

# Management of Perforated Hopeless Tooth with Absorbable Gelatin Sponge

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## ABSTRACT

Root perforation is an artificial communication between the root canal and periodontium, it considered one of post preparation complications. It may be caused by pathological causes such as resorption and caries or iatrogenic causes such as in R.C.T. successful treatment depends on immediate sealing of the perforation. A wide variety of materials and techniques are used to deal with perforation. one of the most successful materials is an absorbable gelatin sponge, which is biocompatible with tissues. An absorbable gelatin sponge helps in packing of repair materials such as MTA (mineral trioxide aggregate) and control hemorrhage in perforation site.

## Case Report

A 28 years-old male patient came to the clinic with sharp pain in his upper right deciduous second molar. The main chief complaint was accumulation of food between teeth 16 and E, with no medical history. Clinical examination detect pain with apical and lateral percussion and large carious cavity in the distal side. A periapical radiograph showed up single rooted tooth, radiolucency in the subcrestal area and widening in the lamina dura (Figure 1). The treatment plan was to seal the perforated area with absorbable gelatin sponge and MTA. The sponge is used to hold the MTA and act as a barrier. The tooth was necrotic so no need to anesthesia. The access cavity was created, and canal orifice was located under the isolation using rubber dam the treatment started with C files manually, working length was obtained with 15 K file using apex locater and affirmed with ra-

diograph (Figure 2). EDTA was used to help in determine clear and accurate working length, length 19 with type 5 canal (Figure 3).

Cleaning and shaping completed with rotary system till file 30 taper 4%. Calcium hydroxide was placed for 12 days to sterilize canal from bacteria. Piece of sponge placed in the perforated area in distal side, flowable MTA was pressed in the perforated side. MTA was allowed to seat for 24 hours. The preparation of the root canal was by using crown-down technique. Obturation performed by lateral compaction technique and bio-ceramic sealer. After the obturation, the sponge and MTA were seated. The obturation was followed by placement of composite restoration. After 3 months the patient came to clinic to follow up. Clinical examination showed that no pain with percussion and no pocket depth. Radiograph showed complete healing and good seal (Figure 4).

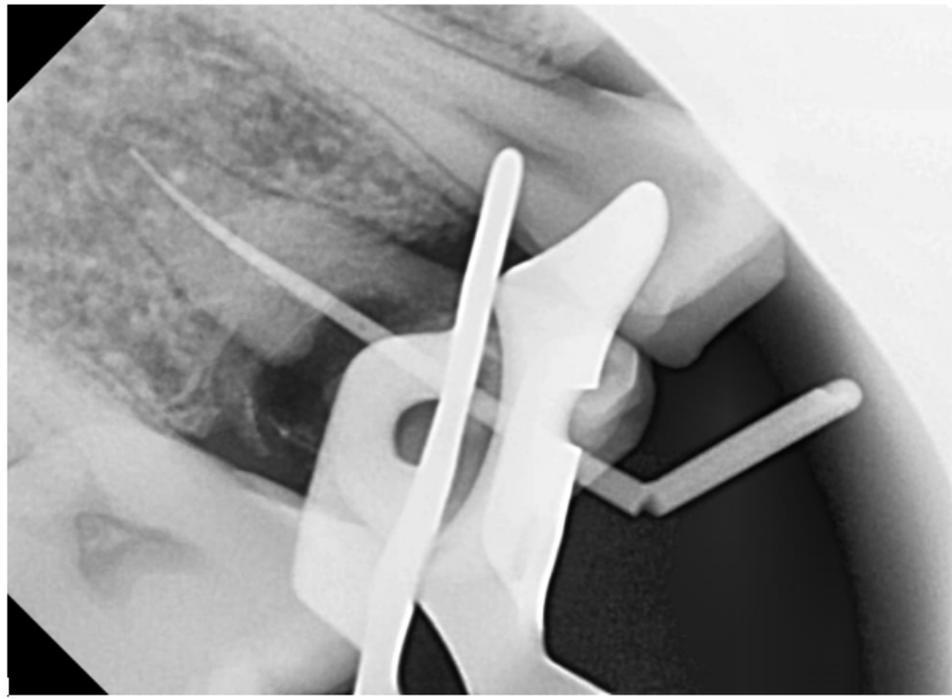


Figure 1.



Figure 2.



Figure 3.



Figure 4.

## Discussion

Perforation is a communication that happened between periodontium and root canal space, it can be pathological or iatrogenic such as caries, resorptive defect and after root canal treatment. Indeed, perforation occur during root canal therapy may account for as many as 10% of all failed endodontic case [1]. Treatment of perforations and the subsequent prognosis of the affected teeth depend on many factors [2].

1. Age of Lesion and Degree of Bacterial Contamination: are the most important in terms of prognosis. Regardless of the cause of the perforation, it must be isolated and obturated as quickly as possible to avoid any bacterial contamination.
2. Site of Perforation: affect the chance of bacterial communication and accessibility of the perforation of treatment.
3. Size and Shape of Perforation: a large oval perforation is more difficult to obturate and seal than a round perforation.
4. Choice of Material for Perforation: repair depends on the clinical situation. The main aim is to provide a long-lasting repair that creates a good seal using a biocompatible material.

A variety of different materials can be used to repair perforations; the choice depends on the site of the perforation and the type of the treatment to be performed. Materials are includes Indium foil, Amalgam, Plaster of Paris, Zinc Oxide Eugenol, Super EBA, IRM (Intermediate Restorative Material), GuttaPercha, Cavit, Glass Ionomer Cement, Metal- Modified Glass Ionomer Cement. Recently Composite, Dentin chips, Decalcified Freezed Dried Bone, Calcium Phosphate Cement, Tricalcium Phosphate Cement, Hydroxyapatite, Calcium hydroxide, Portland Cement, MTA (Mineral Trioxide Aggregate), Biodentine, Endosequence, Bioaggregate and New Endodontic Cement [3]. The material that is currently favored for the treatment of perforations, especially those in the pulp chamber floor, and for the treatment of teeth with open apices is mineral trioxide aggregate. This material, which is entirely mineral in composition, is a form of Portland cement. It has been shown to be very biocompatible and to form a good seal, though its mechanism of action remains unclear [2].

Hyaluronic acid (HA) sponge as a natural polymer has been used in dental pulp regeneration [4]. The highly porous sponges

conformed to the wound, absorbed fluid and produced consistently reliable hemostasis with no secondary bleeding [5]. Placement of collagen sponge after extraction reduce early stage post-operative Complication and enhanced initial healing of soft tissues and periodontal defects [6]. The internal matrix concept of perforation repair result in higher success in the application of the materials used, in the healing and regeneration as well. Using biocompatible matrix like collagen-gelatin sponge allows a higher control during application of MTA or the material use, as it controls the moisture and bleeding and prevents contamination and the prognosis improved greatly. Rather than the effect of the sponge itself in regenerating cells. Less surgical intervention needed with this approach thus reducing cost of treatment and saving more teeth [7].

## Conclusion

Many dentists see the perforation as distressful problem. This article explain how we can deal with this problem by the using of this biocompatible septic material. The absorbable gelatin sponge was used as internal mold for MTA to seal perforation. Good isolation with good materials means good prognosis.

## References

1. Mohammed Saed S, Ashley MP, Darcey J (2016) Root perforations: aetiology, management strategies and outcomes. *The hole truth* 220(4): 171-180.
2. Stéphane Simon, DCD Wilhelm-Joseph Pertot, DCD Clinical Success in Endodontic Retreatment First published in French in 2007 by Quintessence International Paris La reprise du traitement endodontique.
3. Kakani AK, Veeramachaneni C, Majeti C, Tummala M, Khiyani L (2015) A review on perforation repair materials. *J Clin Diagn Res* 9(9): ZE09-ZE13.
4. Sahng G Kim, Jian Zhou, Ling Ye, Shoko Cho, Jeremy J Mao, et al. (2012) Regenerative Endodontics: Barriers and Strategies for Clinical Translation *Dent Clin North Am* 56(3): 639-649.
5. Stein MD, Salkin LM, Freedman AL, Glushko V (1985) Collagen sponge as a topical haemostatic agent in mucogingival surgery. *J Periodontol* 56(1): 35-38.
6. Jin-Woo Kim, Tae-Wan Seaong, Sun-Jong Kim, Sura Cho (2020) Randomized controlled trial on the effectiveness of absorbable collagen sponge after extraction of impacted mandibular third molar: split mouth-mouth design *20(1)*: 77.
7. R R Lemon (1992) Nonsurgical repair of perforation defects. Internal matrix concept. *Dent Clin North Am* 36(2): 439-457.

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