

MTA Apical Barrier placement using paper points:

Why you want to use an MTA apical barrier placement:

-anything above a size 50K file you start having an apex which is irregular in shape and increases your risk of voids.

-if you try to do a calcium hydroxide multiple dressing apexogenesis, the multiple visits increases overheads and increases the period of time that the patient has a temporary restoration, increasing the risk of fracture

-in immature teeth, the canal is cylindrical with parallel walls rather than a tapered cone. If you try to obturate it with GP points, you could have a tight coronal fit with loose apical fit i.e voids. Plus, you may have length control problems. If you use rotary files and make the canal tapered, you'll end up making the dentine walls thinner and they are probably already too thin.

1/ Anaesthetize and Isolate.

2/ Determine the working length of the tooth. Note that apex locators may give inconsistent readings so it's good to also confirm the WL using radiographs and the "paper point past the apex" method.

3/ If the dentine walls are thin, you don't want to use files to shape the walls. Use the largest fitting GP you can fit into the tooth and "pump" it in the canal to brush against the walls and to disturb irrigant to promote biofilm removal. Alternatively, use a length controlled Endoactivator tip. You don't want to instrument past the apex as damage to the periapical tissues will result in bleeding which can impair your MTA placement and impair the properties of your MTA.

4/ irrigate in this order: EDTA, then NaOCl then saline or distilled water. The reason why you should finish with saline or distilled water is because NaOCl mixed with MTA will stain and EDTA mixed with MTA will be more soluble. Do not use LA as anaesthetics are mildly acid.

5/ determine the largest paperpoint that can fit to length in the tooth. Bend the paper point at that length.

6/ dry the canals. The wetter the canals, the more likely the MTA will stick to the walls rather than sliding down the canals.

7/ MTA is typically mixed into a putty. However, for an apical barrier placement, a drier and "crumbly" mix is better. This is because it's far easier to push solid than it is to push liquid.

8/ Place the smallest practical amount into the orifice and push down to length with your length-controlled paperpoint. If the paperpoint does not go to length, you may have placed too much MTA into the canal and there is now a pocket of air blocking your MTA from being packed down. If this has occurred, you need to place file to the obstruction and disrupt the MTA and break the pocket of air.

Alternatively, you can use a Buchanan Plugger (KavoKerr) or the largest GP point.

	Largest matching paperpoint	Standard GP points (not greater tapered)	Buchanan Plugger
Keeps the canal dry	1	2	2
Fits the canal *depends on size and taper of canal	ISO sizes, 02 taper	ISO sizes, 02 taper	#0 (Yellow): NiTi size ISO 25, taper 03, SS ISO 75 taper 02 #1 (Blue) NiTi size ISO 40, taper 03, SS ISO 120 taper 02 #2 (Red) NiTi size ISO 70, taper 03, SS ISO 120 taper 02
Won't deform	3	2	1
Cleans residue off walls	1	2	2

Ranking 1 = best, 2 = average, 3 = less ideal

*Paperpoint and gutta percha tip, many smaller sizes have pointy ends. If you are trying to push down MTA with smaller tips you want a flat end to push it to the end:

-if you cut 2.5mm off the tip you'll have a flat end with a jump in tip size by ISO 5. e.g cut the 2.5mm off the tip of a size 30 and you'll have a tip size of ISO 35.

9/ As you progressively pack MTA you will find that the plugging instrument cannot reach as far. Once you are 4mm short of your working length you can stop and take a radiograph to confirm the density of your packing.

10/ Once you have you reached 4mm barrier placement, gently irrigate with distilled water or saline. Dry and clean canals with paperpoints.

11/ Then obturate with warm backfill (e.g. System B GP Extruder, KavoKerr) or place a Carrier based GP (GuttaCore, Dentsply). Or, if a direct post is to be placed, consider placing Cavit on top of your MTA so that the canals can be etched and washed with less risk of disrupting your setting MTA.