

## Preparation of mouth for RPD

Preparation of mouth for RPD is a fundamental to successful RPD service it is an important procedure since it prescribe that the prosthesis must not only replace what is missing but must also preserve the remaining tissue and structure that will enhance the partial denture .

### The steps for RPD construction :

1. Diagnosis and treatment plane
2. Preparation of mouth for RPD
3. Impression procedure for RPD
4. Occlusal relationship for RPD
5. Trial stage
6. Initial placement ,adjustment ,and servicing of RPD

Preparation of mouth for RPD include two parts

1. Preprosthetic mouth preparation:- done to remove any hindrance into the prosthetic treatment. Also done along with diagnosis and treatment planning.
2. Prosthetic mouth preparation: is done to facilitate prosthetic treatment and done after partial denture design.

### Mouth preparation includes procedures in four categories :

1. Oral surgical preparation.
2. Conditioning of abused and irritated tissues.
3. Periodontal therapy.
4. Preparation of abutment teeth.

### The objective of the procedures :

- a) To return the mouth to optimum health.
- b) To eliminate any condition that would be detrimental to the success the RPD.

**Oral surgical preparation :**

The longer the time between surgery and impression procedure the more complete the healing and consequently the more stable the denture bearing area .A variety of oral surgical technique can prove beneficial to the clinician in preparing the patient for pre prosthetic replacements .

**The most common oral conditions or changes in which surgical intervention is indicated:****1) Extraction:**

Planned extractions should occur early in the treatment regimen ,but not before careful and through evaluation of each remaining tooth in the dental arch completed .Each tooth must be evaluated concerning its strategic importance and its potential contribution to the success of the RPD .The extraction of non strategic teeth that would present complications or those whose presence may be detrimental to the design of the partial denture is a necessary part of the overall treatment plan.

**2) Removal of Residual roots:**

Generally ,all retained roots or root fragments should be removed this is particularly true if they are in close proximity to the tissue surface or if there is evidence of associated pathology . Residual roots adjacent to abutment teeth may contribute to the progression of periodontal pockets and compromise the result from sub sequent periodontal therapy.

**3) Impacted teeth:**

All impacted teeth should be considered for removal ,this applies equally to the impaction in edentulous area ,as well as to those adjacent to abutment teeth .

**4) Malposed teeth:**

The loss of individual teeth or group of teeth may lead to extrusion, mesial drifting , or combinations of malpositioning of remaining teeth . In most instances the alveolar bone supporting extruded teeth will be carried occlusally as the tooth continues to erupt. Orthodontics may be useful in correction many occlusal discrepancies ,but for some patients such treatment may not be practical because of lack of teeth for anchorage of the orthodontics appliance or for other reasons .In such a situation individual teeth or groups of teeth and their supporting alveolar bone can be surgically repositioned ,this type of surgery can be accomplished in an outpatient setting and should be given serious consideration .

**5) Cyst and odontogenic tumor:**

The diagnosis may appear obvious from clinical and radiographic examinations the dentist should confirm that diagnosis through appropriate consultation and if necessary biopsy the area and submit the biopsy to pathologist.

**6) Exostosis and tori:**

Ordinarily mucosa covering bony protuberance (Exostosis and tori) is extremely thin and friable. Patient denture component in proximity to this type of tissue may cause irritation and chronic ulceration. Although modification of denture design can, at time, accommodate for exostosis more frequently, this result in additional stress to the supporting element and compromised function. Surgical removal of tori bony exostosis can be done.

**7) Hyperplastic tissue:**

Hyperplastic tissue are seen in the form of fibrous tuberosity, soft tissue, fold of redundant tissue in the vestibule or floor of the mouth and palatal papillomatosis. All these form of excess tissue should be removed surgically. Always some form of surgical stent considered for these patient so that the period of healing will be more comfortable.

**8) Muscle attachment and frenum:**

As a result of the loss of alveolar bone height, muscle attachment may insert in/or near the alveolar crest. The mylohyoid, buccinators, mentalis and genioglossus muscle are those most likely to introduce problem of this nature beside that the attachments of the muscles themselves ,the mentalis and genioglossus muscles occasionally produce bony protuberance at their attachment that may also interfere with RPD design. The comfort and function of the RPD can enhance through repositioning of attachment specially mylohyoid muscle, however repositioning of genioglossus muscle is more difficult to reposition .

**9) Bony spine and knife edge ridge:**

Sharp bony spicules should be removed and knife like crest gently rounded. These procedures should be carry out with minimum bone loss, if, the correction of a knife edge alveolar crest result in insufficient ridge support for the denture base, the dentist should restore the vestibular deepening for correction of the deficiency or insertion of the various bone grafting materials that have demonstrated successful clinical trials.

**10) Polyps, Papillomas, and Traumatic Hemangiomas:**

All abnormal soft tissue lesions should be excised and submitted for pathologic examination before the fabrication of RPD.

**11) Hyperkeratosis, erythroplasia and ulceration:**

All abnormal white ,red, or ulcerated lesion should be investigated regardless of their relationships to proposed denture base framework.

**12) Dentofacial deformity :**

A patient with dentofacial deformity may have multiple missing teeth . Correction of the jaw deformity can simplify the dental rehabilitation. Surgical correction can be made in horizontal , sagittal or facial planes . Mandible and maxilla may be positioned anteriorly or posteriorly , and their relationship to the facial planes may be surgically altered to achieve improved appearance . Replacement of missing teeth and development of a harmonious occlusion are very difficult in treating those patient .

**13) Osseo integrated devices:**

A number of implant device for replacement of teeth have been introduce titanium implant was designed to provide a direct titanium –to bone interface (osseo integrated) the implant are placed using clean and controlled oral surgical procedure and are allowed to heal before surgical exposure and fabrication of a dental prosthesis .

**14) Augmentation of alveolar bone:**

Hydroxyl appetite has been used as a material for augmentation of deficient alveolar bone ,this material display a lack of toxicity and demonstrates no inflammatory or foreign body responses .This material provide increase in ridge width and height and also provide a matrix for new bone formation .

## Conditioning of abused and irritated tissues

Many partial denture patients may require conditioning of the supporting tissue in the edentulous area before the final impression

**Those who need conditioning treatment are those who have the following symptoms :**

1. Inflamed and irritation tissue of the mucosa covering the denture bearing area.
2. Distortion of the normal anatomic structures ,such as incisive papillae the rugae and retromolar pads.
3. A burning sensation in residual ridge area ,the tongue, the cheeks and the lips.
4. Nutritional deficiencies ,endocrine imbalances ,sever health problems and bruxism must be considered also .

These conditions are usually associated with **ill-fitting** or **poorly occluded** RPD. So these conditions should be treated before relining or making a new RPD. The treatment procedure includes good home care by:

- Rinsing the mouth three times daily with prescribed saline solutions.
- Massaging the residual ridge area, palate and tongue with a soft tooth brush.
- Removing the prosthesis at night.
- Using a prescribed therapeutic multiple vitamins along with a prescribed high protein low carbohydrate diet .

## USES OF TISSUE CONDITIONING MATERIAL

These are elastopolymers that continue to flow for extended period of time permitting distorted tissue to rebound and assume their normal form these materials apparently have a smoothing effect on irritated mucosa and because they are soft ,occlusal forces are probably more evenly distributed .

### Maximum benefit from using tissue conditioning material

- Extending denture base to proper form to enhance support retention and stability .
- Relieving the tissue side of denture base sufficiently (2mm) to provide space for even thickness and distribution of the material.
- Applying the material in amount sufficient to provide support and a cushioning effect.
- Following manufacturer directions .

The conditioning procedure should be repeated until the supporting tissue display an undistorted and healthy appearance .

### Periodontal therapy.

This procedure is over formed simultaneously with the oral surgical procedure it should completed before restorative procedure ,because the success of this restoration depend on the health and integrity of the supporting structure of the remaining teeth therefore the periodontal health of the teeth especially the abutments must be evaluated and corrective measures takes before RPD construction.

### Abutment teeth preparation

After several steps of mouth preparation of RPD construction (surgery periodontal treatment ,endodontic and tissue conditioning ) the abutment teeth may be prepared to provide support, stabilization, reciprocation and retention for RPD .

#### Classification of abutment teeth preparation:

- Those abutment teeth that require only minor modification to their coronal portion.
- Those that are to have restoration other than crowns.
- Those that are to have crowns.

**The sequence of abutment tooth preparation on sound enamel or existing restoration is as follow:**

- 1- Proximal surface parallel to the path of placement should be prepared to provide guiding planes .
- 2- Tooth contours should be modified ,lowering the height of contours so that :
  - a. The origin of circumferential clasp arm may be placed well below the occlusal surface ,preferably at the junction of the middle and gingival thirds .
  - b. The retentive clasp terminals may be placed in the gingival third of the crown for better esthetic and better mechanical advantages .
  - c. Reciprocal clasp arm may be placed on and above a height of contour that is no higher than the cervical portion of the middle third of the crown of the abutment teeth .
- 3- After alterations of axial contours are accomplished and before rest seat preparation are instituted ,an impression of the arch should be made in an irreversible hydrocolloid and a cast poured in a fast setting stone ,this cast can be returned to the surveyor to determine the adequacy of axial alterations before proceeding with rest seat preparation .If axial surface require additional axial recontouring it can be performed during the same appointment and without compromise.
- 4- Occlusal rest areas should be prepared that will direct the occlusal force along the long axis of the abutment ,the outline form of an occlusal rest seat should be a rounded triangular with the apex toward the center of the occlusal surface.

### The procedure of rest seat preparation on sound enamel surface:

- 1- Round bur No.8 used to lower the marginal ridge and established the outline of the rest seat.
- 2- Round bur No.6 used to slight deepen the floor of the rest seat of the rest seat inside this lowered marginal ridge this provide for an occlusal rest that satisfied the requirement that the rest be placed so that any occlusal force will be directed axially and that there will be the least possible interference to occlusion with the opposing teeth.
- 3- The floor of the rest seat should incline toward the center of the tooth so that the occlusal forces are centered over the root apex.
- 4- The marginal ridge must be lowered so that the angle formed by occlusal rest with the minor connector will with stand above the occlusal surface of the abutment tooth as little as possible and above interface with apposing teeth . Simultaneously sufficient bulk must be provided to prevent a weakness in the occlusal rest at the marginal ridge. The marginal ridge must be lowered and yet not be deepest part of the rest proportion to permit occlusal stress to be directed toward the center of the abutment tooth , the angle formed by the occlusal rest with the vertical minor connector should be less than 90 degree . In other ward the floor of the occlusal rest should incline slightly from the lowered marginal ridge toward the center of the tooth.

#### Design of an occlusal rest seat

- **Triangular shape** with apex at the centre of the tooth and base at the marginal ridge
- **1/2 buccolingual** width
- **1/3 mesiodistal** width
- **Angle** between floor of the prosthesis and proximal surface of tooth **<90 degree**
- **0.5mm thick at thinnest point** and 1-1.5 mm thick at margin.

