

North Carolina Dental Society

Simplified Clinical Techniques for Primary Molars

Vital Pulp Therapy, Stainless Steel , Esthetic Crowns
&
Chair-side Space Maintainers

Jane A. Soxman, DDS
Diplomate, American Board of Pediatric Dentistry

Primary Molar Pulpotomy

lower left second primary molar

Indications for Pulpotomy

*Complaint of spontaneous (unprovoked) pain in a carious primary molar

Radiographic evidence of pulpal involvement (careful re false involvement with occlusal caries)

Carious pulp exposure during preparation

Complaint of Pain

Children may not recall experiences of pain and difficult to obtain accurate history of pain.

Parent will be more reliable for child's history of complaint regarding pain.

Verghese ST, Hannallah RS. Acute pain management in children. J Pain Res 2010;3:105-123.

Medicaments

Pulpotomy

Formocresol
MTA: Mineral trioxide aggregate
Portland Cement
Ferric sulfate
Glutaraldehyde
Electrosurgery-Cautery
Laser
Sodium Hypochlorite
Biodentine
NeoMTA & NeoMTA Plus

Pulpectomy

Zinc oxide eugenol
Calcium hydroxide
Iodoform paste:
Kri-paste
Vitapex/Metapex-CaOH plus iodoform

Primary molar pulpotomy requires a vital radicular pulp no matter what medicament is used.

If the pulp chamber is dry, has an odor, or contains purulent material, extraction is indicated.

Mobility

*****Seale NS, Coll JA. Vital pulp therapy for the primary dentition. Gen Dent 2010; 58:194-200.

Pulpotomy Armamentarium

Rubber dam

Curette/Spoon for tissue tags

Sterile #6 or #8 round bur in high speed

Sterile saline, chlorhexidine or NaOCL for irrigation with monoject syringe

Cotton forceps

Cotton pellets - size 1

NeoMTA - glass slab, spatula & plugger

IRM (reinforced ZOE with polymer fibers)

Wet cotton tipped applicators

Pulpotomy Procedure

Perform 1mm occlusal reduction with #6 or 8 round carbide bur in high speed.

Remove all peripheral & superficial caries prior to entering the pulp chamber.

Create large enough access opening to permit visualization of canal orifices and remove ledges that could hide tissue tags.

Contaminated water from dental unit water lines introduced Mycobacterium abscessus during irrigation and drilling in pulpotomy procedures.

Peralta G, Tobin-D'Angelo M et al. Notes from the field: Mycobacterium abscessus infections among patients of a pediatric dentistry practice-Georgia 2015. MMWR Morb Mortal Wkly Rep. 2016;65:355-356.

Deep purple or excessive hemorrhage denotes extensive inflammation.

If hemorrhage cannot be controlled in a few minutes by light pressure with a damp cotton pellet or after curette for tissue tags, pulpectomy or extraction should be performed.

24

After complete hemostasis, the preferred medicament is used and the pulp chamber is completely filled with a thick mix of ZOE and packed with a wet cotton-tipped applicator.

OR

After complete hemostasis, the pulp chamber is completely filled with a thick mix of NeoMTA and packed tightly with a wet cotton-tipped

NeoMTA Mixing

Use glass slab & spatula

Dispense 1 scoop (0.1gm) of powder from desiccant-lined container

Dispense one drop of gel in a strip

Gradually incorporate gel into powder until putty consistency (powder more expensive component so do not want to have to add powder to make thicker consistency). Make sure each particle of fine powder is wet

Can divide into 2 pieces for 2 primary molars

Minimum thickness 1.5mm

Radiopaque and wash-out resistant in 3 minutes

Full Coverage Restoration

Stainless Steel Crown

High Caries Active/Risk
Pulpotomy/Pulpectomy
Large Preparation

Once and Done!

lower left second primary molar

Stainless Steel Crown Armamentarium

Mirror/Explorer

Pre-crimped SSC's

Topical/Local anesthesia

Rubber dam isolation

#6 or #8 Round carbide bur in high speed

#170 or 169L carbide bur in high speed

Instrument to remove SSC after try-in if seated

Wooden wedge for distal of second primary molar if the adjacent first permanent molar is erupted.

Glass ionomer or polycarboxylate cement

Bite stick

Wet cotton tipped applicators & 2x2's

Floss with 4-5 knots tied segmentally

**Esthetic Crowns -
Change Your Mindset!**

**Zirconia Crowns
for
Primary Molars**

upper left first primary molar

Selecting a Crown

Crown size should be selected after administering local anesthesia, before placement of the rubber dam and preparation.

Approximate the mesial-distal width.

Sizing step is very important with tight interproximal contacts, crowding and space loss.

62

Parents are never happy with a crown that looks too large.

Try-In crowns may be used for size selection.

63

Preparation

Donut or football diamond for 2mm occlusal reduction.

Open interproximals with fine diamond or 169L carbide.

Coarse round end tapered diamond (or carbide) for 0.75-1.5mm entire circumference just above the gingival margin. Keep bur straight up & down. (Chamfer)

Fine round end tapered diamond for 1-2mm subgingival prep to CEJ. IMPORTANT STEP!!!

65

Coarse Tapered Diamond Bur

Remove buccal bulge on first primary molar.

Round all surfaces ending with an ovoid shape of the tooth after preparation complete.

Circumferential chamfer on cervical at gingival margin.

67

Use the try-in crowns to avoid contaminating the internal surface of the zirconia crown with blood or saliva.

Try-in all crowns at the same time if multiple teeth are being restored.

PASSIVE fit with finger pressure only.

Avoid excessive contact in occlusion.

Check occlusal relationship to determine if there will be adequate clearance--important step with marked attrition due to bruxing.

Primary tooth enamel is thinner, less mineralized, more porous and aprismatic compared to permanent enamel.

Zirconia crowns do not cause excess enamel loss to occluding primary molars.

Johnson-Harris D, Chiquet B, Flaitz C et al. Wear of primary tooth enamel by ceramic materials. *Pediatr Dent* 2016;38:519-522.

Rinse prepped tooth thoroughly. Saliva will bind to the internal area of the zirconia crown and impede bond.

Blood may show through zirconia. Hemostasis must be achieved prior to cementation.

If not using try-in crowns, clean contaminated inside of crown with alcohol, peroxide, sandblast with aluminum oxide or Ivoclean by Vivadent prior to placing cement.

Fill the crown completely with glass ionomer cement.

Pure GI may be preferred to RMGI due to no issues with Bis-GMA resin polymerization shrinkage.

Pure GI is less expensive.

Do not disturb until cement is set.

Special zirconia diamond burs are available for adjustment with copious water spray. Kit available for adjusting occlusion.

May reduce collar with zirconia diamond in high speed with copious water coolant--excessive heat will cause micro-fracture of zirconia. Better to avoid.

Occlusal or interproximal adjustment may jeopardize the integrity of the crown. (microfractures)

Adjust opposing primary molar if occlusion high.

Common Problems

Inadequate subgingival preparation.

Inadequate prep around the collar of the tooth.
Proper reduction with this step will not only make prep smaller, but permit use of a crown closer in size to the original tooth.

Inadequate interproximal reduction and slanting bur. KEEP BUR VERTICAL.

Vertical walls of prep should be rounded near occlusal to avoid internal binding.

Remove size with spoon or coarse prophylactic paste.

Zirconia 9X stronger than enamel.

Autoclave, chemoclave, or glutaraldehyde for sterilizing.

Code D2929 - Prefabricated porcelain/ceramic crown- primary tooth

Space Maintenance & Chair-side Fabrication of Space Maintainers

Chairside Fabrication for Band & Loop or Distal Shoe

Pre-formed bands

Pre-crimped/pre-contoured crowns

Adjustable

Why?

No impression

No return visit with chair-time

No wait-time

Can immediately be delivered during sedation or GA

Can not bill until delivered

2-4 procedures pays for kit

**First permanent molar unerupted
or partially erupted**

Space maintainer *necessary* to avoid mesial drift of second primary molar into the extraction site and premolar blocked out by first permanent molar.

Tunison W. Flores-Mir C, ElBadrawy H, Nassar U, El-Bialy T. Dental arch space changes following premature loss of primary first molars: a systemic review. *Pediatr Dent* 2008; 30:297-302.

Band the second primary molar.

The loop extends to the distal of the primary canine just below its contact point.

Loop is wide enough to permit unobstructed eruption of the premolar.

Remember dental age when deciding when to place the band & loop.

Band & Loop



Loss of the Second Primary Molar before the eruption of the first permanent molar

Band the first primary molar AS SOON AS THE FIRST PERMANENT MOLAR BEGINS TO ERUPT and extend the loop distally to the mesial of the erupting first permanent molar.

Loss of the Second Primary Molar before the eruption of the first permanent molar

Band the first primary molar AS SOON AS THE FIRST PERMANENT MOLAR BEGINS TO ERUPT and extend the loop distally to the mesial of the erupting first permanent molar.

Distal shoe if first permanent molar is unerupted.
