DEPARTMENT OF RESTORATIVE DENTISTRY

REMOVABLE PARTIAL DENTURE EDUCATION AND PATIENT CARE
POLICIES/GUIDELINES

1. **Initial exam procedures:** Review of medical/dental histories, intra-extraoral exam and cancer screening, odontogram and periodontal charting, appropriate radiographs, evaluation of existing RPDs, and alginate impressions for diagnostic casts.

2. **Diagnostic casts:** Preliminary casts should include an accurate representation of teeth and edentulous areas for accurate survey and design. Diagnostic casts should be mounted using wax rims if hand articulation is not possible.

3. The criteria included in the *Prosthodontic Diagnostic Index (PDI)* is to be used in the diagnostic phase of treatment planning to evaluate and assess case complexity and to identify cases requiring referral for care by a specialist.

4. **Risk Assessment:** As a part of diagnostic procedures, risk assessment for caries and periodontal disease are to be completed. Treatment planning must include clinical procedures as well as patient education and home care measures to aid in reducing the risk of caries and periodontal disease. Patient education in the proper care and cleaning of the RPD as well as the supporting teeth and tissues is an essential component in optimizing the prognosis of the RPD case.

5. **Diagnosis and treatment planning:** Diagnostic casts must be mounted including cases with opposing completely edentulous arches. Survey and tripod the diagnostic cast(s) planned for RPDs, complete a Preliminary Partial Denture Design worksheet for each RPD that may be included in the Optimal or Alternative treatment plans. Evaluate potential abutment teeth for use as retainers.
   
   **A.** Plan and design the major connector, direct and indirect retainers, and type(s) of tooth replacement.
   
   **B.** Plan and design direct and indirect restorations for teeth involved in the RPD design.
   
   **C.** Plan rest seats and guiding planes to be completed in metal for all indirect restorations.
   
   **D.** Avoid eliminating centric stops during rest preparation as these occlusal contacts maintain occlusal vertical dimension. Modify the RPD design so as to retain these contacts.

6. **RPD design:**
   
   **A.** *Base metal alloy* (e.g., Cobalt-Chromium) used unless gold alloy is indicated due to metal allergy or other consideration.
   
   **B.** *Maxillary major connector selection criteria:*
      
      a. *Use strap type major connector* (8 mm wide), not bar.
      
      b. *A-P palatal strap* most often used in Kennedy Class I, II, and IV cases.
      
      c. *Palatal plate* often used for Kennedy Class I cases with few or no posterior teeth remaining and/or significantly resorbed residual ridges.
      
      d. *Single Palatal Strap* used for most Kennedy Class III cases. Unilateral (Nesbit) RPDs are **not** acceptable due to patient safety concerns.
e. U-shaped palatal connector is only indicated for cases where a large palatal torus extends to the vibrating line and cannot be removed surgically. If gagging is a potential problem, design the case as an A-P strap with the anterior strap wide enough to act as a U-shaped major connector in case the posterior strap needs to be removed due to gagging problem.

C. Mandibular major connector selection criteria:
   a. Determine space available for the major connector. Measure space between the raised floor of mouth to the lingual gingival margins of teeth.

   b. Lingual bar requires 7-8 mm of space (4 mm bar height, 3-4 mm superior border of bar to lingual gingival margin). Can be used for most RPD cases.

   c. Lingual plate used when less than 7-8 mm space is available. Other indications are severe ridge resorption and allowing future tooth replacement.

D. Direct retainer selection criteria:
   a. Tooth supported cases: Clasps may be Suprabulge (circumferential type) or Infrabulge (bar type) depending on tooth/tissue anatomy and esthetic considerations.

   b. Tooth-tissue supported cases: Clasp selection should be limited to RPI or Combination clasp direct retainers (allows stress release for abutment in distal extension cases).

E. Indirect retainer criteria:
   a. Indicated for Kennedy Class I, II, IV cases. Avoid using incisors. Ideally place indirect retainer perpendicular to the horizontal axis (Fulcrum line).

F. Denture base and tooth replacement considerations:
   a. Lattice or retentive mesh supporting an acrylic resin base should be used for distal extension cases and in cases of severely resorbed residual ridges. Selection of acrylic resin denture teeth dependent on shade, size, shape, and cusp angle of remaining teeth.

   b. Metal base is indicated for tooth supported areas with minimal ridge resorption and no recent extractions. Tooth replacement options include the facing, tube tooth, and metal pontic designs.

7. Preparation of abutment teeth: Guiding planes should be placed on proximal tooth surfaces adjacent to edentulous areas. Teeth should be recontoured to ideally place retentive and reciprocating/bracing elements at the junction of the gingival 1/3 and middle 1/3 of the tooth. Rest seats should be placed adjacent to all edentulous areas.

These design elements should be included in the design of planned indirect restorations.

Design of rest seats should follow these guidelines:
   a. Occlusal rests for molars should be 1/3 the B-L dimension and approximately 1/4 the M-D dimension of the tooth.

   b. Occlusal rests for premolars should be 1/3 the B-L dimension and approximately 1/3 the M-D dimension of the tooth.

   c. Occlusal rest depth will create occlusal space for 1.5 mm of metal thickness for the rest and adjacent minor connector. All rests must have an axial inclination resulting in a positive seat. Actual tooth preparation will depend on occlusal relations with the opposing arch.

   d. Cingulum rests are generally used for maxillary canines and will follow "V" or "U" shape of the anatomical cingulum and will include a positive seat.

   e. Lingual ball rests are indicated for maxillary and mandibular canines without a prominent cingulum as well as for anterior teeth. The rest will be located in the proximal
marginal ridge area at the junction of the gingival 1/3 and middle 1/3 of the tooth. The size generally approximates the size of a #4 round bur, but will vary according to tooth size.

Prior to intraoral preparations, students are to prepare teeth on a diagnostic cast (other than the original diagnostic cast). Preparations should be self-evaluated by students and reviewed with faculty prior to intraoral preparations.

8. **Indirect restorations that will serve as abutments for an RPD must be evaluated prior to cementation.**
   a. The design of the indirect restoration should follow the planned design of the RPD.
   b. The restoration is to be evaluated with a surveyor to verify the appropriate guiding planes and axial contours for the planned direct retainer, indirect retainer, or additional supporting rest.
   c. Retentive undercut areas are to be measured with the surveyor to ensure proper location and amount of the retentive undercut.
   d. Rest seats are to be evaluated for proper location and dimensions

9. **Impression trays:**
   A. For tooth supported RPDs, plastic or metal stock trays may be used. Some cases may require a custom tray due to size/shape of the dental arch or due to the large number of missing teeth in the arch.
   B. **Single step impression for tooth-tissue supported RPDs**, TRIAD custom trays should be fabricated after placing wax spacers: two sheets of baseplate wax over remaining teeth and one sheet of baseplate wax over the edentulous ridge and palatal areas.
      - The wax spacer should extend 2 mm short of the outline of the custom tray in edentulous areas to be border molded.
      - The wax spacer should extend to 1 mm short of the depth of the vestibule in dentulous areas.
      - The custom tray should extend 2 mm short of the depth of the vestibule in edentulous areas to be border molded.
      - The custom tray should extend to 1 mm short of the depth of the vestibule in dentulous areas.
   C. **Altered cast impression for tooth-tissue supported RPDs:**
      a. This two-step impression technique may be used as an alternative to the single step impression technique detailed in 6B. above.
      b. This technique will be required if the impression obtained using the single step impression technique is judged to be insufficient in the registration of residual ridge anatomy and/or vestibular extensions. **Supervising faculty will make the final decision regarding the need for an altered cast impression.**
      c. This technique will also be required if, at the time of framework try-in, the relationship of the framework to the edentulous ridge **intraorally** varies from the relationship seen between the framework and master cast (e.g. the tissue stop contacts the edentulous ridge on the cast, but does not contact the ridge **intraorally**). Supervising faculty will make the final decision regarding the need for an altered cast impression.
      d. Technique: TRIAD custom trays with a single wax spacer are attached to the RPD framework such that the tray(s) are 2 mm short of the depth of the vestibule.

10. **Border molding:** In edentulous areas requiring border molding, green stick compound should be used with the wax spacer remaining in the tray. Border molding may be achieved by movement of
limiting oral structures using patient physiologic movements or by manual manipulation. A Hanau alcohol torch with a functioning brush flame and a hot water bath are required for this procedure.

11. Final impressions: Border molding should be reduced 0.5 mm and the wax spacer removed (except for vertical stop areas as indicated). When a relief hole is necessary for maxillary custom trays, it is placed using a #8 round bur in the anterior palatal area along the mid-palatal suture line. PVS medium body impression material should be used (the clinician may elect to use light body PVS for syringing abutment teeth).

12. Master casts: Casts should be poured in Micro-stone and neatly trimmed leaving a 4 mm land area. The base of the cast should have indexing grooves placed in three widely spaced areas.

13. Mounting of maxillary cast: Cast should be mounted using an arbitrary face-bow and bite registration material. A wax rim should be used when few teeth remain and for distal extension cases.

14. Mounting of mandibular cast: Cast should be mounted in Maximum Intercuspation when sufficient teeth remain. Centric Relation should be used when one arch is edentulous. Wax rims should be used as needed.

15. Registration bases for distal extension cases: A well adapted Triad base (with a wax rim) extending to the depth of the vestibular extensions of the master cast is necessary to provide stability and support for the base during registration of jaw relations. Also, the base will allow assessment of tissue support in distal extension areas.

16. Try-in of RPD framework using Kerr Disclosing Wax to adjust the framework as needed and confirm fit intraorally should be completed before setting denture teeth.

Following intraoral confirmation of framework fit, record bases and wax rims should be placed on the framework using the master cast. The RPD and base assembly should then be used to intraorally verify adaptation of the bases to the residual ridge, the relationship of the teeth to the edentulous area, as well as confirmation of jaw relations of the mounted casts.

17. Tooth selection and occlusal contact relationships:

A. Anterior teeth are to be selected using remaining anterior teeth as a guide for mould and shade.
B. Posterior teeth are to be selected using remaining posterior teeth as a guide for cusp angle, mould, and shade.
C. Remaining anterior and posterior teeth will serve as a guide for occlusal contact relationships.
D. For cases in which all posterior or all anterior teeth are missing, utilize the tooth selection protocol for complete dentures (e.g. only #22 and #27 remain).
E. Portrait IPN teeth are to be used for all cases. Porcelain denture teeth are not to be used.

18. Wax try-in of completed tooth set up should be scheduled to verify interocclusal records and to evaluate occlusion, esthetics, phonetics, and support of facial contours. Acrylic base shade should be selected. Tooth manufacturer, mould, shade, cusp angle, and acrylic base shade should be documented in the Axium treatment record. Written patient acceptance of the tooth arrangement,
shade, and mold, as well as the denture base shade must be obtained. Patient acceptance of esthetics relating to clasp location will also be included in this written patient consent.

19. **Delivery of the processed RPD** will include adjustment of acrylic bases, as needed, to verify fit and complete seating of RPD. PIP paste with Mizzy spray should be used to evaluate for pressure spots on tissue from acrylic bases. Occlusion should be evaluated and adjusted. Home care instructions, denture tub, and denture brush will be provided and a 24 hour adjustment appointment set.

20. **Following two adjustment appointments**, if no further adjustments are needed as indicated by, but not limited to, the following list, the patient is instructed to contact his/her student if further adjustment is needed. The student should confirm a 6 month recall interval with the patient.
   A. Resolution of soft tissue irritation
   B. Correction of occlusal discrepancies
   C. Proper flange length and thickness
   D. Patient satisfaction with comfort, function, and esthetics
   E. Other case-specific issues

**Critical Criteria for RPD Cases**

A. All cases that have an RPD as part of the Optimal or Alternative treatment plan must have casts mounted.

B. All diagnostic casts and master casts must be surveyed and tripodped.

C. All cases that have an RPD as part of the Optimal or Alternative treatment plan must have an RPD design drawn on the diagnostic cast and the Preliminary Partial Design form with all requested information completed.

D. The RPD design(s) must be approved prior to approval of the treatment plan.

E. All soft tissue bearing areas must be accurately captured within the final impression including, but not limited to:
   1. All vestibular extensions and frena.
   2. Tuberosities, hamular notches, junction of the hard/soft palate.
   3. Retromolar pads and buccal shelves.

F. All prepared teeth must be accurately captured within the final impression including, but not limited to:
   1. Prepared guiding planes, rests seats, axial contours, and indirect retainers.

G. A tooth-borne case with minimal edentulous areas and critical esthetic issues in which a Cu-Sil RPD is a treatment alternative or a Valplast type of RPD as a treatment alternative must be reviewed and approved by the designated prosthodontic consultant during the treatment planning phase. A conventional RPD is always preferred due to lack of rigidity, inability to repair, and other problems associated with Cu-Sil and Valplast prostheses.
H. Tooth colored clasps are not acceptable. Cases with a demanding esthetic component requiring precision attachments to avoid clasping teeth are to be referred to the Post-Graduate Prosthodontics Clinic.

I. Permanent Immediate RPDs (a final RPD with a cast metal framework) are not an acceptable treatment option.

J. Initial examination procedures as well as all recall appointments are to include an intra/extraoral cancer examination.

K. Students must work with the same instructor for all steps involved in RPD fabrication.

**References:**

**Required textbook:** Carr AB, McGivney GP, and Brown DT McCracken’s Removable Partial Prosthodontics Eleventh edition, Mosby

**Optional textbook:** Krol AJ, Jacobson TE, and Finzen FC Removable Partial Denture Design Outline Syllabus Fifth edition, Indent