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CASE STUDY

BIODENTINE AS A RECENT DENTINE SUBSTITUTE FOR PULP CAPPING

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ABSTRACT

Biodentine material has been recently introduced in dentistry in order to provide dentin substitute for coronal and radicular pulp. Although number of materials like Amalgam, GIC, Composite and MTA are available in market for repair of dentin loss in tooth structure, none of these possesses ideal properties. Despite of number of advantages of MTA, its limitations cannot be overlooked. These drawbacks have been overcome by a new calcium silicate based material named Biodentine which has good handling properties, short setting time and improved mechanical properties. In nut shell it is able to act as a promising dentin substitute in coronal and radicular portion of tooth.

INTRODUCTION

Biodentin is the best material offering bioactivity and outstanding sealing properties to fully replace dentine, both in the crown and in the root with unique benets: 1. Preservation of pulp vitality 2. Prevention of clinical failures 3.Ultimate dentine substitute

Chemical Composition

Biodentine is conditioned in a capsule containing the good ratio of powder and liqud. Properties of the different components: 1• Tricalcium silicate (3CaO.SiO2): It is the main component of the powder. It regulates the setting reaction. • Dicalcium silicate (2CaO.SiO2): It acts as second main core material •2. Calcium carbonate (CaCO3): It acts as filler. 3• Zirconium dioxide (ZrO2): It is added to provide the radio-opacity to the cement. 4• Calcium chloride (CaCl2 .2H2 O): It is an accelerator. 5• Water reducing agent (Superplasticiser): It is based on polycarboxylate but modified to obtain a high short-term resistance.

Case report

A 24-year-old patient presented with a deep carious lesion on the facial surface of the mandibular canine. There was no past history of pain, and the tooth pulp tested vital to EPT and cold test with no lingering pain.

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There was no radiographic evidence of periapical pathology Figure 1. During caries removal with a spoon excavator hand instrument, a small carious pulpal exposure was visualized Figure 2. Because there was no history of pain and the pulp was vital, the decision was made to do a direct pulp cap with Biodentine provided as tricalcium-silicate powder in a capsule. The Biodentine liquid is provided in a unit-dose form. The capsule was tapped on the tabletop several times to loosen the powder. After opening the dispensing bottle, five drops of the Biodentine liquid was added to the powder-containing capsule and the capsule was closed.

The capsule was then mixed for 30 seconds at 4,200 rpm in an automatic mixer (triturator). When the capsule was opened, the mix had a putty-like consistency (Figure 3). The Biodentine was dispensed onto a mixing pad and was applied to the cavity preparation using an amalgam carrier. The cavity preparation was bulk-filled and the material was adapted and contoured using a plastic filling instrument, then allowed to set for 10 minutes. Excess restorative material was contoured with disks (Figure 4).

The primary author has been involved in physical property testing of Biodentine as a liner/base. During a typical restorative timeline, after liner/base placement, adhesive and composite placement, finishing and polishing, the restoration would not be functional for an additional 10 to 20 minutes. Based upon the physical properties, Biodentine can be placed as a liner–base, allowed to set for 5 minutes, and then the preparation can be restored with composite resin.

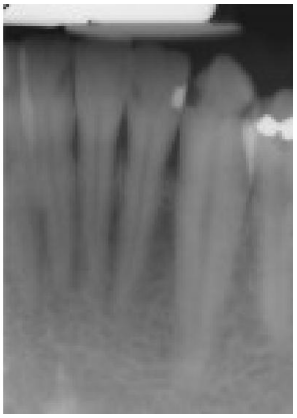

Fig .1.

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

One month after placement, the tooth was evaluated for pulp vitality and tested normal to cold and EPT. The restorative material was removed, leaving a thin liner to not disturb the pulp cap, and the adjacent premolar was also prepared Figure 5.

Conclusion

For caries-exposed vital pulps where there is already inflammation of the pulp, it is difficult to get a consensus on decision-making for direct pulp-capping. The goal for a permanent tooth with deep caries and the potential for exposure of pulp that is vital, asymptomatic, and exhibits no radiographic evidence of periapical infection is to maintain pulp vitality. An indirect pulp cap is preferable. A tricalcium-silicate cement (Biodentine) is a treatment choice. The patient needs to understand that the tooth is still at risk for need for endodontic treatment at a later time. Follow-up evaluations are crucial to evaluate pulpal vitality. To these authors, this innovative bioactive tricalcium-silicate cement is a “heroic” material. Its recommended clinical uses are for those clinical situations where the conditions are challenging and the prognosis is questionable. These clinical uses include restoring root perforations, restoration of internal and external resorption, and apexification.

REFERENCES

About I. Dentin regeneration in vitro: the pivotal role of supportive cells. *Adv Dent Res*., 2011;23(3):320-324.

Aguilar P., Linsuwanont P. Vital pulp therapy in vital permanent teeth with cariously exposed pulp: a systematic review. *J Endod*. , 2011;37(5):581-587.

Al-Hiyasat AS., Barrieshi-Nusair M. and Al-Omari MA. The radiographic outcomes of direct pulp-capping procedures performed by dental students: a retrospective study. *J Am Dent Assoc*., 2006;137(12):1699-1705.

Bergenholtz G., Spångberg L. Controversies in endodontics. *Crit Rev Oral Biol Med*., 2004; 15(2):99-114.

Ward J. Vital pulp therapy in cariously exposed permanent teeth and its limitations. *Aust Endod J*., 2002; 28(1):29-37.

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