Principles of Partial Denture Design

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Partial Denture Design

- Denture design may be defined as a visual planning of the form and extent of the partial denture, arrived after study of all the factors involved.
The first step in a successful partial denture is to design and plan the case very carefully. The more time taken with this important step, the more secure and functional the resulting partial.
RPD REQUIREMENTS

A properly constructed partial denture must

All should be within the physiological limits of the tissues involved.
1. **SUPPORT**: adequate distribution of the load to the teeth and mucosa and resisting tissue-ward movement.

2. **Retention**: sufficient to resist vertical displacing forces (tissue away movement).

3. **Stabilization and bracing**: creation of firmness by resisting horizontal forces. resisting lateral movement

4. **Reciprocation**: Equalize the effect of pressure on one side of the teeth by application of pressure, equal in amount, but in an opposite direction, on the opposite side of the teeth (during insertion and removal).
Stresses acting on a partial denture

1. Masticatory stress tends to move the denture vertically towards the tissues (tissue-ward movement).

2. Gravity tends to displace a maxillary denture downward (tissue-away movement).

3. Sticky food, tongue and muscle pull tends to pull the denture occlusally away from the tissues (tissue-away movement).
4. Intercuspation of the teeth may tend to produce horizontal and rotational stresses, unless the occlusion is adjusted.
Successful R.P.D design depends on favorable control and distribution of masticatory load
The magnitude and direction of stresses acting depend on:

1- The general **musculature** of the patient.
2- **Occlusal forces** and bad habits as bruxism or clenching.
3- The type of **opposing occlusion**.
4- The **degree of inclination** of the cusps of natural teeth. (Cusp height)
5- The inclination of long axes of remaining teeth. (Tilting)
6- Location of the saddle area.
7- Length of the saddle area.
8- Size of the occlusal table.
9- Absence of posterior abutment. (Free end saddle cases)
The possible movements
Support
Design for support

- **TYPES OF R.P.D.:**
  - Tooth support
  - Tissue support
  - Tooth-tissue support

Generally, either the abutment teeth, or the residual ridges resist masticatory forces applied to a partial denture. These structures resist the tissue-ward movement of the denture.
From:
- Rests
- Denture bases
- Major connector

Design for support
A- Tooth support RPD:

• Tooth support is obtained by the use of occlusal rests when abutment teeth are available at both ends of the denture base (short span bounded saddle Kennedy Class III), the teeth can carry the load entirely provided that, they are healthy.

• Tissue-ward movement of the denture bases is markedly reduced in tooth-borne cases.
Types of rests

Occlusal rest

Cingulum rest

Ball rest

Incisal rest
Rests: The Principle

The rest must direct functional forces in the long axis of the tooth. The most destructive situation is that in which force is placed on an inclined plane or that in which a rest produces lateral forces on supporting structures.
Rests: The Principle

The rest is placed as close to the center of the tooth as possible and .

The rest seat should be inclined apically with an angle less than 90 degrees .

Lateral forces against the tooth tend to pinch the periodontal ligament between the root and the bone, triggering osteoclastic activity and bone resorption.
Rests: The Principle

The Lingual Rest is Preferred than the Incisal Rest because:

- It is placed closer to the center of rotation of the abutment tooth, thus it will exert less leverage and reducing its tendency to tipping.
- More esthetic, as it can be discreetly hidden from view.
- It tends to be less bothersome to a curious tongue.
Design for support

B- Mucosa support RPD:

Interim RPD

*Tissue Supported RPD
Design for support
C- Combination tooth -tissue support:

- The best example of this type of support is the bilateral distal extension (free-end saddle) restorations.
- Tooth surfaces provide the support at one extremity of the denture base, whereas, soft tissues support the denture base posteriorly.
- Under stresses, the area supported by the tooth will have little tissue-ward movement in contrast to the tissue borne posterior part.
Design for support

C- Combination tooth-tissue support:

• Under function, teeth may be displaced as much as 0.2 mm. In contrast, soft tissues overlying residual ridge is displaced 1.0 mm. Differences in tooth and tissue support eventually result in non axial loading as the prosthesis pivots on the abutment, where the resultant forces may be extremely damaging to the abutments.
Design for support

C- Combination tooth-tissue support:

- Torque on the abutment teeth will take place, depending on the degree that the free-end of the denture base moves towards the tissues. To minimize the torque, a clasp with stress breaking action such as bar clasp or wrought wire clasp should be used.
Design for support

C- Combination tooth -tissue support :

• The amount of displacement (tissue-ward movement) that can take place will depends upon:

1) The amount of pressure or load applied:

   The more pressure the bigger the degree of tissue displacement.

2) The nature of mucoperiosteum (It’s thickness).

   The thicker the mucoperiosteum the more it is liable to displacement.

   Thin mucoperiosteum is less liable to displacement.
Design for support

C- Combination tooth-tissue support:

• The amount of displacement (tissue-ward movement) that can take place will depend upon:

3) **Area covered by denture.**
   The wider the area of coverage the less the displacement

4) **Fit of denture base.**
   The better the base fits the denture foundation, the less the degree of displacement.
   Metal bases have better fit than acrylic resin bases.
Design for support

C - Combination tooth - tissue support:

• The amount of displacement (tissue-ward movement) that can take place will depend upon:

5) **Type of impression (anatomical, functional or selective pressure)**

   Against which the denture bases are fabricated. Minimization of tissue-ward movement of the partial denture can be accomplished by wide coverage, in other words, increasing the size of the foundation area.
Design for support

C- Combination tooth-tissue support:

- The problem of support may be managed through:

1. Reducing the load.
2. Distributing the load between the teeth and ridge.
3. Varying the nature of connection between clasp and the base.
4. Anterior placement of the occlusal rest
5. Functional impression techniques
Anterior placement of the occlusal rest

- The anterior placement of the rest, the more vertical will be the forces, the less is the horizontal component of force falling on the ridge.
- This yields a more vertical movement of the base.
- Changing the stresses acting on the abutment and the saddle from the cantilever action or class I lever action to class II lever action.
Anterior placement of the occlusal rest

- Changing the direction of torque on the abutment from the distal to the mesial side of the tooth, where the resistance to torque action will be applied to the neighboring teeth. (Buttressing effect)
Anterior placement of the occlusal rest

- Prevents the antero-posterior movement of the denture

- Wide distribution of the load in an antero-posterior direction.

- The bone near the abutment will thus share the distal part of the ridge in bearing the occlusal load.
Anterior placement of the occlusal rest

Advantages of Placing the occlusal rest away from the distal extension base

1. The resistance to torque action will be applied to the neighboring teeth (Buttressing effect).

2. Achieving mechanical adv. By Changing the stresses acting on the abutment and the saddle from the cantilever action or class I lever to class II lever.

3. Clasp disengagement from the tooth during function provide less stresses on the abutment.

4. The farther the ant. Placement of the rest, the more vertical will be the forces, the less is the horizontal components of force falling on the ridge.

5. Increase the area of support (decrease the force/unit area) and hence less stresses on the ridge and less torque on the abutments.

6. Wide distribution of the load in an antero-posterior direction. The bone near the abutment will thus share the distal part of the ridge in bearing the occlusal load.
Retention
Design for Retention

The resistance of the partial denture to dislodgment (tissue-away movement)

This can be achieved by:

- Mechanical means such as friction or intra-coronal attachments
- Retentive clasp arms engaging undercut areas on tooth surfaces.
- Physical means.
- The patient muscular control.
Design for Retention

The retentive clasp arm may be

Occlusally approaching clasp.  
Gingivally approaching clasp.
Design for Retention

Factor governing the choice of clasp.

The choice of retentive clasp depends on:

1. The health of periodontal ligament.
2. Position of the undercut.
3. Location of the edentulous area.
4. Appearance. Esthetics
Design for Retention

Position of the undercut

Isolated tilted molar creates larger undercut near the saddle mesiobuccal undercut. An alternative design to Aker clasp is ring clasp.
Design for Retention

Location of the edentulous area

- In distal extension RPD difference of quality in the nature of support causes tipping stresses. This need clasp with stress breaking action
• *Clasps that posses stress releasing action.*
- Used for distal extension base partial dentures.
- Provides stress breaking action and releases abutments from strain during tissue-ward movement of the partial denture

*Examples:*
* I bar clasp.  * RPI clasp  * RPA clasp  * Reverse Aker.
* Combination clasp
Clasps that possess stress releasing action.

- **Gingivally approaching clasps**
  - except Devan clasp
- **Occlusally approaching clasps**
  - Reverse Aker clasp
  - Back action clasp
  - Reverse back action clasp
  - R.P.A.
  - R L S
  - Ring (bounded sad., isolated molar)
- **Combination clasps** (wrought wire + casted)
Indirect Retention
**INDIRECT RETENTION**

• Are supportive elements, designed to counteract displacing rotational forces. They may be in the form of rests or palatal connectors.

• One on each side are generally used, they should be located as far anterior to the fulcrum axis as possible
INDIRECT RETENTION

A fulcrum line (axis of rotation) goes through the most distal rests.

A rest on the right canine will prevent lifting of the free end base.

**Axis of Rotation**

- Passes through the rest closest to the extension base edentulous area and the farthest rest.
- Only exist in extension-base RPDs.
INDIRECT RETENTION

Factors affecting Indirect retainer:

1. Effectiveness of the Direct retainer.
2. Proper Location of Indirect retainer
3. Effectiveness of the Supporting Structures
4. Rigidity of the Denture Frame
Bracing and Stability
Bracing and Stability

Bracing means, providing resistance to lateral movement of the partial denture, which may be induced by the lateral forces. Such resistance may be affected by natural teeth, or by the mucosa overlying the ridges or palate.
Causes of tipping

• Inter cuspation of teeth during lateral movements could create anteroposterior forces.
• Rigid components placed on side of the arch stabilizes the denture against horizontal forces acting on the opposite side

i.e. Bilateral stabilization / Cross arch stabilization
Bracing and Stability

This can be achieved by:

- Rigid clasp arm located above the survey line of teeth.
- Major and minor connectors.
- Proximal plates.
- Properly extended denture flanges and by covering the palatal slopes in maxillary dentures.
- Extension of maxillary dentures behind maxillary tuberosities and lower dentures to cover the retromolar pad provide resistance to antero-posterior forces.
**Bracing and Stability**

- Rigid major connector is important for wide distribution of the occlusal force.
- Flexible major connector causes over loading of the abutment and the residual ridge.
Bracing and Stability

• Establishing proper occlusion free from interlocking cusps and selection of sharp teeth with reduced cusp angles improve partial denture stability and reduces the generated lateral component of force.

• Elongated teeth off the occlusal plane create interferences.
Bracing and Stability

- Remove all the excursive contacts and preserve the centric contacts on the prosthetic teeth
Bracing and Stability

• Providing reciprocation:

Reciprocation is necessary to **counteract forces** acting on one side of the tooth by an equal and opposite force. This can be achieved by reciprocal clasp arms contacting the tooth prior to or at the same time the retentive tip crosses the survey line.
Bracing and Stability

• Joining the partial denture components:
  * Saddles are joined together by a suitable rigid major connector.
  * Other components as clasps, additional rests or indirect, retainers or to the major connector by minor connectors.
## Summary: Roles of RPD parts

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<th>Retention</th>
<th>Stability</th>
<th>Support</th>
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Kennedy classification of 
PARTIALLY EDENTULOUS ARCHES

Class I

Class II

Class III

Class IV
Principles of Class I RPD design

Figure 1: Class I. Bilateral free ended saddle.
Principles of Class I RPD design

Problems of Kennedy class I
Principles of Class I RPD design

• **TOOTH-MUCOSA SUPPORT**

Mucosa/mucoperiosteum
• [2.0 + mm]

Periodontal ligament
[0.25 ± 0.1 mm]
Principles of Class I RPD design

• **Problems of support associated with free-end saddles RPD is due to:**

1. Lack of posterior abutment
2. Support is derived from both the residual ridge and abutment teeth
3. Major support is obtained from the residual ridge
4. If resorption occurs and relining of the denture is neglected further bone resorption occurs with subsequent torque acting on the abutments.
Principles of Class I RPD design

• **These difficulties will lead to:**

1. Ridge resorption is likely to happen.

2. The abutment teeth are subjected to torque in both antero-posterior and buccolingual directions.
Principles of Class I RPD design

- **How could we control these difficulties:**
  
  1. Reduction of the load.
  
  2. Distribution of the load between abutment teeth and residual ridges.
  
  3. Wide distribution of the load.
  
  4. Providing posterior abutment
Principles of Class I RPD design

• **How could we control these difficulties:**

1. **Reduction of the load.**
   
   a. **Broad tissue coverage** and **maximum extension** of the denture base within the functional limits of muscular movements.
   
   b. **Use of small and narrow teeth** to increase the masticatory efficiency and reduce the masticatory load.
   
   c. **Fitness and intimate adaptation** of the denture base to the tissue.
   
   d. **Harmonious occlusion** and reducing the cusp angle of art. teeth.
   
   e. **Leaving a tooth off the saddle.**
   
   f. **Improving the condition of the residual ridge** e.g. correction of abusive condition of tori and
Principles of Class I RPD design

• How could we control these difficulties:

2. Distribution of load between the teeth and the ridges
   a. Varying the connection between the clasps and saddles: Through applying the stress-breaking principle
   b. Functional impression. Mucocompression impression recording of the residual ridges.
   c. Placement of occlusal rests away from the saddle.
Principles of Class I RPD design

• Selecting Components for Designing Free Extension Removable Partial Dentures

I. Denture base

a. Combined metal-acrylic bases used to allow for future relining as bone resorption is usually anticipated.

b. The metal part is designed either in ladder-like configuration or in the form of meshwork, to allow for mechanical retention with acrylic resin.

c. Maximum coverage and extension within the physiologic limits.

d. Either constructed over mucosa in its displaced functional form or in the static form if the stress breaking principle is applied.

e. Teeth arranged in neutral zone.
Principles of Class I RPD design

- **Selecting Components for Designing Free Extension Removable Partial Dentures**

*The neutral zone concept* is based on the belief that the muscles should functionally mold not only the border and the artificial teeth but also the entire polished surface. Facial and lingual forces generated by the musculature of the lips, cheeks and tongue are balanced.
Principles of Class I RPD design

• Selecting Components for Designing Free Extension Removable Partial Dentures

II. Artificial teeth and Occlusion for class I RPD

A- TEETH:

- Smaller teeth and narrow bucco-lingually are usually preferred to reduce the occlusal load.

- Teeth should exhibit sharp cutting edges

- Lower teeth should be placed over the crest of the ridge to enhance denture stability.

- Position of the buccal cusp favorably placed over the buccal turning point of the ridge crest.
Principles of Class I RPD design

- **Selecting Components for Designing Free Extension Removable Partial Dentures**

II. Artificial teeth and Occlusion for class I RPD

A- Occlusion:

- Centric occlusion of teeth should coincide with centric relation

- If opposed by natural teeth: Simultaneous bilateral contacts must occur in centric and eccentric occlusion (working side) and in harmony with the remaining natural teeth.

- If opposed by complete denture: Bilateral balanced occlusion is obtained.

- Contact of the anterior teeth is avoided to avoid unfavorable forces to maxillary anterior residual ridge.
Principles of Class I RPD design

II. Artificial teeth and Occlusion for class I RPD

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**Principles of Class I RPD design**

- **Selecting Components for Designing Free Extension Removable Partial Dentures**

**III. Proximal plates (guiding Plates)**

They are 2-4 mm in height, extending from the marginal ridge to the junction of the middle and gingival third of the abutment tooth.

A guide surface should be produced by removing a minimal and fairly uniform thickness of enamel, usually not more than 0.5m.m., from around the appropriate part of the circumference of the tooth.
III. Proximal plates (guiding Plates)

Contact approximately 1 mm of the gingival portion of the guiding plane in distal extension cases. A slight degree of movement of the base and the clasp is permitted without transmitting torsional stress to the tooth.
Principles of Class I RPD design

• Selecting Components for Designing Free Extension Removable Partial Dentures

IV. Rests

Requirements:

- Transmission of stresses along the long axes of abutment
- Mesially placed
- The floor of the rest seat should be inclined apically
- Fit
- Rigid
- Not raise the vertical dimension of occlusion.
Principles of Class I RPD design

V. **Direct retention:**

**Clasps Should be designed to:**

1. Reduce torque to the abutment tooth. The more flexible the retentive arm of the clasp, the less stress is transmitted to the abutment tooth.
2. Minimize interference with normal stimulation of gingival tissue
3. Has stress breaking action
4. Remain passive until activated by functional stress
5. Strategically positioned (class I usually required only two retentive clasp arms one on each terminal tooth)
VI. **Indirect retention:**

- Should be located as far anterior to the fulcrum axis as possible
- Prefered to be perpendicular to fulcrum line.
VII. *Maxillary Major connectors*

- The prime requirement of any connector is **rigidity**

- Maxillary Major connector used for distal extension removable partial denture
VIII. Mandibular Major Connectors

Mandibular Major connector should be relieved while Maxillary one should be beaded.
Principles of Class I RPD design

Factors influencing the effectiveness of tissue support of a distal extension base

1. Contour and quality of the residual ridge (nature of the mucoperiosteum)
2. The Extent of area coverage by the denture base
3. Accuracy and fitness of the denture base
4. The accuracy and type of impression registration (anatomical or functional)
5. The Design characteristics of the components parts of the partial denture Framework
6. Total occlusal load applied
Principles of Class I RPD design

• **General rules for design Class I RPD**

  ❖ Close the ant. modification spaces of class I with fixed bridge.

- **this helps in:**

• Simplifying the partial denture design.

• Saving the anterior ridge from resorption and the anterior abutments from torque resulting due to movements of the anterior saddle occurring as a result of rotation of the posterior free end saddle.
Principles of Class I RPD design

• General rules for design Class I RPD
  
  ✓ Splinting lower anterior teeth with major connector
  
  ✓ Keep the clasp passive, it required to keep or just to retain the denture in its place just during function
  
  ✓ Minimize strain on the abutment teeth as possible
  
  ✓ Minimize strain on residual ridge
Strain on the abutment teeth is minimized through:

1. Correct choice of the abutment Tooth with sufficient alveolar bone support and crown and root morphology.

2. Placement of occlusal rests away from the saddle.

3. Correct choice of direct retainer (flexible clasp ing).


5. Using a Kennedy bar to distribute the lateral load on multiple teeth.
6. **Wide distribution of the load** over the teeth:
   
   a- By placing additional rests, or
   
   b- by a splinting of one or more teeth, either by fixed partial dentures or by soldering two or more individual restoration together.

7. **Preparation and restoration of the abutment teeth to accommodate the most ideal design** of PD this include
   
   a- Proper form of occlusal rest seats
   
   b- Tooth prep. and modification to withstand the functional stresses (guiding planes, ………..)
Strain on the abutment teeth is minimized through:

8. Providing Posterior Abutments

a- Using an implant at the distal part of the ridge.

b- Salvaging a hopeless badly decayed tooth, an overdenture abutment
Strain on the residual ridge is minimized through

1. *Broad tissue coverage* and maximum extension of the denture base within the functional limits of muscular movements.

2. Fitness and *intimate adaptation of the denture base to the tissue*.


4. *Improving the condition of the residual ridge* e.g. correction of abusive condition of tori and hyperplastic tissues.
Strain on the residual ridge is minimized through:

5. Use of small and narrow teeth to increase the masticatory efficiency and reduce the mast. load.

6. Harmonious occlusion and reducing the cusp angle of art. teeth.

7. Leaving a tooth off the saddle.

8. Placing the artificial teeth on the anterior two-thirds of the base (no 3rd molar).

9. Placement of occlusal rests away from the saddle.

10. Providing Posterior Abutments
   - Using an implant at the distal part of the ridge.
   - Salvaging a hopeless badly decayed tooth (an overdenture abutments)
Principles of Class II RPD design

Figure 2: Class II. Unilateral free ended saddle.
Principles of Class II RPD design

Problems of Kennedy class II
Principles of Class II RPD design

Strain on the residual ridge is minimized through

Designing class II partial dentures usually follow the same basic principles of class I partial dentures. As the problems resulting from absence of posterior abutment, which causes lack of proper posterior support and retention.

The absence of a saddle on the other side of a class II partial denture complicates the design of the prosthesis.
Principles of Class II RPD design

• **TOOTH-MUCOSA SUPPORT**

- Mucosa/mucoperiosteum: [2.0 + mm]
- Periodontal ligament: [0.25 ± 0.1 mm]

Same as CLASS I
Principles of Class II RPD design

- **Problems of support associated with free-end saddles RPD is due to:**

1. Lack of posterior abutment
2. Support is derived from both the residual ridge and abutment teeth
3. Major support is obtained from the residual ridge
4. If resorption occurs and relining of the denture is neglected further bone resorption occurs with subsequent torque acting on the abutments.
Principles of Class II RPD design

Thus, in class II RPD there are problems of:

- Support
- Retention
- Bracing and reciprocation
- Stabilization (tipping and rotational movements)
Principles of Class II RPD design

Factors influencing the effectiveness of tissue support of a distal extension base

1. Contour and quality of the residual ridge (nature of the mucoperiosteum)
2. The Extent of area coverage by the denture base
3. Accuracy and fitness of the denture base
4. The accuracy and type of impression registration (anatomical or functional)
5. The Design characteristics of the components parts of the partial denture Framework
6. Total occlusal load applied

Same as CLASS I
Principles of Class II RPD design

• How could we control these difficulties:

1. Reduction of the load and distribution..

2. Distribution of the load between abutment teeth and residual ridges.

3. Addition retention must be provided on the side where the arch is complete. The clasp line should divide the denture into two equal halves.

4. Using indirect retainer in case of class II without modification, to reduce lateral loading and rotational movement of the denture base.

5. Providing posterior abutment
Strain on the abutment teeth is minimized through:

1. **Broad tissue coverage and maximum extension of the denture base within the functional limits of muscular movements.**

2. **Functional base. Mucocomp. impression recording of the residual ridges.**

3. **Improving the condition of the residual ridge e.g. correction of abusive condition of tori and hyperplastic tissues.**
Strain on the abutment teeth is minimized through:

4. Use of narrow teeth and harmonious occlusion.

5. Leaving a tooth off the saddle.

6. Placing the artificial teeth on the anterior two-thirds of the base.

7. Correct choice of direct retainer (flexible clasping).


9. Using a Kennedy bar to distribute the lateral load on multiple teeth.

Same as CLASS I
Principles of Class II RPD design

- **Selecting Components for Designing Free Extension Removable Partial Dentures**

I. **Denture base:** As Kennedy class I

II. **Direct retention:**

- A double Aker clasp usually used on the dentulous side.

- Rigid clasp ing and rigid connection between the saddle and the retainer.

- Designs applying stress equalizing principles: Usually is applied in long class II cases.
Principles of Class II RPD design

• **Selecting Components for Designing Free Extension Removable Partial Dentures**

**III. Indirect retainer:**

- Should be provided to counteract rotation of the denture away from the tissues.
Principles of Class II RPD design

Designing of class II partial dentures with modification spaces:

- Modification area simplify the design. Give **Tripoding configuration**
- The clasps on abutments bounding the modification area provide retention, bracing and reciprocation together with indirect retention
Principles of Class III RPD design

**Figure 3:** Class III. Unilateral tooth bounded.
Principles of Class III RPD design

Problems of Kennedy class III
A- RESTORATION OF THE UNMODIFIED CLASS III

1. **Fixed bridges** are usually the treatment of choice for short span bounded edentulous areas when abutments are strong and healthy and minimum bone loss exists.

2. **Unilateral partial dentures**

3. **Cross arch stabilization**
For unilateral removable partial denture to be successful:

should be used with caution

The clinical crown of abutment tooth must be long enough to resist rotational forces.

The buccal and lingual surfaces of the abutment tooth must be parallel to resist tipping forces.
1- **Denture base:** Metallic denture base is designed to fit the static rather than the functional form of the ridge.

2- **Rests:** rests are usually placed *on the near zone* of the abutment teeth to provide adequate support. Rest seats can be prepared in either a *box-shaped* or *saucer-shaped* configuration depending on the condition of the abutment teeth.
3-**Clasps:** Rigid clasping is usually required for class III cases bounded by strong abutments. The clasps are located on abutments bounding the edentulous span.

A **third clasp**, which may either be an butterfly or a multiple clasp is used on the intact side (cross arch stabilization).

4-**Major connectors:** A lingual bar for mandibular dentures. A palatal bar or palatal strap for maxillary major connector are usually used.
B- Class III having modification areas

The tripod clasp configuration for class III partial denture.
The quadrilateral clasp configuration for class III partial denture

The tripod clasp configuration for class III partial denture

Class III cases having long edentulous spans and having modification are usually considered tooth-tissue supported dentures
These cases could also be restored by an *Every denture* which is a totally mucosa-borne denture.
Principles of Class IV RPD design

Figure 4: Class IV. Crossing Midline. Tooth Bounded
Principles of Class III RPD design

- Retention
- Class IV
- Esthetics
- Stability
- Support
Kennedy class IV Partial Dentures

usually follow the same basic principles of class I partial dentures, and are considered as free-end partial dentures.

As the edentulous area that crossing the midline lies anterior to the abutments

Fixed partial denture is the treatment of choice but removable restoration is preferred in children
Proper Location of I.R
Sincerely:  

Dr. Hussein A. Hady Hussein

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