3/4 Crown Maxillary Premolar
Maxillary 3/4 Crown Preparation

- Lingual walls of grooves resists lingual displacement
  - Replace facial wall of full crown
- Lingual walls of grooves taper occlusally with lingual wall of the preparation
- Base of grooves end 0.5 mm occlusal to finish line
- Offset adds strength to the casting
Advantages For Partial Veneer Crowns

- Tooth structure is spared
- Margin is accessible for finishing & cleaning
- Gingival crevice is spared
- Easier to seat/cement
- Easier to verify complete seating of the crown
- Future pulp testing is possible if necessary
Disadvantages For Partial Veneer Crown

- Less retention than full crown
- Requires greater skill by the operator
- May be less esthetic
Maxillary 3/4 Crown Preparation

Preoperative evaluation
Mesial Facial Extension

- Must extend facially far enough to resist recurrent decay and allow for finishing
- Must be esthetic
  - Follow contour of tooth mesial to preparation
  - Finish line tucked in behind mesial tooth
- Sufficient facial extension for proper groove placement & length
Mesial Facial Extension

- Facial extension cleansable, but not visible when viewed in normal conversation range
Mesial Facial Extension

- Occlusal portion of flare extends far enough facially to clear adjacent tooth & be finishable but not visible.
Mesial Facial Extension

- Extension of the flare clears adjacent tooth
Occlusal Clearance

- 1.5 mm on functional cusp (lingual)
- 1.0 mm on non-functional cusp (facial)
- Less than .5 mm reduction on facial cusp tip if sufficient horizontal overlap
Occlusal Clearance

- Check occlusion & note amount of horizontal overlap
Occlusal Clearance

- Depth grooves placed with 57-010 bur to a depth of 1.5 mm in central groove & lingual cusp
- Grooves taper off to a depth of 0.5 mm on buccal cusp
Occlusal Clearance

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Occlusal Clearance

- Reduce occlusal surface maintaining occlusal planes
- Occlusal clearance measured on incline of triangular ridge
Occlusal Clearance

- Have “patient” close & check occlusal clearance
- Check clearance with RGS 2 which must pass freely from mesial to distal
Occlusal Clearance

- Lack of adequate clearance on mesial incline of buccal cusp-UX
- RGS 2 binds
Occlusal Clearance

- Additional clearance obtained on mesial incline of buccal cusp
Occlusal Clearance

- Buccal cusp incline toward central groove is steeper than buccal incline of lingual cusp
Occlusal Clearance

- Buccal cusp incline toward central groove is steeper than buccal incline of lingual cusp
Functional Cusp Bevel

- 1.5 mm clearance
- Follow contours of opposing tooth
  - Approximately 45 degree angle to long axis of the preparation
- Maintain contours of tooth being prepared
- Extend bevel into lingual embrasure
Functional Cusp Bevel

- Functional bevel is part of occlusal reduction
- Use 57-010 bur to place bevel
- Parallel bur with opposing cusp & triangular ridge inclines
Functional Cusp Bevel

- Functional bevel aligns cusp tip with the rest of the arch
- Maintain proper contours on mesial & distal inclines
Functional Cusp Bevel

- Functional bevel creates adequate clearance both in intercuspal position & in excursions
Axial Reduction & Finish Line

- 6-10 degree taper between opposing axial walls
- 3mm long axial walls (minimum)
- Chamfer finish line
  - 0.3-0.7 mm axial depth
  - .5 mm supragingival
  - Even axial depth
Axial Reduction & Finish Line

- Incorrect line of draw leads to excess taper & excess axial reduction
Axial Reduction & Finish Line

- Use tapered diamond to reduce axially & create finish line
- Align bur with line of draw both mesio-distally & bucco-lingually
Axial Reduction & Finish Line

- Align bur with outer surface of the tooth on the buccal & maintain correct line of draw when moving to the lingual
Axial Reduction & Finish Line

- Reduce axial walls evenly & extend axial reduction into interproximal
- Maintain even distance from gingiva
Interproximal Reduction

- Extend facially and gingivally to break contact with adjacent tooth
- Initial reduction with 850-012 diamond
- Follow up with 878K-012 diamond
- Extension of flare clears adjacent tooth
- Avoid
  - Damage to adjacent tooth
  - Excessive axial reduction
Interproximal Reduction

- Extensions of flares clears adjacent teeth
- Facial extension greater on distal than mesial
Interproximal Reduction

- Use flame shaped diamond to break interproximal contact both gingivally and facially.
- Finish line at this point will be a knife edge.
Interproximal Reduction

- Facial extension less on mesial than distal on any given tooth
- Facial extension greater as you extend distally in the arch
Interproximal Reduction

- Adequate mesial extension?
Interproximal Reduction

- Inadequate facial extension at gingiva leads to short grooves and difficulty finishing & cleaning due to limited access.
Interproximal Reduction

- Mesial extended adequately at gingiva
- Be careful about undercuts at base of flares
Evaluation

- Line of draw
- Can visualize
  - Axial walls
  - Mesial and distal flares
  - Flares clear adjacent teeth
  - 6-10 degree taper
Interproximal Reduction

- Use flame shaped diamond to eliminate unsupported enamel on flare & to make flares draw with each other.
Interproximal Reduction

Taper of flares with each other
Retention Grooves

- Lingual walls taper toward lingual of prep
- Lingual walls provide resistance to lingual displacement of the restoration
- 0.5 mm axial depth
- Gingival ends 0.5 mm occlusal to finish line
- Placed with tapered fissure bur-169L
- Size of 170L bur
Retention Grooves

Use 169L for initial groove placement
Retention Grooves

- Mesial groove draws with rest of the preparation & ends 0.5 mm from gingival finish line
Retention Grooves

- When satisfied with initial groove placement, use groove to line up placement of second groove
Retention Grooves

“Bump” in distal flare
Retention Grooves

Flame shaped diamond removes bump & flare is one plane from axial to facial finish line
Retention Grooves
Occlusal Offset

- Facial cusp of maxillary 3/4 preparations
- Provides bulk of gold near finish line
- **Not** for occlusal clearance
- Parallels facial margin of preparation
- 0.5 mm deep (pulpal)
- 1.5 mm from facial finish line
Occlusal Offset

- Use 169L to place offset
- Parallel facial finish line
- 1.5 mm wide
- 0.5 mm deep
- Used to strengthen casting
Occlusal Offset

Completed offset
Non-functional Cusp Bevel

- 0.2-0.3 mm wide
- Smoothes enamel rods
- Eases lab work
- Not placed for occlusal clearance
Non Functional Cusp Bevel

7404 finishing bur used to place bevel
Non Functional Cusp Bevel

Bevels blend into flares to smooth transition from facial to vertical axial wall.
Final Preparation
Maxillary Molar 3/4 Crown

- Same as premolar except for occlusal table
- Lingual 1/2 of preparation is the same as a full gold crown preparation
  - Mesio-lingual cusp about 2/3 of the mesio-distal dimension
  - Disto-lingual cusp about 1/3 of the mesio-distal dimension
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