Mouth Preparation for RPD

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Mouth preparation

- Mouth preparation for partial dentures can be roughly divided into two stages
  - Mouth preparation during diagnosis and treatment planning phase
  - Mouth preparation after arriving final design to prepare the tissues for RPD insertion.
Flow Chart of the RPD Clinical Procedures

- Treatment of irritated soft tissue
- Preprosthetic surgery
- Periodontal treatment
- Endodontics / Orthodontics / occlusal corrections / Restorative (including FPD) and Treatment partial

Pt may requires

- Diagnosis and treatment plan

- Final RPD design

- Mouth preparation and impression for the RPD framework

- Metal try in / jaw relation / try in of teeth / delivery / inspection
Mouth preparation during treatment planning phase

1. These are necessary preparation that should be carried out before reaching a final decision upon RPD design.

2. They may alter the design or even affect the selection of a specific treatment.
Mouth preparation during treatment planning phase

They can be divided into:

1. Surgical corrections and or teeth extraction
2. Periodontal therapy and abutment teeth splinting.
3. Conservative treatment including: restoration of carious lesions, root canal fillings, post and core and or surveyed crowns or bridges
4. Correction of the occlusion and treatment partial.
Surgical preparation

These may include:

1. Extraction of teeth diagnosed as unrestorable.
2. Removal of remaining roots of no prosthetic importance.
3. Excision or removal of hyperplastic and excessively movable flabby tissues.
4. Alveoplasty or ridge augmentation procedures.
5. Removal of tori and other bony projections.
Surgical Preparation

- **Extraction of tooth**
- **Hyperplastic tissue**
- **Alveoplasty**
- **Residual roots**
Preprosthetic Surgery

Gross bone undercut

Enlarged tuberosity

Large Tori
Periodontal Preparation

1. Periodontal scaling
2. Elimination of local irritating factors (Scaling and gingival curettage)
3. Elimination of periodontal pockets and reshaping gingival architecture
4. Correction of traumatic occlusion by occlusal adjustment (or occlusal equilibration)
5. Splinting
Periodontal scaling

ultrasonic-prophy-1 Before and after

Calculus before and after
Periodontal Treatment

For I-bar consideration:
1. Tissue quality:
   2-3mm attached gingiva
2. Tissue contour:
   in relation to the abutment

Free gingiva graft can provide attached mucosa in an area critically associated with the prosthesis
Operative and Endodontics treatment

- **Operative treatment**: Decayed teeth are restored with proper fillings. It is recommended to restore carious teeth with inlays or crowns if they are contacted by RPD.

- **Endodontics Treatment**: Root canal treatment is done for teeth with pulpal exposure and deep caries. Then restored by a crown with or without post and core according to its condition.
Conservative Treatment
Complete crowns to restore remaining teeth are often necessary and are contoured to coordinate and integrate with RPD treatment. **Note positive rests.**
Endodontics Treatment

- Root canal treatment
- Root amputation and hemisection
- Pin, post, and core buildups
- ROOT CANAL TREATMENT:
Fixed restoration
Occlusal orthodontic devices and Correction of Occlusion

- These procedures correct discrepancies in how the upper teeth meet the lower teeth. This treatment sometimes involves the construction of removable orthodontic devices.
- Or: occlusal adjustments
Occlusal relation
Buccal view

Teeth & hard tissue:
Treatment Partial Denture: An acrylic resin partial denture that is placed on interim or transitional bases

**Indications:**
1. Cases require restoration of vertical dimension
2. Immediate esthetic & functional needs
3. Evaluation of hygiene & abutments
4. As immediate restoration to promote healing

#23 & 26: hopeless teeth
Extraction is recommended

Immediate treatment partial in place right after extraction
Treatment Partial Denture:

Compatible with the following definitive RPD design:
: more streamline design but consistent with final RPD design

Same requirements like the definitive RPD:
Support, Stability, and Retention
Fabrication of Treatment Partial: Proper block out

Block out all undercut of abutment teeth and soft tissue with plaster (except retention area)

The amount of undercut to be blocked out is determined by the surveying lines marked following the designed MAP.

Use wax knife to remove the excessive block out material under MAP.
Fabrication of Treatment Partial Denture: Rests and Retainers

Orthodontic Wrought Wire .040” for rests
Fabrication of Treatment Partial Denture: Rests and Retainers

Orthodontic Wrought Wire .036” for retainers

Position the retainer wire below the height of contour
Treatment Partials:
Support: positive rest & accurate mucosal adaptation
Stability: parallel proximal plate & proper block out
Retention: active wire retainers
1. Before
2. Immediate Treatment Partial
3. Healing phase
4. Ready for definitive partial
5. Definitive Cast Partial
Mouth preparation after reaching a final design for the RPD

These are carried out after reaching a final design of the RPD:

1. Need for crowing or splinting abutment teeth

2. Preparation of abutment teeth to receive the partial denture that includes:
   A. Guide planes preparation
   B. Rest seat preparation
   C. Improving teeth contours
   D. preparing other teeth for indirect retainers
Mouth preparation should be drawn on the study cast (Diagnostic cast).
Preparation of Abutment Teeth

1. Caries, gingival inflammation and oral hygiene
2. Location of teeth and occlusal analysis
3. Form, position and size of teeth and supporting structures
4. Tooth vitality
Abutment Teeth

The criteria for abutment tooth evaluation and selection are based on the following aspects:

1. Caries, gingival inflammation and oral hygiene:

The success of a partial denture depends greatly upon the soundness of the abutment.
Abutment Teeth

2. Location of teeth and occlusal analysis:
The loss of one or more of the natural teeth generally creates changes in the occlusion.
Abutment Teeth

3. Form positions and size of teeth:
A tooth that is small, malformed, or excessively thin labiolinguually or one whose crown is short occluso- gingivally, is not an ideal abutment.

4. Tooth vitality:
A tooth with a normal, vital pulp is the ideal abutment.
Force distribution on abutment teeth

When constructing a removable prosthesis that will transmit forces to abutment teeth, the design should:

1. Transmit forces down the root surface in a vertical direction.
2. Transmit forces parallel to the long axis of the tooth.
3. Prevent or minimize lateral forces.
Guiding Planes

Modification and contouring the proximal or axial surface of the abutment teeth allows the prosthesis to:

- Slide into position more easily.
- Contacted by the rigid part of the prosthesis, help stabilize it against lateral forces.
- Eliminating all voids or open spaces, protect weaken teeth from destructive lateral forces.
- More favorable esthetic.
Guiding Planes

- The Guiding planes may be the mesial or the distal portion or both surfaces also can be made lingually.

- Guiding planes on the abutment teeth adjacent to the distal extension edentulous spaces, avoids creation of torque or twist forces on the abutment tooth.

- Guiding planes on lingual surfaces of the abutment teeth provide maximum resistance to lateral stresses.
Prepare Parallel Guiding Surfaces:
Use parallel-sided bur

Diamond: For tooth/or porcelain

Carbide: For tooth
Proximal guiding planes
When prepare parallel guiding surfaces of anterior abutment----

Stay on the lingual half to optimize esthetics!
Establishing Guiding Planes Tooth-Borne Partial Denture

- parallel to the long axes of the abutment teeth.
- At least two widely separated teeth in the dental arch.
- more than one common axial surface.
- continual contact
- the minimal size should be one-third (⅓) of the axial surface of the abutment.
- in a more proximal-lingual direction
- round any sharp line angles
- guiding plane must always precede rest preparations
Guiding Planes and the Free End Extension Partial Denture

- To minimize normal stresses being directed on the distal and lingual surfaces,
- The prepared surface should extend no more than 2-3 mms in occlusal-gingival direction.
- The proximal plate of the denture should only contact the lower half of the prepared surface.
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.

As the prosthesis is inserted and removed, thus horizontal wedging is eliminated.

Vertically disengage with extension base loading.
Occlusal rest

The main function of the rest is to transfer all load in the vertical direction which is most favourably resisted by the periodontal membrane mechanism. In this case the partial denture is similar to the fixed bridge in function.
Steps of occlusal rest preparation
Occlusal Rest Seat Form

- Rounded triangular shape
- Apex near center of tooth
Occlusal Rest Seat Form

- Base of triangle should be one third the bucco-lingual width of the tooth
Occlusal Rest Seat Form

- Marginal ridge must be lowered and rounded 1-1.5mm
- Bulk of metal to prevent fracture
Tooth Preparation for RPD
1. Parallel Guiding Surfaces
2. Rest Seats - Anterior rests
   Posterior rests

Posterior Rests is prepared with round bur
Rests Areas-must be positive
• Spoon shape (thicker in the center of the tooth than at the marginal ridge)
• Minimum thickness: 1.25 mm
• Wider at the marginal ridge
• Rounded, especially at the junction with the minor connector
Extended occlusal rest

When the lower molar is severely tipped to the mesial and the lingual, it is often best to use a rest only, as the clasp often gets bent or broken.
Tooth Preparation for RPD

1. Parallel Guiding Surfaces

2. Rest Seats-Anterior rests

- Cingulum rest
- Incisal rest
- Circular concave rest
Cingulum rest
Cingulum Rest Seat Form

- Inverted “V”
- < 90°
Cingulum Rest Seat Form

- Slightly rounded to avoid sharp line angles
- Test as ‘positive’ with explorer tip
- 1mm depth
Cingulum rest seat
Lingual rest seat
a prepared depression within an abutment tooth lingual surface.
Rest prep on existing PFM crown: Diamond bur only

Always inform the patient in advance the potential risk of perforating the existing crown/or restoration.
Round Lingual Rest Seat Form

- Spoon-shaped, similar to occlusal rest seat
- More difficult due to the incline of the lingual surface
- Easily incorporated into crowns
Incisal Rests: Flamed shape bur

Positive Incisal Rest:
1. Two Planes Preparation:
   - Incisal Plane
   - Labial Plane
2. Concave MD, Convex BL
3. 1/3 of MD Incisal Width
Incisal Rests: Flamed Shape Bur
On-lays

They are enlarged occlusal rests covering the whole occlusal surface and extending buccally and lingually.
Creation of retentive areas of adjustment teeth

Two types of retentive undercuts:
1. Wide depression undercut.
2. Dimple.
Abutment coverage with crown restorations

Four criteria must be followed:

1. Adequate guide planes.
3. Proper retention.
4. Proper bracing.
Surveying the waxed crown
Rest seat in different metals