APPLICATION OF MTA APICAL PLUG IN A TRAUMATIC TOOTH IN SURGERY ROOM

Real I.[1,2*], Arezes M.[1,2], Melo-Ferraz A.[1,3,4], Lobo M.[1,3,5], Miller P.[1,3,6]

[1] Dentist;
[2] Student of Pos-Graduation in Endodontic in IUCS-CESPU;
[3] Teacher of Pos-Graduation in Endodontic in IUCS-CESPU;
[4] Guest Assistant in Conservatory of Dentistry Department in IUCS-CESPU;
[5] Clinical Monitor in Conservatory of Dentistry Department in IUCS-CESPU;
[6] Assistent Teacher in Conservatory of Dentistry Department in IUCS-CESPU;
* – Presenting Autor

INTRODUCTION

Endodontic treatment, in cases of **traumatic teeth with immature apex**, requires **special care**, due to anatomical particularities: **Wide root canal, little thickness of dentine walls, absence of apical constriction and apical divergence**. [1]

Currently, there are several apexification techniques using calcium hydroxide, Mineral trioxide aggregate (MTA) or other materials based on calcium silicate, as well as regenerative endodontic treatments (RET). [2,3,4]

CASE APRESENTATION

Patient: Female, 8 years old, buccal fistula associated with tooth 11 and also discolored tooth.

Anamnesis: Parents reported a history of trauma a year and a half ago and dental phobia. Conventional behavioral control techniques and conscious sedation have already been done without success.

Diagnosis: pulp necrosis, chronic apical abscess and incomplete root formation.

Treatment Plan: apexification with an MTA apical plug (MAP), in a surgery room.

Picture. 1. Inicial X-ray showing radiollucence around immature apex of UR1

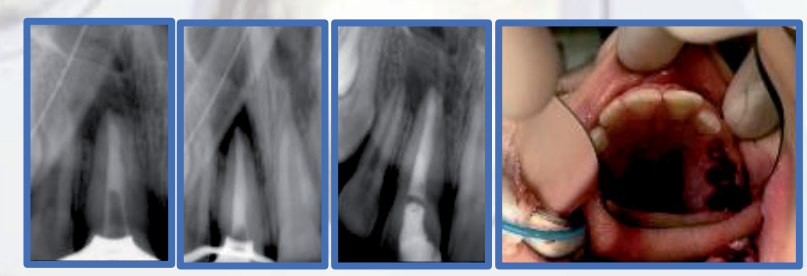
CLINICAL PROCEDURE

Already with patient in surgery, rubber dam isolation was done, removal of the infiltrated restoration and pre-endodontic restoration were placed as well as cavity acess.

Debridement of the necrotic tissue was performed with #80 K file at working length, proceeding to permeabilization, conformation and cleaning of the root canal with irrigation NAOCL 5.25% + EDTA 17% + Alcohol 96%, with sonic activation of NAOCL.

Drying with sterile paper tips and placement of MTA (White Pro-Root MTA; Dentsply Maillefer, Ballaigues, Switzerland), at 1mm from working length, condensation with plugger at 5mm from CT. (Picture 2)

The Backfill technique was performed with B&L SuperEndo β ® using AHPlus ® cement. (picture 3) Ionoseal (Voco®) was used for intra-coronary sealing and Flow Composite composite provisionalization. (Picture 4)



Picture 2 MTA apical plug | Picture 3 Backfill | Picture 4 Final X-ray | Picture 5 Final photo

METHODS

The bibliographic survey was carried out by searching the PUBMED (National Institute of Health - NIH) and WEB OF SCIENCE databases. It were used as keywords in English / Portuguese, consulted in the MeSH vocabulary (Medical Subject Headings): apexification/apexificação; trauma/trauma; dental pulp necrosis/necrose da polpa dentária; mineral trioxide aggregate/agregado trióxido mineral; calcium hydroxide/hidróxido de cálcio.

DISCUSSION

The apexification technique using calcium hydroxide for a long period of time (6 months to 2 years) has been historically used, but several studies have shown that long term used on immature teeth weakens the root structure and causes tooth staining. [2]

In the other hand, MTA has a high potential in endodontic treatments due to its ability to induce the formation of mineralized tissue. [5.6]

Its sealing capacity, resistance to microleakage and the fact that it can be used in a humid environment or with the presence of blood, makes it suitable for use as an apical barrier in teeth with immature apex. [7]

Due to this fact, reducing the apexification time for a single session allows definitive restoration to be carried out briefly in order to achieve the coronary resistance, reducing the risk of fracture - many authors have suggested the apexification in a single session. [8] In this case, apexification with MTA apical plug (MAP) was performed in the surgery room, due to the patient's phobia - previously, conventional behavioral control techniques and conscious sedation were performed, which were not effective for the treatments. In the 4-month follow-up, the patient is asymptomatic, with no clinical evidence of a fistula and the periapical radiograph shows signs of lesion regression. (Picture 6)

Picture 6
Follow-up after 4 months

CONCLUSION

There are several protocols to perform endodontic treatment on teeth with immature roots. The placement of an MTA apical barrier facilitates the achievement of an apical seal. **In patients with behavioral changes, apexification with an MTA plug offers high predictability in relation to apical sealing, allows for a reduction in the number of sessions as well as less dependence on the patient's collaboration.**

REFERENCES

1 - Morabito A, Defabians P. Apexification in the endodontic treatment of pulpless immature teeth: indications and requiriments. J Clin Pediatr, 1996; 20(3): 197-2.
2 - B. Rosenberg, P. E. Murray, and K. Namerow, The effect of calcium hydroxide root filling on dentin fracture strength, Dental Traumatology, 2007; 23: 26-29.
3 - Felippe WT, Felippe MC, Rocha MJ. The effect of mineral trioxide aggregate on the apexification and periapical healing of teeth with incomplete root foramation. Int Endod J. 2006;39:2–9
4 - Murray, P. E., et al. Regenerative endodontics: a review of current status and a call for action. J Endod, 2007, 33(4): 377-390.
5 - Main C, Mirzayan N, Shabahang S, Torabinejad M. Repair of root perforations using mineral trioxide aggregate: a long-term study. J Endod, 2004; 30: 80–3.
6 - Yaltirik M, Ozbas H, Bilgic B, Issever H. Reactions of connective tissue to mineral trioxide aggregate and amalgam. J Endod, 2004; 30: 95–9.
7 - Fisher E, Arens DE, Miiller CH. Bacterial leakage of mineral trioxide aggregate as compared with zinc-free amalgam, intermediate restorative material, and super EBA as a root-end filling material. J Endod, 1998; 24 (3): 176-179.
8 - Hachmeister DR, Schindler WG, Walker WA, Thomas DD. The sealing ability and retention characteristics of mineral trioxide aggregate in a model of apexification. J Endod, 2002; 28: 386–90.