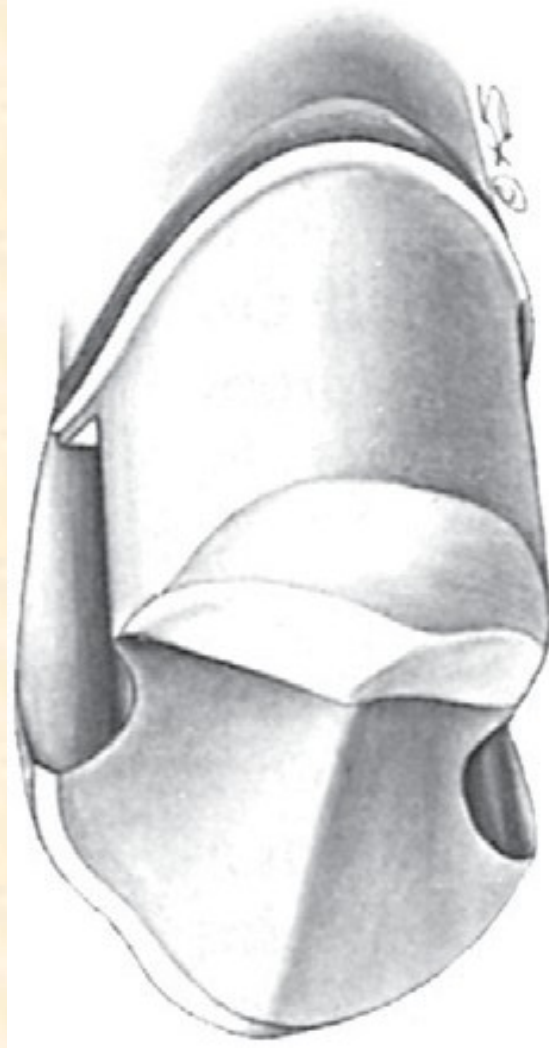
According to the location in the arch and the expected masticatory load

Age of the patient and the dexterity with which the patient can undertake the home care procedures

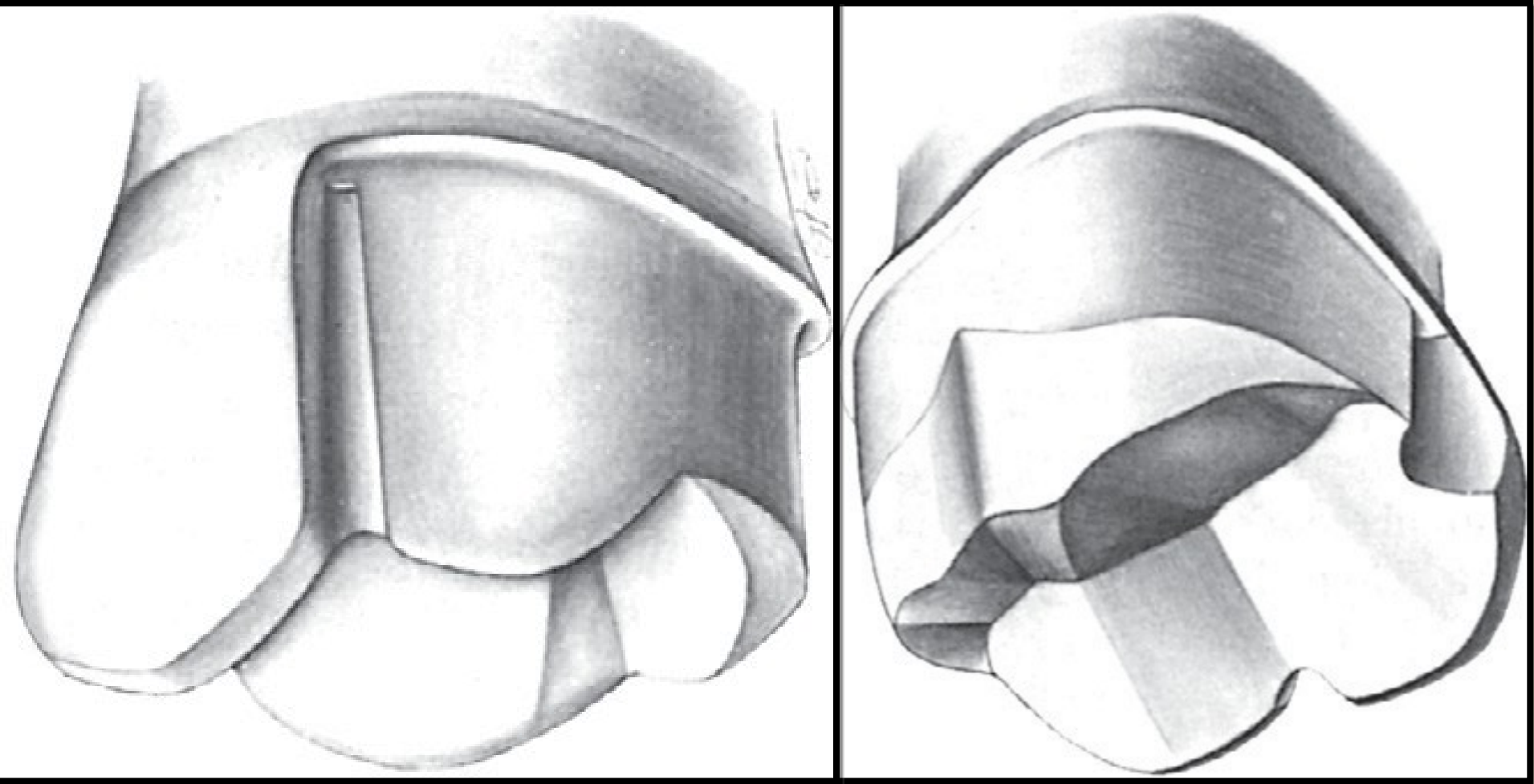
Location in the arch for esthetics

Based on an analysis of the periodontal support of the abutment and length of the bridge

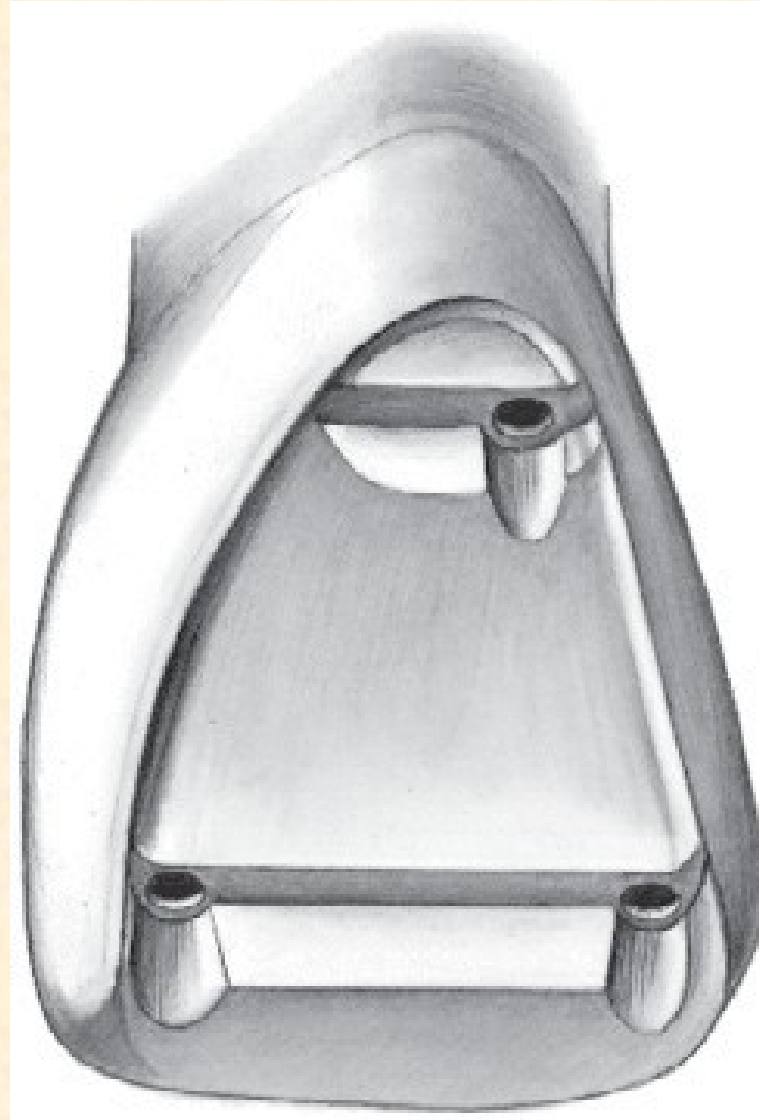
Three-quarter Crown



Seven-eighths Crown



Pin-ledge Crown



Seven-eighths Crown



Onlay



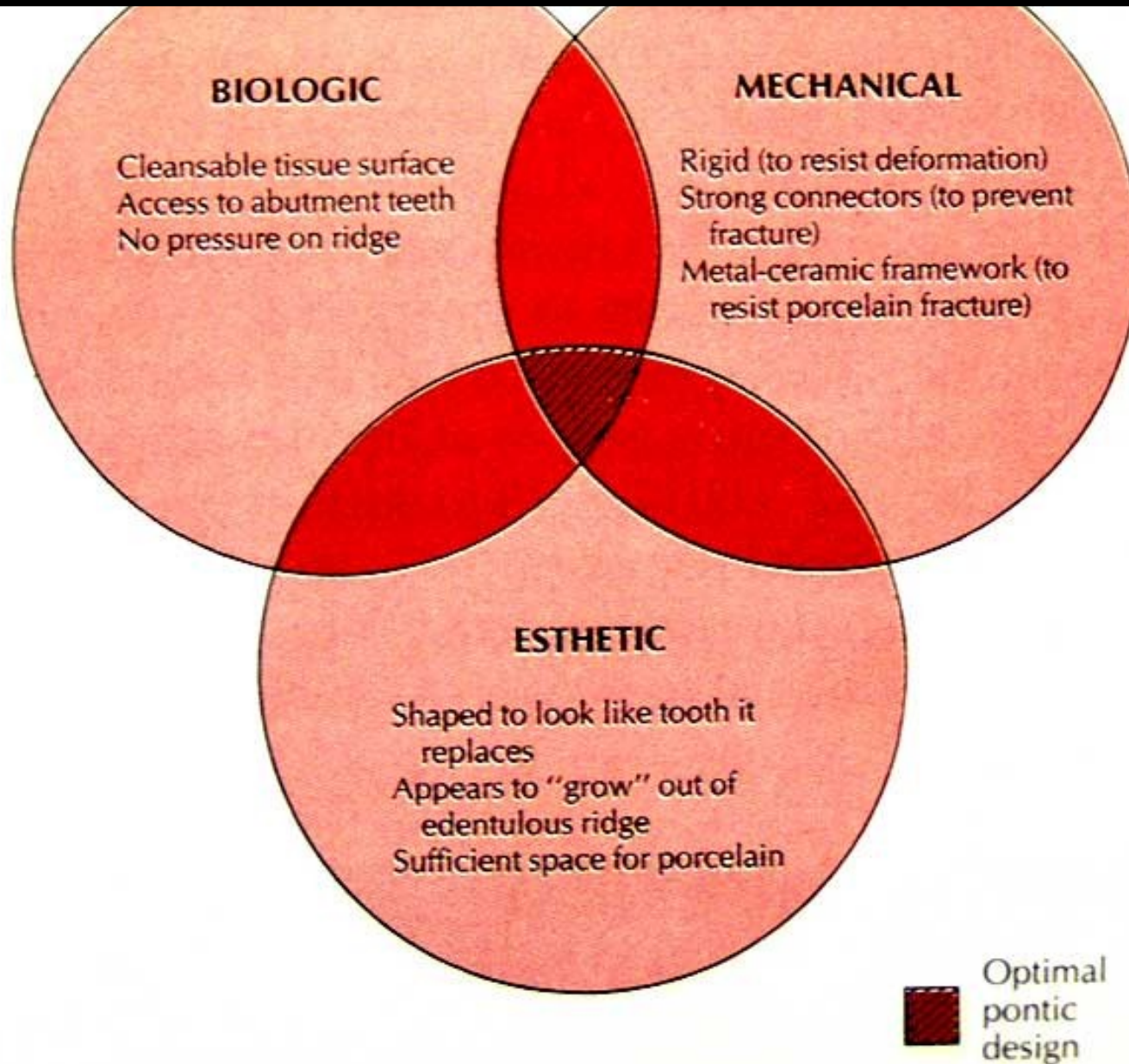
**PONTICS IN FIXED
PARTIAL DENTURE
PROSTHESIS**

PONTICS

An artificial tooth on a fixed dental prosthesis that replaces a missing natural tooth, restores its function and usually fills the space previously occupied by the clinical crown. (GPT)

Tylman defines Pontics as the suspended member of a fixed dental prosthesis which replaces the lost natural tooth, restores function and occupies the space of the missing tooth.

IDEAL REQUIREMENTS OF A PONTIC



CLASSIFICATION

According to Shillingburg, Pontics are classified :

1. Depending on the shape of the pontic contacting the tissues
2. Depending on the materials
3. Depending upon the manufacturer's design

1. On Shape

- i. Conical or root extension pontics
- ii. Spheroidal pontic
- iii. Ridge Lap pontic
- iv. Modified ridge Lap
- v. Hygienic or Centric pontic
- vi. Saddle pontic

2. On Materials used

- i. All metal – gold, cobalt-chromium, nickel-chromium etc.
- ii. Non metallic – Porcelain
- iii. Combination – Metal and porcelain, metal and resin

According to Rosenstiel -Pontic designs are classified into two general groups:

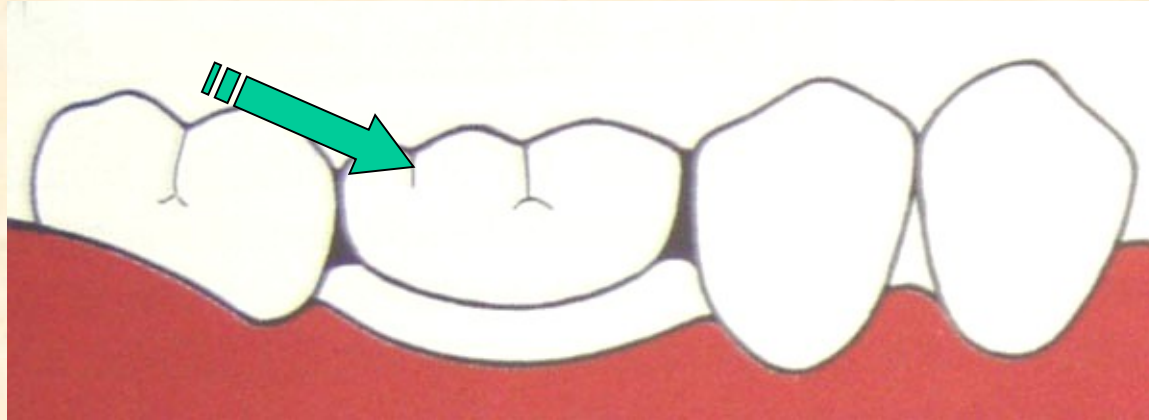
Those that contact the oral mucosa and those that do not.

A. Mucosal contact	B. No mucosal contact
1. Ridge lap	1.Sanitary (hygienic)
2. Modified ridge lap	2. Modified sanitary (hygienic)
3. Ovate	
4. Conical	

PONTIC SELECTION

- Pontic selection depends primarily on esthetics and oral hygiene
- In the anterior region, where esthetics is a concern, the pontic should be well adapted to the tissue to make it appear that it emerges from the gingiva
- Conversely, in the posterior regions, esthetics can be compromised in the interest of designs that are more amenable to oral hygiene

SANITARY OR HYGIENIC PONTIC



ADVANTAGES:

- ✓ **No tissue contact: at least 2mm clearance between tissue and pontic**
- ✓ **self cleansing**
- ✓ **Allows easy cleaning using floss, gauze strips etc.**

DISADVANTAGES:

- ✘ Poor esthetics; least “toothlike”**
- ✘ Food entrapment**
- ✘ Tongue habits may develop**

INDICATIONS:

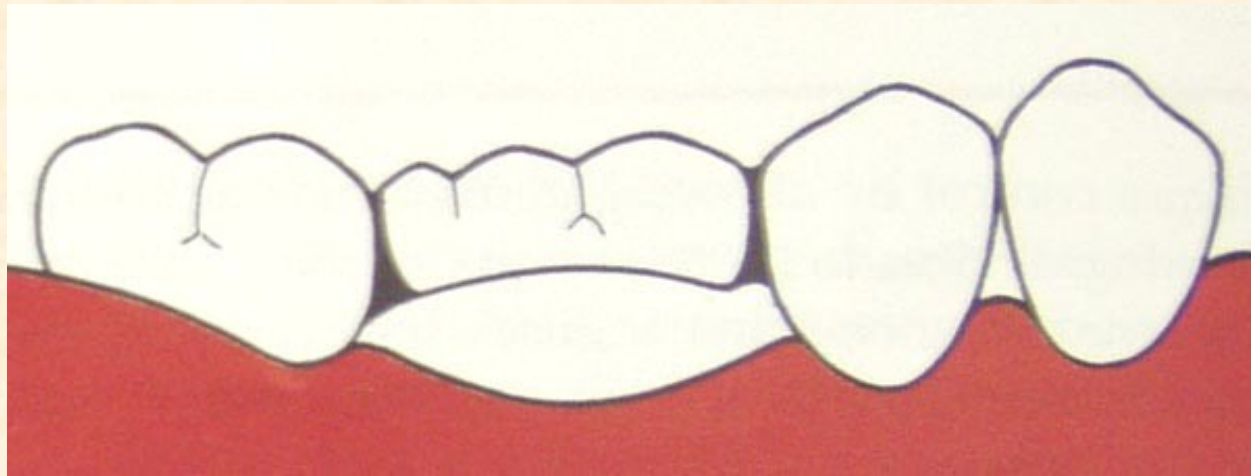
1. Non esthetic zones of the oral cavity
(Mandibular molars)
2. Impaired oral hygiene of the patient

CONTRAINDICATIONS:

1. Where esthetics is important
2. Minimal vertical space for pontic placement

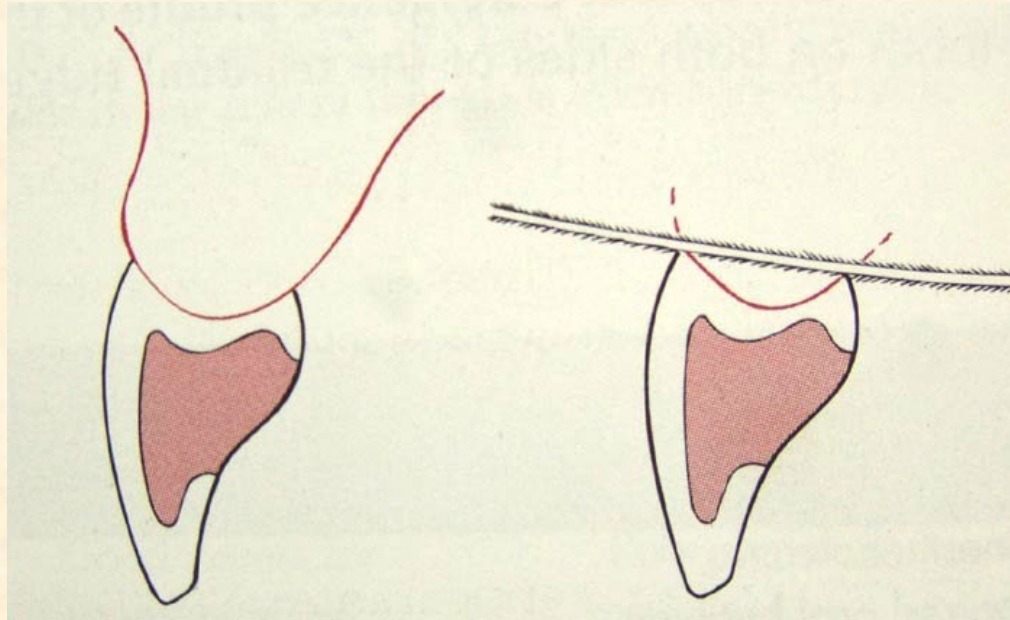
MODIFIED VERSION OF SANITARY PONTIC

Gingival portion is like an archway between the retainers.



SADDLE OR RIDGE LAP PONTIC

The saddle pontic has a concave fitting surface that overlaps the residual ridge buccolingually, simulating the contours and emergence profile of the missing tooth on both sides of the residual ridge.



ADVANTAGES:

1. Esthetic

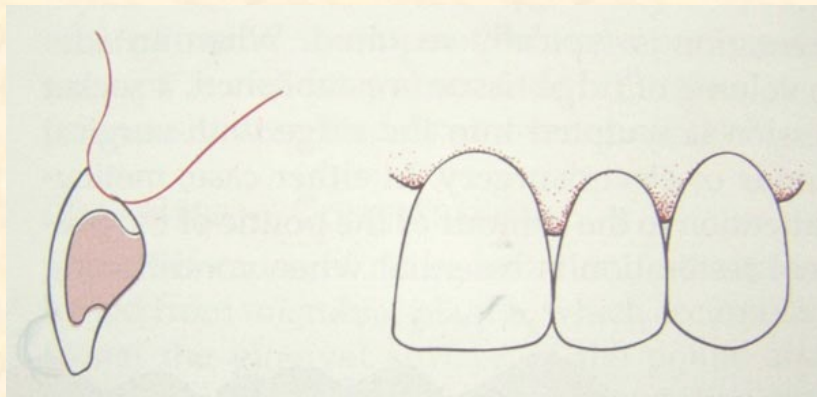
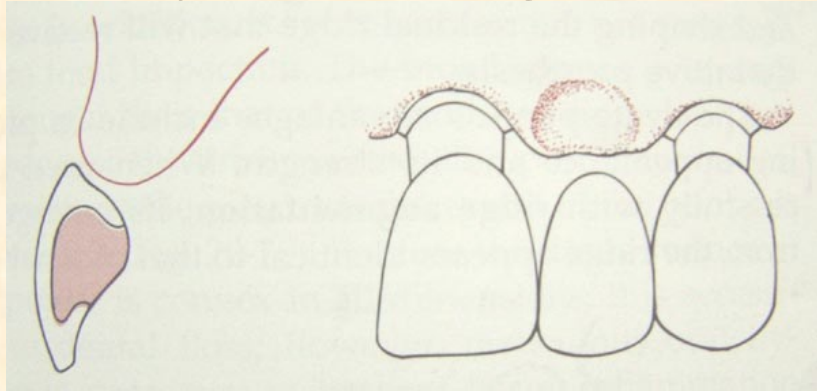
DISADVANTAGES:

1. Concave surface of the pontic is not accessible for home cleaning procedures
2. Therefore plaque accumulation resulting in gingival inflammation

NOT INDICATED IN ANY CLINICAL SITUATION

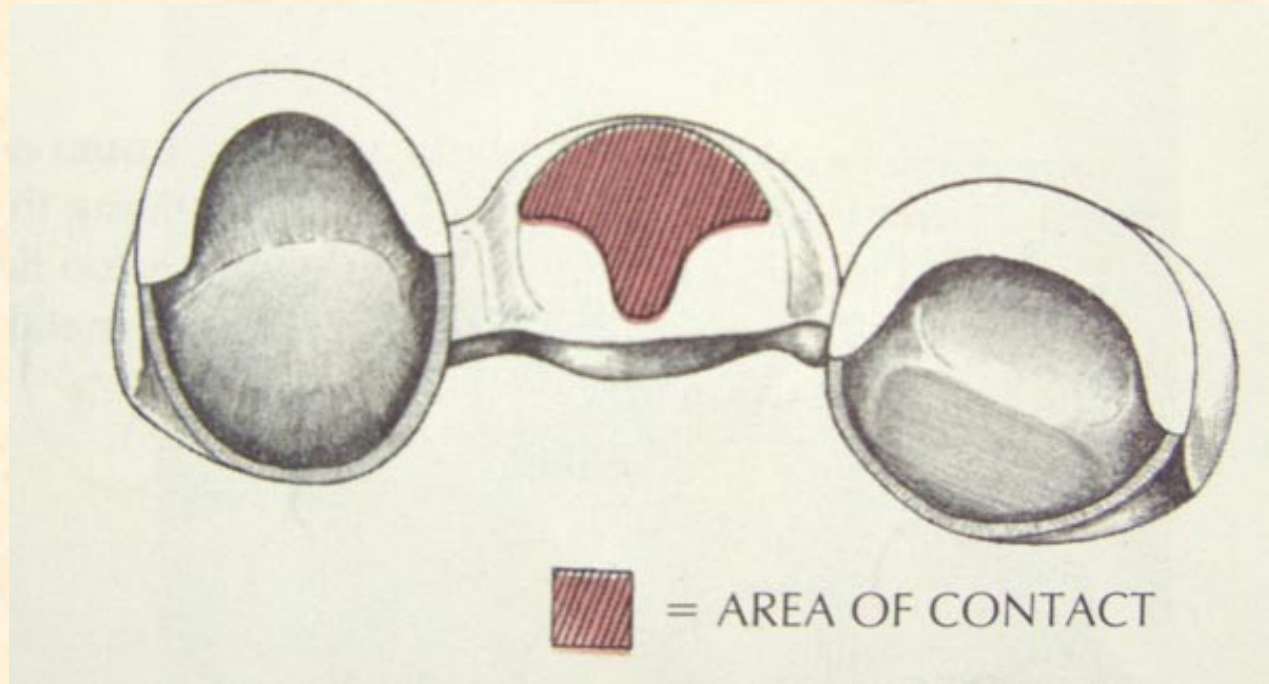
MODIFIED RIDGE LAP PONTIC

The modified ridge lap pontic combines the best features of the hygienic and saddle pontic designs, combining esthetics with easy cleaning.



The modified ridge lap design overlaps the residual ridge on the facial (to achieve the appearance of a tooth emerging from the gingiva) but remain clear of the ridge on the lingual

- **Contact with the ridge is at an area of maximum convexity and in a T-shape to enable home cleaning procedures**



ADVANTAGES:

1. Good esthetics

DISADVANTAGES:

1. Moderately easy to clean

INDICATIONS:

1. Areas with esthetic concern (anterior, premolars, maxillary molars)

CONTRAINDICATIONS:

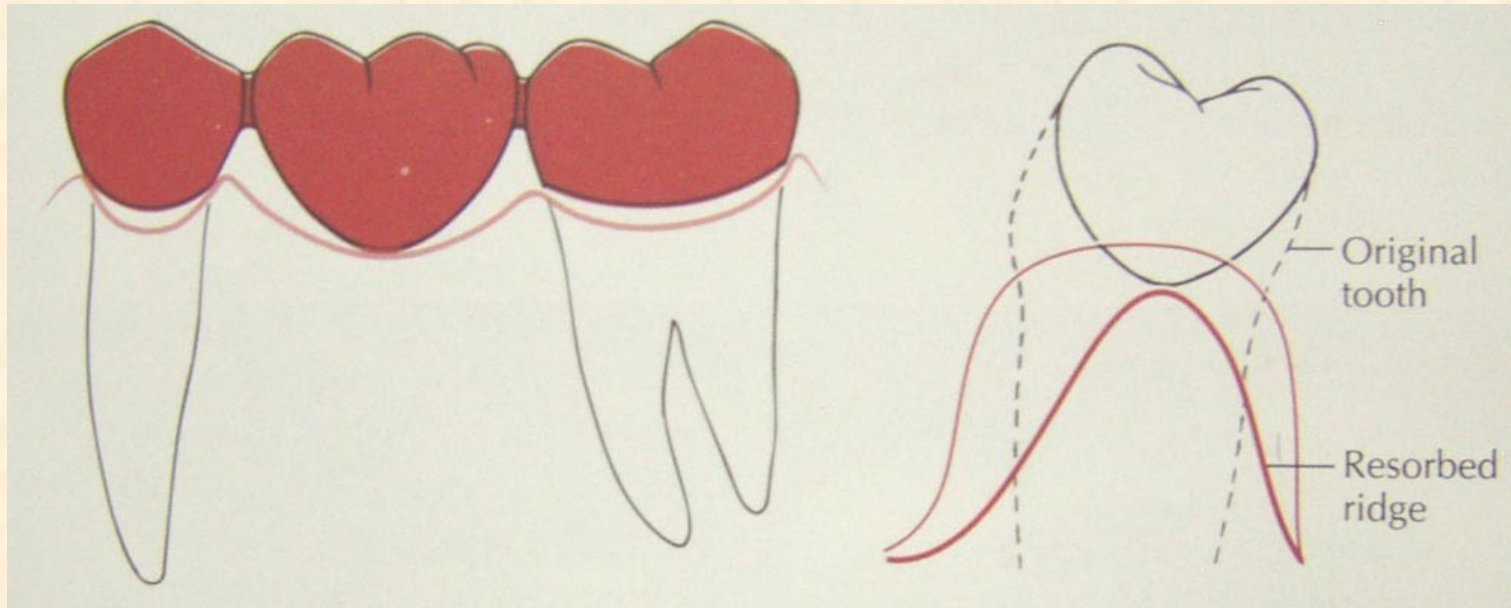
1. Where esthetics is of minimal concern

CONICAL PONTIC

Other names:

egg-shaped, bullet-shaped, or heart-shaped

It is made as convex as possible, with only one point of contact at the center of the residual ridge.



ADVANTAGES:

1. Good access for oral hygiene procedures.

DISADVANTAGES:

1. Poor esthetics

INDICATIONS:

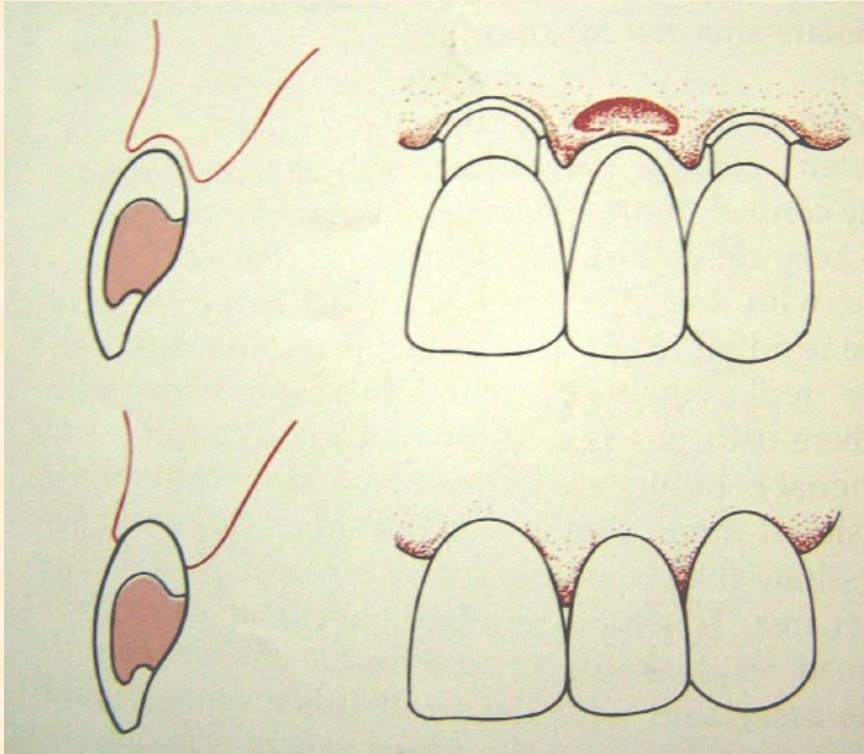
1. Posterior areas where esthetics is minimal concern. (Mandibular molars)
2. Knife edge residual alveolar ridge

CONTRAINDICATIONS:

1. Esthetics

OVATE PONTIC

The ovate pontic is the most esthetically appealing pontic design. Its convex tissue surface resides in a soft tissue depression or hollow in the residual ridge, which makes it appear that a tooth is literally emerging from the gingival. Careful treatment planning is necessary for successful results.



ADVANTAGES:

1. Superior esthetics
2. Negligible food entrapment
3. Ease of cleaning

DISADVANTAGES:

1. Requires surgical preparation of the pontic site

INDICATIONS:

1. High esthetic requirements: anterior teeth, some premolars and maxillary molars sometimes

CONTRAINDICATIONS:

1. Resorbed residual alveolar ridge

BIOLOGICAL CONSERIDATIONS FOR PONTICS:

Maintenance and preservation of:

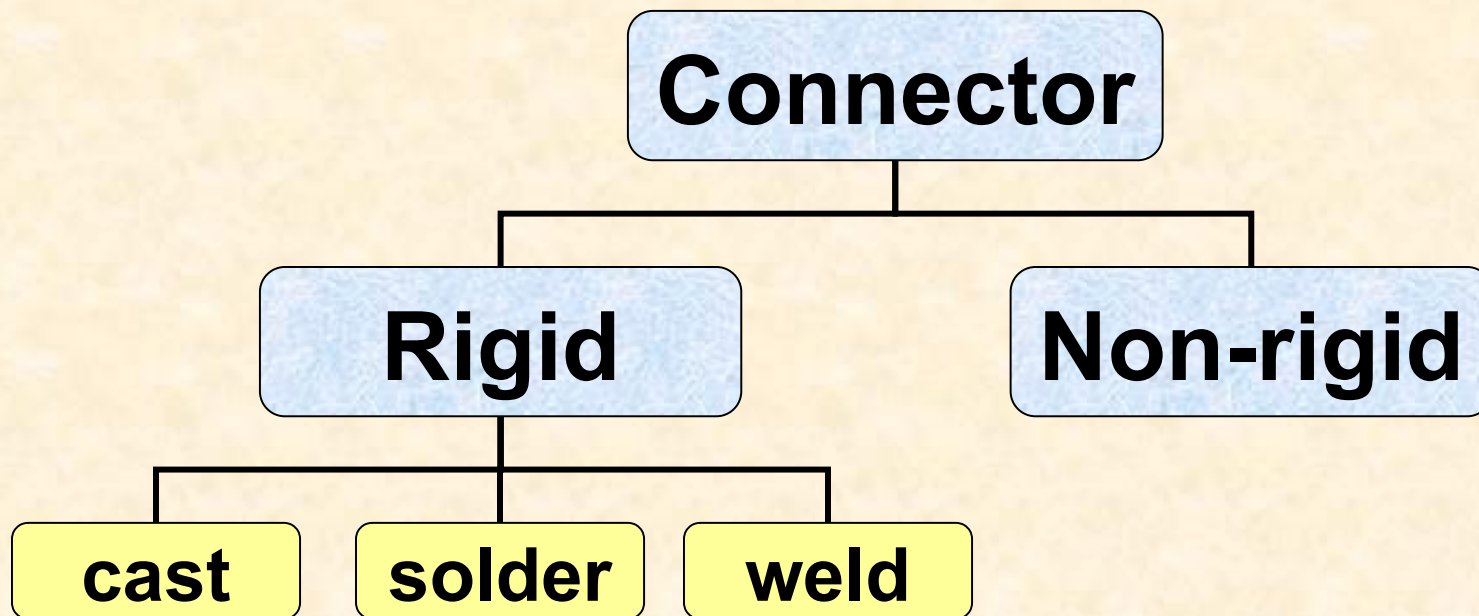
- the residual ridge
- Abutment and opposing teeth
- Supporting tissue integrity

FACTORS OF SPECIFIC INFLUENCE:

- Ridge contact
- Amenability to oral hygiene
- Direction of occlusal forces

**CONNECTORS IN
FIXED
DENTAL PROSTHESIS**

The portion of the fixed dental prosthesis that unites the retainer(s) and pontic(s) – GPT



RIGID CONNECTORS:

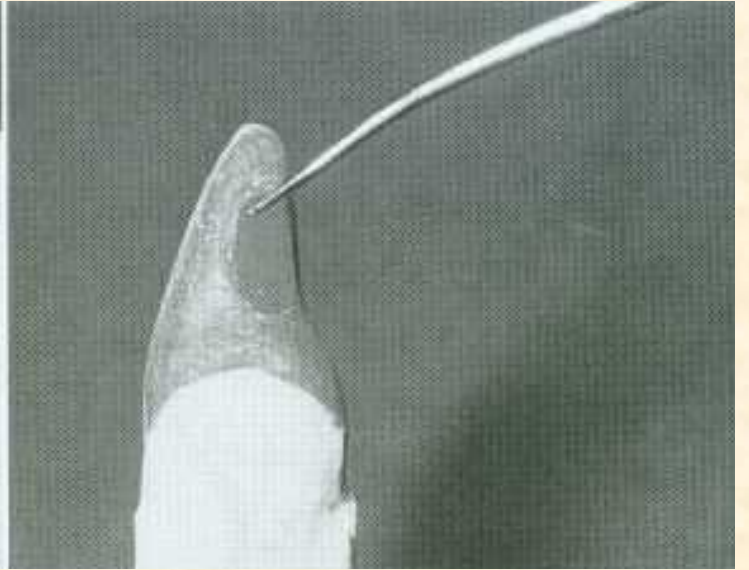
Shaped and incorporated into wax pattern after individual retainer and pontic have been completed to final contour.

Cast connector:

- Waxed on the master cast
- Use of cast connectors is limited to complete coverage restorations
- *Advantage:* simplified technique of fabrication of metal framework for FDP

SOLDERED CONNECTOR

- Similar to the cast connector, these are waxed to the final contour and then sectioned with a thin ribbon saw.
- The individual patterns are then cast and thus obtained are castings with flat sides which can be easily re-oriented and soldered.
- *Advantage:* facilitates accurate positioning of the units





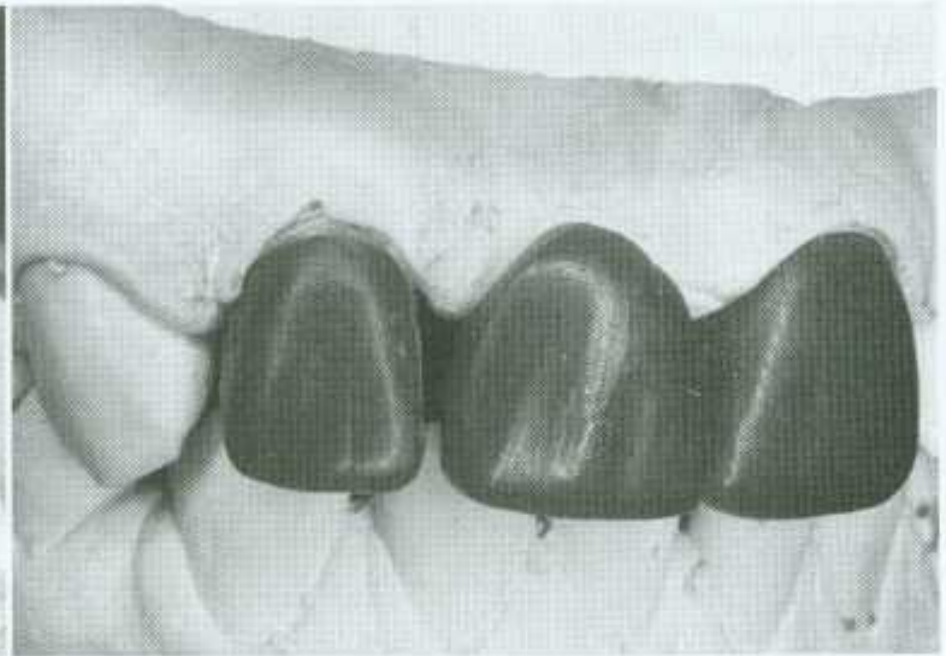
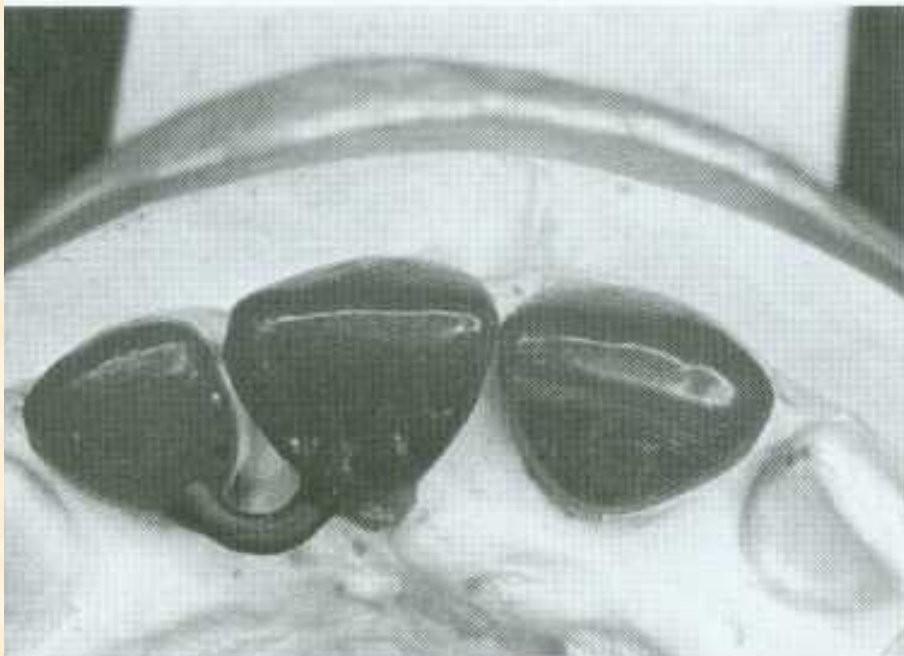
Indications:

1. distortion of a single piece FPD casting
2. one retainer has inadequate margins and must be redone
3. the span length of the FPD is too great for an accurate single piece casting

NON RIGID CONNECTORS

- Incorporated in the wax pattern and consist of a *mortise* (female) and *tenon* (male) portion which accurately align into each other in the casting
- Female portion is usually placed on the distal aspect of the anterior retainer
- Can be custom made with paralleling done using a surveyor or precision milling machine
- Pre-formed plastic components - attached to the wax pattern and cast

Loop Connectors



Loop Connectors





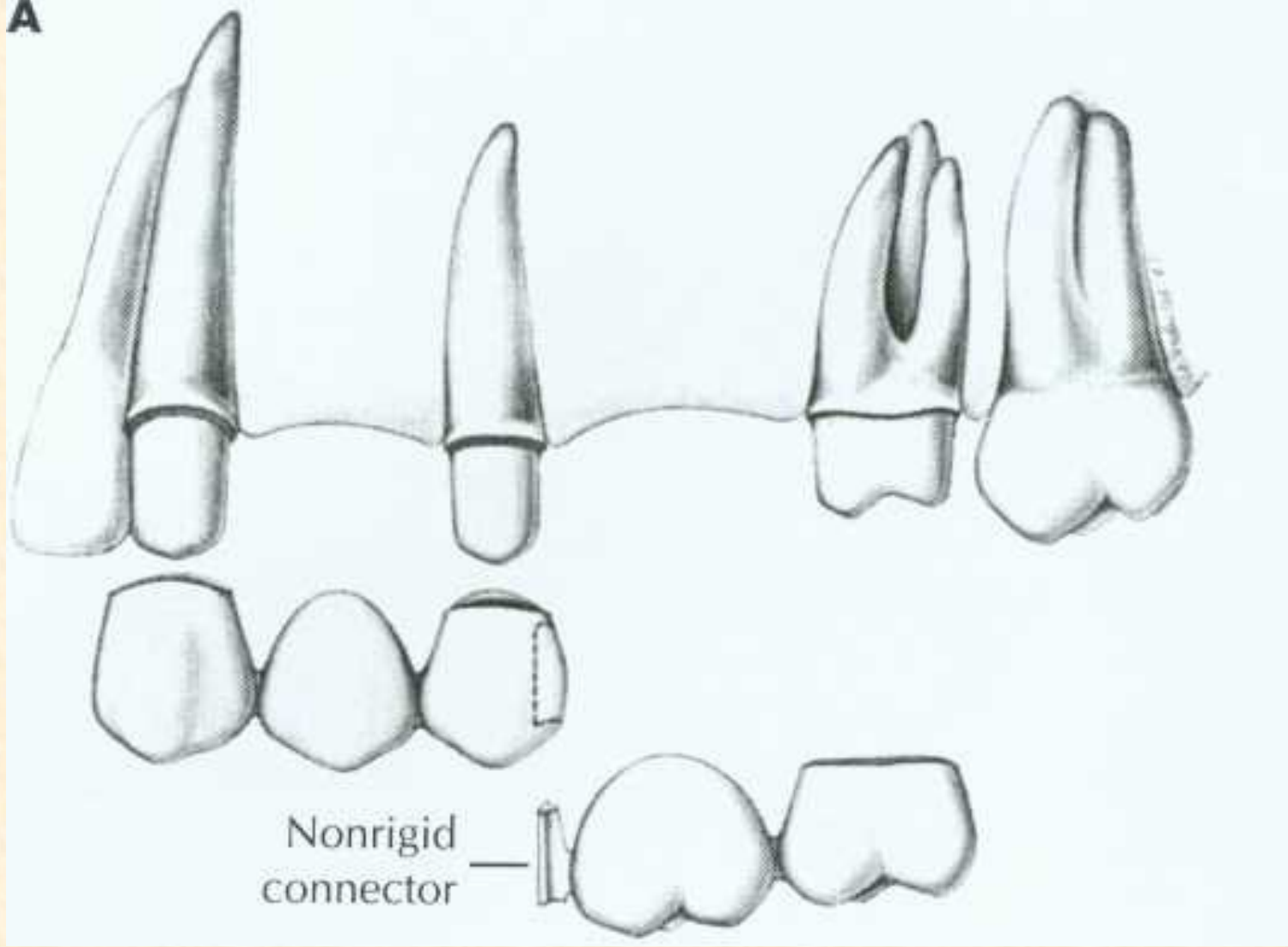
Loop Connectors

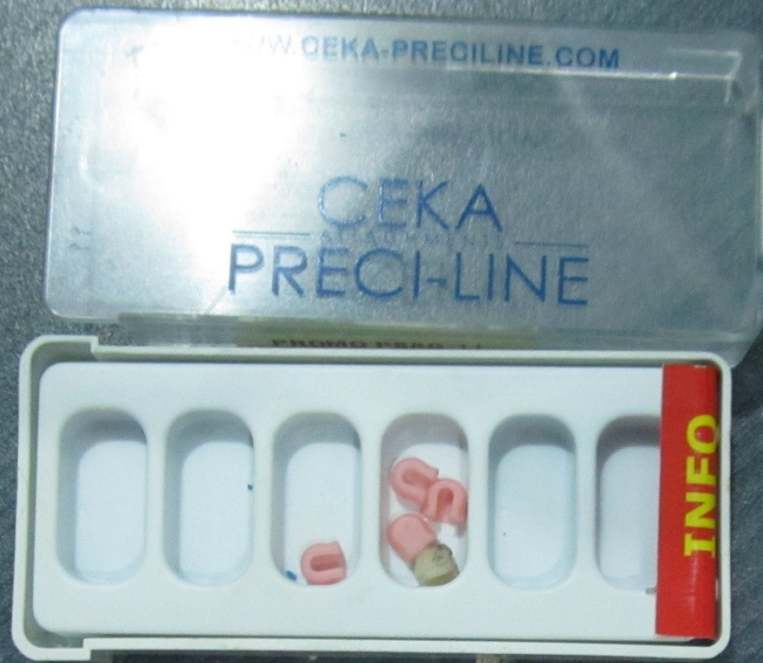


Precision Attachment

The design of nonrigid connectors that are incorporated in the wax pattern stage consists of a mortise (also referred to as the *female component*) prepared within the contours of the retainer and a Tenon (male) attached to the pontic.

A











CONNECTOR DESIGN: Requirements

- Must be sufficiently large to prevent distortion or fracture during function; but not too large to interfere with the effective plaque control
- Provide adequate access to the gingival surface of the pontic
- Highly polished

CONNECTOR DESIGN: Requirements

- Facio-lingually- curved to facilitate cleaning
- Occluso-gingvally- elliptical shape
- For anterior bridges: connectors are placed towards the lingual
- For posterior: connectors are placed in the center of the tooth.