

Mineral Trioxide Aggregate Repair of Perforated Internal Resorption: A Case Report

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ABSTRACT

Internal root resorption is an unusual condition of a tooth when the dentin and pulpal walls begin to resorb centrally within the root canal.

A case of internal resorption with buccal perforation was found in a maxillary central incisor. As there was extensive lesion and continuous exudation, *envelope flap surgery* was suggested. The apical third was obturated with gutta-percha, and the perforated lesion was repaired with mineral trioxide aggregate. Thermo plasticized gutta-percha was filled in the residual canal space and composite resin was used to restore the coronal cavity. The symptoms and signs ceased, and the results were satisfactory at 2-year follow-up.

Keywords: Mineral trioxide aggregate, Internal resorption, Repair.

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INTRODUCTION

Internal resorption is a rare type of root resorption in permanent teeth, which is related to pulpal inflammation and bacterial invasion. The exact cause is unknown in most cases (1). Andreasen stated that there are two types of internal root resorption: Root canal (internal) replacement resorption and internal inflammatory resorption. He also stated that the progression of the internal resorption depended on vital tissue (1). Immediate root canal treatment would be the only treatment necessary for cases without external perforation. Sealing perforations of resorptive origin is a challenge even for experienced dentists. The most effective treatment is immediate sealing with a biocompatible material that is insoluble in the presence of tissue fluids (2) and let's surrounding tissue regenerate (3).

As a material for perforation repair, mineral trioxide aggregate (MTA) has many beneficial properties, including good sealing abilities (4) biocompatibility (5), radiopacity, and moisture resistance. There are

many studies or clinical case reports of iatrogenic perforation repair with MTA. But few, if any, reports about repair of perforating internal resorption with MTA. The following case report demonstrates surgical repair of perforating internal resorption with MTA.

CASE REPORT

A 36-year-old female suffered from labial swelling in the maxillary anterior region for many weeks. Her swelling was consistently diagnosed as originating from the maxillary incisor. The tooth was opened and debrided. But the symptoms did not subside as expected, the swelling with sinus tract was located on the attached gingival of the maxillary left incisor, and the tooth had biting and percussion pain, tenderness on palpation, and mild mobility with normal probing depth. A previous distopalatal composite resin restoration with extensive.

Secondary caries was noted. Radiographic examination (Fig.1) showed an oval radiolucent lesion in the internal root canal

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Figure 1. Maxillary left central incisor: In the middle of the third canal, oval radiolucent internal resorption lesion is seen

dentin walls. Appearance of a pink-hued area on the crown of the tooth, a condition referred as “pink tooth mummery” which confirmed it as internal resorption in the middle third of the canal. Access to the canal system was reestablished. The original canal was negotiable, but the canal could not be completely dried because of continuous exudation and hemorrhage. Surgical intervention was therefore required.

An envelope flap was elevated; an extended horizontal incision was made along the cervical lines of the teeth. The incision was made in the gingival sulcus and extended along four teeth, and then the perforated site with a bone window was exposed. The surgical field was cleaned and dried, and the root canal was instrumented and filled. Although the gutta-percha seemed under-filled when judging from a radiographic film, the working length was determined by an electronic apex locator (Root-ZXJ, Morita Corp., Osaka, Japan) and controlled with a periapical radiograph. The filling material was removed apical to the level of the resorptive lesion. This was done in order to control the internal root resorption, it is necessary to treat the root canal, aiming to remove all pulp tissue and filling material, so as to achieve a posterior better sealing and avoid gaps and infections. The labial perforation was enlarged until the border of the lesion could be curetted. The whole lesion was completely debrided and irrigated, and MTA (ProRoot, DENTSPLY/Tulsa, OK) was



Figure 2. The whole lesion was completely debrided and irrigated, and MTA (ProRoot, Dentsply) was applied and compacted into the defect

applied and compacted into the defect (Fig.2). The flap was sutured, and the canal was packed with a wet cotton pellet contacting the MTA before it was temporarily sealed.

The patient returned to clinic 1 week later with no symptoms or signs. The sutures and temporary sealing materials were removed. The residual canal space coronal to the MTA was backfilled with a warm gutta-percha system (Obtura II, Obtura-Spartan Inc., Fenton MO). The tooth was restored with composite resin. A 2-week follow-up evaluation found that the sinus tract had healed. The clinical examinations and radiographic findings showed satisfactory results (Fig.3).

DISCUSSION

MTA is known as a biocompatible material that may induce cementum formation around the furcal perforation in animal study (6). The clinical applications to human subjects also have proved that MTA is good for solving the problem derived from perforation—it is not interfered in the presence of moisture and inhibits the activity of bacteria (7). A good success rate can be achieved with MTA (3) usage of MTA for repair of root perforations is recommended.

Few if any, studies associated with MTA repair of perforating internal resorption could be found. In this case, the material resulted in rapid resolution of symptoms



Figure 3. After 2 years follow-up perforating lesion was healed.

and signs and successful repair of perforating internal resorption. The surgical intervention of perforation and repair with MTA may be encouraged in dealing with such cases.

Other treatment options such as non-surgical-root-canal-therapy have been suggested for internal root resorption, the prognosis for which is good, but the patient may be recalled, since resorptive defect can recur. Materials such as gutta-percha, zinc oxide eugenol, amalgam alloy have been suggested for treatment of internal root resorption but they do not provide strength to the tooth structure and may be responsible for considerable tooth discoloration. MTA is selected because of its known abilities as a repair material along with sealing abilities and mechanical strength.

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