MTA placement with the Produits Dentaires (PD) MAP System

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More than 20 years ago, Torabinejad et al. (1993) first described a new root-end filling material called mineral trioxide aggregate (MTA). MTA showed in vitro better sealing ability than amalgam or Super EBA when used as a root-end filling material. Later, several in vivo and in vitro studies demonstrated more applications for MTA. Pulp capping, apexification, repair of root perforations and root-end filling are commonly associated with less inflammation, cementum formation over MTA and regeneration of the periodontal tissue (Torabinejad and Chivian 1999). Unfortunately, proper placement was not possible in this manner.

Therefore, Produits Dentaires introduced a universal carrier system for clinical and surgical MTA placement. Its Micro-Apical Placement (MAP) System offers different application points for every clinical situation. The Intro Kit and the Universal Kit are for orthograde obturation and the Surgical Kit for retrograde obturation. The NiTi Memory Shape tips can be manually shaped to any required curvature. After autoclave sterilization, the needle returns to its initial shape. With the use of the MAP System, proper placement of MTA has become an easy task for every dentist. In combination with the MAP System, Produits Dentaires offers a white MTA specially developed for placement with the MAP System. The optimized practical size means economical application for each treatment. There are many indications for the PD MTA White and with the MAP System, proper placement is easy in every situation.

Pulp capping

Vital pulp therapy has become more popular in recent years. Calcium hydroxide has been the most common material for pulp-capping, but MTA has shown even better results in biocompatibility and outcome (Aguilar and Linsuwanont 2011). Cases with large carious pulp exposure can be treated successfully with partial pulpotomy and MTA as a capping agent, keeping teeth vital (Figs. 1a–e).

Apexification

In order to prevent extrusion of root canal filling material in immature teeth with open apices, MTA is used as an apical plug. The results of many studies have shown that MTA induced apical hard tissue formation more often and its use was associated with less inflammation than with other test materials (Simon et al. 2007) (Figs. 2a–g).

Repair of root perforations

Accidental perforation of the pulp chamber or of the root canal significantly changes the prognosis of the tooth. Perforation repair with a biocompatible sealing material such as MTA may save compromised teeth (Mintz et al. 2014) (Figs. 3a–e).

Apical surgery

MTA is the material with the most favorable outcome as a root-end filling material for apical surgery. MTA has been associated with significantly less inflammation, cementum formation over MTA and regeneration of the periodontal tissue (Torabinejad and Chivian 1999) (Figs. 4a–f).

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Fig. 1a–e: (a) Deep carious lesion. (b) Partial pulpotomy. (c) MTA application with the MAP System and PD MTA White. (d) Filling. (e) Post-op radiograph showing the pulp capping with MTA.

Fig. 2a–g: (a) Endodontically treated tooth with fistulae. (b) After retreatment, the tooth showed an open apex. (c) MTA application with the MAP System and PD MTA White. Condensation of the MTA with pluggers (d) or paper points (e). (f) MTA plug. (g) Post-op radiograph showing the MTA plug and the reconstruction with a fiber post.

Fig. 3a–e: (a) Radiolucency in the cervical part of the canine. (b) Bleeding from the perforation. (c) MTA application with the MAP System and PD MTA White. (d) Original canal and repair of root perforation. (e) Post-op radiograph showing the root canal filling.

Fig. 4a–f: (a) Pre-op radiograph with a large periradicular lesion. (b) Periapical surgery. (c) MTA application with the MAP System and PD MTA White. (d) Condensation of the MTA with pluggers. (e) Mirror view of the root-end cavity filled with MTA. (f) Post-op radiograph showing the root-end filling.