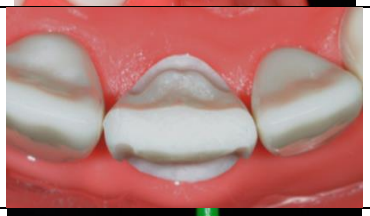
Prosthodontics

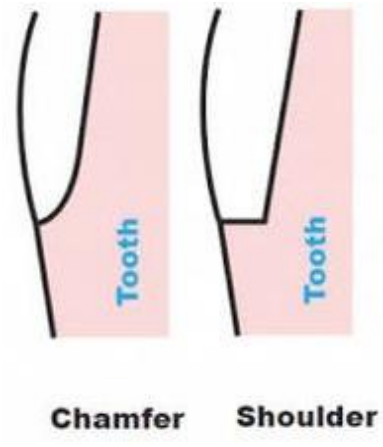
ALL - CERAMIC CROWNS

Indication: Esthetic crowns for cracked, stained, chipped, or decayed anterior teeth.		
Incisal Reduction	Reduce 2 mm	
Path of Draw	Parallel to the long axis of the tooth	
Axial Reduction	**Facial:** 2-Plane Reduction - Gingival: 1 – 1.2 mm - Incisal: 1.5 mm **Lingual:** 1 – 1.2 mm	
Proximal Reduction	Use Needle Chamfer bur to reduce interproximally + obtain 6 – 10° taper	
Lingual Reduction & Clearance	**Reduction:** 1 – 1.2 mm **Clearance:** 1.2 – 1.5 mm (ball burnisher)	
Margin Finishing	**Modified Shoulder Margin** - **Width:** 1 – 1.2 mm - **Location:** 0.5 mm supragingival	
Rounding + Finishing	**Helps prevent wedging action that can cause fracture**	

FULL GOLD CROWNS

Indications: Restoration of a posterior tooth, often in patients with parafunctional habits (grinding).		
Anatomical Occlusal Reduction	**Fxnl Cusps + Central Groove:** 1.5 mm - Maxilla: lingual - Mandible: buccal **Non-Fxnl Cusps:** 1 mm	
Functional Cusp Bevel	Between occlusal surface + axial wall @ 45° - Provides uniform clearance - Realigns functional cusps	
Axial Reduction	**Facial:** 0.5 mm (gingival) → 1 mm (apical) **Lingual:** 0.5 mm	
Proximal Reduction	Use Needle Chamfer bur to reduce interproximally + obtain 6 – 10° taper	
Finish Line Placement	**Light Chamfer Margin** - **Width:** 0.5 mm - **Location:** 0.5 mm supragingival	
Rounding + Smoothing	Distolingual cusps + functional cusp bevels are frequently missed.	

PORCELAIN - FUSED - TO - METAL

Indications: Good esthetics with better cost efficiency.		
Occlusal Reduction	Porcelain – Metal junction should be 1.5 mm away from opposing arch's contact **Porcelain Occlusal:** 2 – 2.5 mm reduction **Metal Occlusal:** 1.5 – 2 mm reduction	
Functional Cusp Bevel	Angled @ 45° to the long axis of the tooth	
Axial Reduction	**Porcelain:** 1.2 mm (gingival) → 1.7 mm (occlusal) **Metal:** 0.5 mm (gingival) → 1 mm (occlusal)	
Proximal Reduction	Use Needle Chamfer bur to reduce interproximally + obtain 6 – 10° taper	
Margination	**Facial Design Choices** - <u>All Porcelain Margin:</u> o Most esthetic (use in Anteriors) o Modified Shoulder margin (1 – 1.2 mm) - <u>Disappearing Margin:</u> o Heavy Chamfer Margin (1 – 1.2 mm) - <u>Metal Collar Margin:</u> o Least esthetic, but most accurate casting (use in Posteriors) o Heavy Chamfer margin (1 – 1.2 mm) **Lingual Design:** Light Chamfer (0.5 mm)	
Rounding + Finishing	Distolingual cusps + functional cusp bevels are frequently missed.	

INTERIM CROWNS

Material Choices:

	PRO–TEMP	PMMA
Advantages	Less shrinkage + minimal heat generation Excellent esthetics Auto-mix delivery	High strength Can be relined + repaired Color stable Material of choice!
Disadvantages	Brittle Hard to reline + repair	Exothermic High shrinkage
Steps	1. Extrude material into matrix (keep tip inserted to avoid bubbles) 2. Allow material to set 3 minutes intraorally 3. Use Flowable Composite to correct deficiencies 4. Adjust occlusion + polish	1. Dispense 15 drops of monomer 2. Add PMMA powder + mix 3. Follow through 4 stages: a. **Sticky:** load into matrix b. **Doughy:** put matrix into mouth c. **Rubbery:** lift facially + lingually every 30 seconds to prevent locking d. **Stiff:** remove 4. Use Bead Brush technique to refine margins + proximal contacts 5. Adjust occlusion + polish

Fabrication Methods:

Direct	Indirect	Direct - Indirect

Crown is made intra-orally Poorer marginal fit + greater potential for tissue damage due to material contact	Crown made extra-orally using a cast of the patient's tooth prep Greater lab time required to ensure a good fit of the crown Best for the patient!	Interim shell is made in the lab using a cast that has been minimally reduced + then relined intraorally Less heat is generated + minimal contact with the tissue occurs
		

CROWN CEMENTATION

Type	Description	Advantages	Disadvantages
Interim Cements			
Zinc-Oxide Eugenol	Powder + liquid mix Creates an acid-base reaction	Easy to remove excess	Can inhibit the setting of methacrylate-based resins No bond to tooth structure + high solubility
Zinc-Oxide Non-Eugenol	No eugenol Acid reacts with Zinc Oxide particles	Easy to remove excess Does not inhibit the polymerization of resins	No bond to tooth structure + high solubility
Zinc Polycarboxylate (Durelon, Tylok-Plus)	Powder (Zinc Oxide) + Liquid (Polyacrylic Acid)	Adhesive bond to tooth structure Lasts the longest of any interim cement (weeks → months)	Hard to remove excess cement Short working time High solubility
Final Cements			

Glass Ionomer Cements	Resin can be added to improve physical properties (RMGI) Recommended cement for Metal, PFM, + Zirconia crowns	Chemically adheres to the tooth Prevents caries through Fluoride release Can be used without good isolation	Decreased bond strength
Resin Cements	**Self-Adhesive**: no etch or prime required + is dual cure **Multi-Step:** etch, primer, + adhesive are recommended	Multi-Step is the gold standard for Lithium Disilicate (e.Max) + Feldspathic Porcelain (Vitablocs – veneers)	Technique sensitive (requires good isolation)