The use of MTA-based endodontic cements in root perforation treatment.

Nayara Rodrigues Nascimento Oliveira Tavares, Jéssica Monteiro Mendes, Alexia da Mata Galvão, Maria Antonieta Veloso Carvalho de Oliveira.

Introduction

Mineral trioxide aggregate (MTA) is considered a gold-standard material for various endodontic procedures. It is indicated for applications such as pulp capping, perforation sealing, repair of apical resorptions, apexicification and parendodontic surgeries (Altan et al 2015, Sousa et al 2015).

The perforation in the furcal region, among all types, is the one with worst prognosis. The earlier you perform the perforation treatment, the greater the maintenance chances of the dental element. Various materials have been suggested for furcal perforations repair, such as amalgam, cavit, composite resin, glass ionomer, super EBA or calcium hydroxide. Today, MTA is the material with best response because it has essential characteristics for tissue repair: it's atoxic, radiopaque, bacteriostatic/bactericidal and non-resorbable (Haghgoo et al 2013, Baroudi et al 2016).

Some authors show that despite all the positive aspects, the MTA formulations presented manipulation and insertion difficulties, a characteristic that has been modified, as in the current formulation of MTA Repair HP (Angelus Indústria de Produtos Odontológicos S/A, Paraná, Brazil), which presents more favorable consistency for insertion, especially in small perforations (Baroudi et al 2016).

Machado et al. (2013) described the successful use of mineral trioxide aggregate in the treatment of large furcal perforations due to its sealing ability, biocompatibility, bactericidal effect, radiopacity and fixability in the presence of tissue or blood fluids.

The objective of this article is to describe the case report of perforation and extensive lesion in the furcal region with MTA Repair, HP, chosen due to these characteristics, increasing the chances of periradicular tissues repair, even in the case of extensive perforation.

Case report

Patient, 28 years, male, attended to the dental clinic for making a full crown on element 46. Through radiographic examinations, it was possible to verify the presence of extensive lesion in the furcal region (Figure 1A). In the first session, resin reconstruction was performed to facilitate insulation, perforation location (Figure 1B) and placement of intracanal medication based on calcium hydroxide (Biodinâmica, Ibiporã, Brazil) associated with physiological saline ,and temporary restoration of the opening with IRM (Dentsply).

After 15 days, the endodontic retreatment was started with the use of rotary files (Pro Taper Retreatment, Dentsply) (Figure 2A) and eucalyptol for removal of the sealing material. With canals already prepared (Figure 2B), it was placed new medication in the canals and perforation, followed by temporary restoration.

After 30 days, the intracanal medication was removed and the perforation was sealed with MTA-based reparative cement (MTA Repair HP, Angelus Indústria de Produtos Odontológicos S/A, Paraná, Brazil). The cement was manipulated, dispensing the first drop of the liquid (distilled water and plasticizer) in a ratio of 3 drops of liquid to 1 portion of powder (Figure 3A and 3B), reaching a homogeneous consistency, which could be manipulated (Figure 3C) .

The insertion was done with a small MTA Applicator (Angelus Indústria de Produtos Odontológicos S / A, Paraná, Brazil) (Figure 4) and adapted with a

condenser. After checking the adaptation of reparative cement (Figure 5), the canals were sealed with MTA-based endodontic sealer (MTA-Fillapex) and gutta-percha cones using the lateral condensation technique (Figures 6 and 7A).

Radiographically, it was observed satisfactory sealing and extravasation of the MTA-based reparative cement (Figure 7B), what wouldn't be a problem since the cement is biocompatible and will be reabsorbed in the region. The tooth was provisionally restored and sent to rehabilitation with full crown.

Conclusion

Even in situations of initially unfavorable prognosis of chronic and extensive lesion, the correct endodontic treatment and perforations repair conduct with MTA-based reparative cement allows a satisfactory result, with repair of the periradicular tissues and maintenance of the dental element.

References

1. Altan H, Tosun G. The setting mechanism of mineral trioxide aggregate. J Istanb Univ Fac Dent. 2016 Jan 12;50(1):65-72.
2. Baroudi K, Samir S. Sealing Ability of MTA Used in Perforation Repair of Permanent Teeth; Literature Review. Open Dent J. 2016; 10:278-86.
3. Haghgoo R, Abbasi F. Comparison of ProRoot MTA and Root MTA in Repairing of Furcal Perforation of Primary Molars: A Laboratory Study. Iran Endod J. 2013; 8(2):52-4.
4. Machado R., Tomazinho L., Randazzo M., Silva E., Vansan L. Repair of a large furcal perforation with mineral trioxide aggregate:a 21-month follow-up. Endod Pract Today. 2013;7:239–242.
5. Souza LC, Yadlapati M, Dorn SO, Silva R, Letra A. Analysis of radiopacity, pH and cytotoxicity of a new bioceramic material. J Appl Oral Sci. 2015 Jul-Aug;23(4):383-9.

Legend

Figure 1: Initial clinical and radiographic aspects (Figure 1A, 1B)

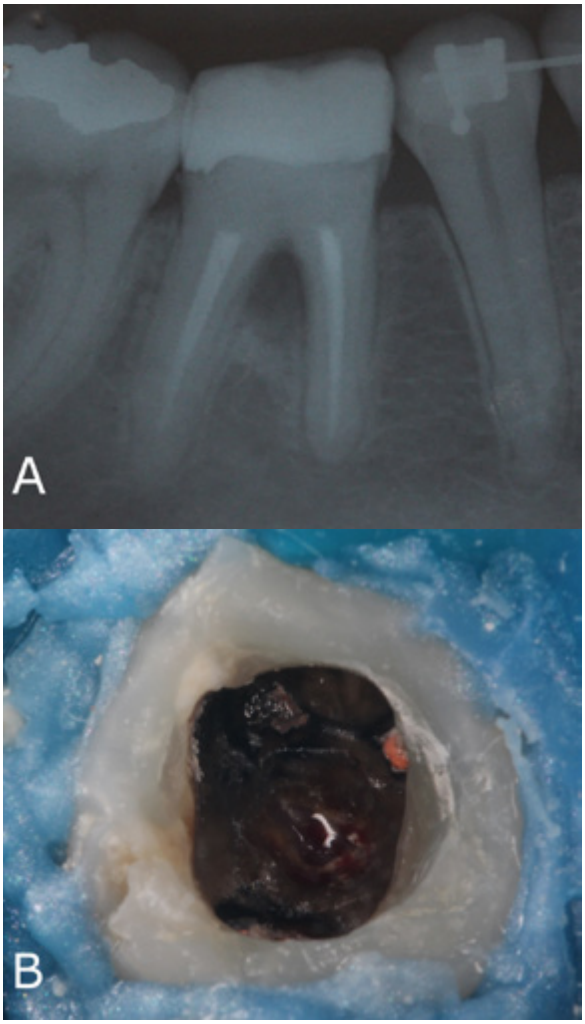


Figure 2: Removal of the sealing material with ProTaper Retreatment (Figure 2A, 2B)

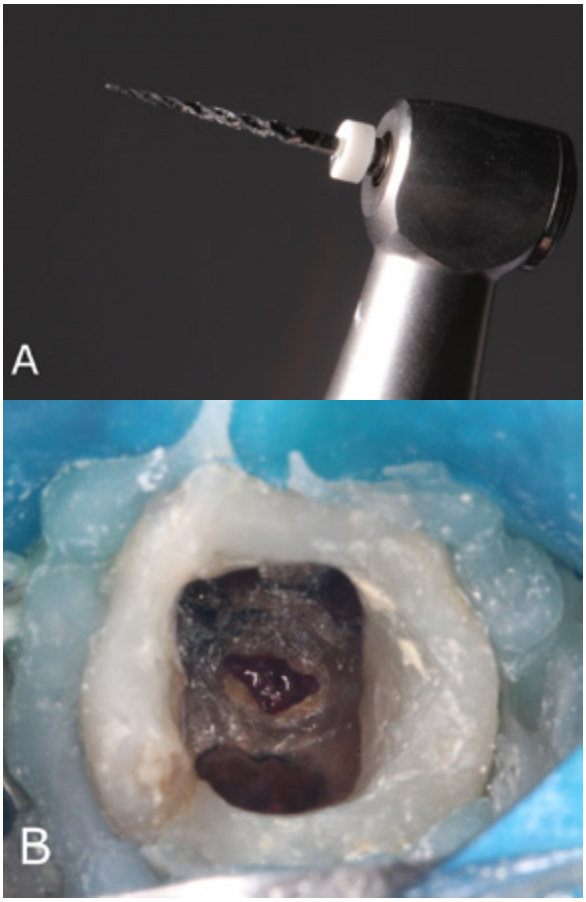


Figure 3: Manipulation of the reparative cement MTA REPAIR HP (Figure 3A). Powder (Figure 3B). Liquid (Figure 3C). Manipulated cement

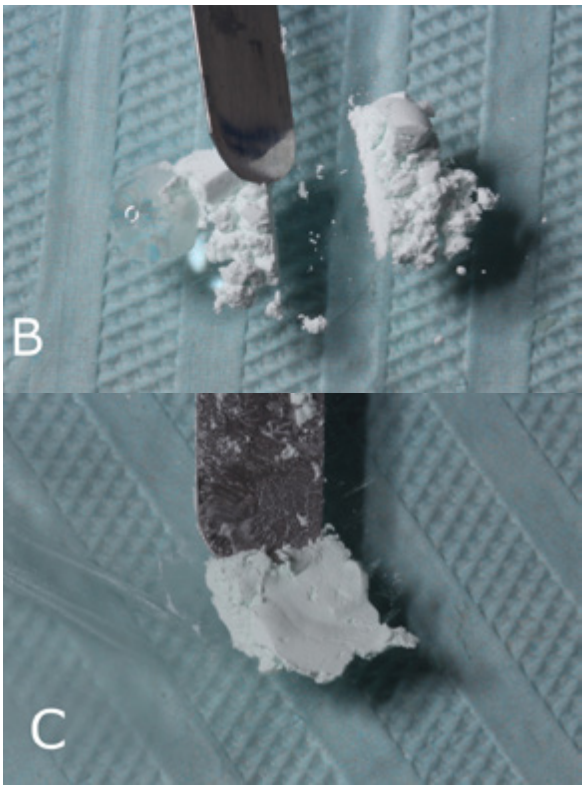
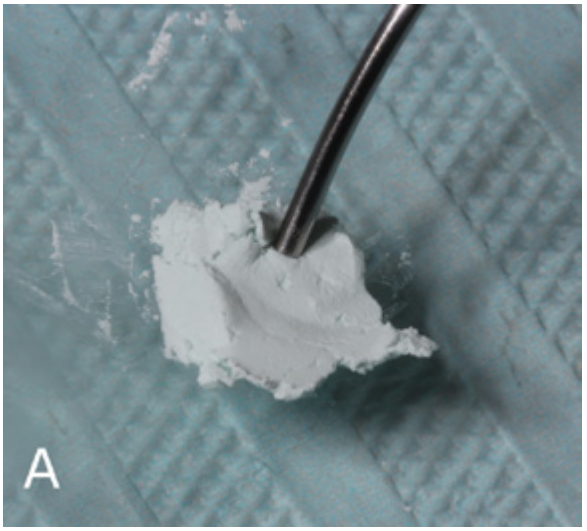


Figure 4: Insertion in the perforation with MTA Applicator (Figure 4A, 4B)



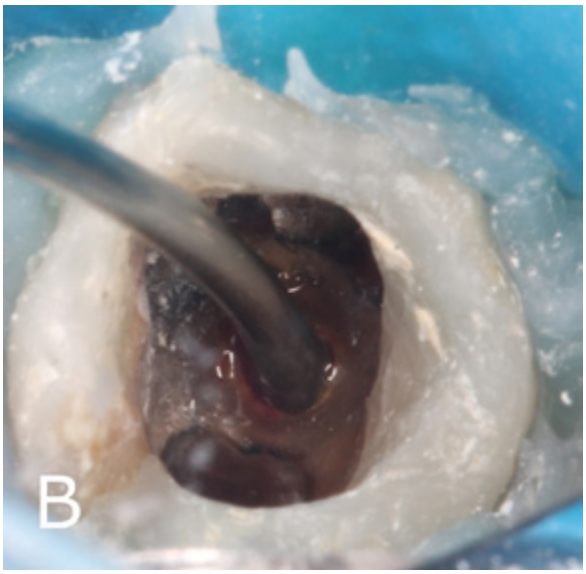


Figure 5: Perforation filled by the cement

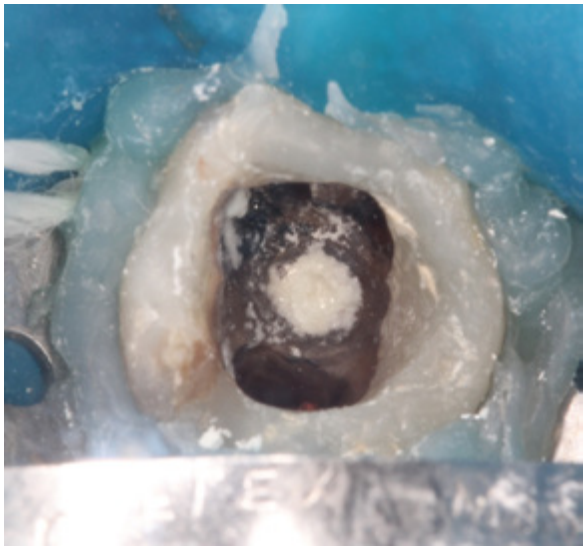


Figure 6: Seal with MTA-based cement

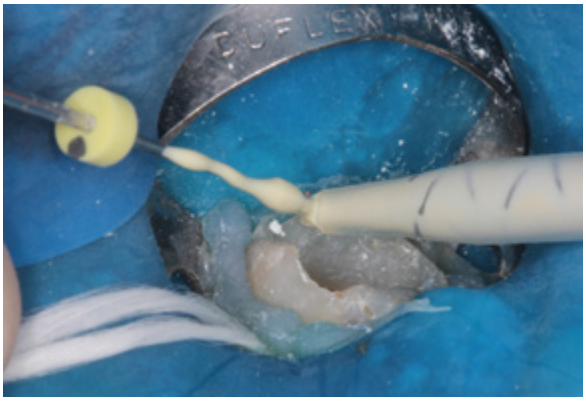


Figure 7: Final clinical and radiographic aspects (Figure 7A, 7B)