



ENDODONTIC MANAGEMENT OF INTERNAL ROOT RESORPTION- A CASE REPORT

RAMESH CHANDRA^{a1}, ANKITA MEHROTRA^b, MARIYAM KHAN^c, NUREZ ANWAR^d, B. SRUJAN KUMAR^e AND SANCHARI SEN^f

^{abcdef}Department of Conservative Dentistry and Endodontics, Career P.G. Institute of Dental Sciences and Hospital, Lucknow, India

ABSTRACT

Resorption can be defined as either a physiological or a pathological condition that results in a loss of substance from a tissue. Radiographic features of lesion may show well-delineated to irregular bordered mottled radiolucencies and sometimes may simulate as caries. Internal root radiolucencies are not detectable on radiographs at their early stages, when they are small, or because of limitations of this 2- dimensional method. Proper diagnosis and management of this condition is key to the successful outcome. Cone beam computerized tomography (CBCT) is a more powerful tool which allows an earlier and more accurate diagnosis of these lesions. The aim of this article was to elaborate a case report of invasive root resorption with non-surgical management using biocompatible restorative material.

KEYWORDS: Endodontic, Internal Root Resorption, Root Canal Treatment, Bioactive Sealer, Resorption

Resorption can be defined as either a physiological or a pathological condition that results in a loss of substance from a tissue. In dentistry, resorption may result in the loss of dentin, cementum and/ or bone (Lin *et al.*, 2022). Due to the resorptive process, it often creates a pinkish hue as highly vascular resorptive tissue is visible through residual enamel. Orthodontic treatment seems to be the most common risk factor for Internal Cervical Resorption (ICR) followed by physical (orthodontic treatment, segmental orthognathic surgery, transplanted teeth, trauma, bruxism, and guided tissue regeneration) and chemical trauma (tetracycline conditioning of root, intracoronary bleaching, and bone grafting). Diagnosis is usually done by routine radiographic examination. Heithersay has proposed a clinical classification of ICR depending on the amount of invasion (Manjushree and Prasad, 2021). Radiographic features of lesion may show well-delineated to irregular bordered mottled radiolucencies and sometimes may simulate as caries. Internal root radiolucencies are not detectable on radiographs at their early stages, when they are small, or because of limitations of this 2- dimensional method. Cone beam computerized tomography (CBCT) is a more powerful tool which allows an earlier and more accurate diagnosis of these lesions (Agrawal and Kapoor, 2020). At the same time, new materials are offered to induce a remineralization and healing. A bioactive calcium-silicate-based formulation which promises a bioactive behaviour with high-mechanical properties and excellent biocompatibility.

CASE REPORT

A 32-year-old female patient referred to the department of Career Post graduate institute of dental sciences and Hospital, with a chief complaint of pain in the lower left back tooth region of the jaw since 3 months. The medical history was non-contributory. Clinical examination revealed pain on percussion. Well defined radiolucency was seen in the distal canal at apical third along periapical pathology resulting in widening of periodontal ligament space was seen in the pre-operative radiograph. A pre-operative radiograph of mandibular left first molar shows presence of internal resorption (Figure 1).

At the first appointment, under rubber dam isolation (Hygienic, Coltene Whaledent Inc., USA) access opening was prepared on mandibular left first molar. The patency was confirmed using a no. 10 k file. Working length determination was done by using a 15. K file (Figure 2). The presence of separate canals was confirmed using different radiographic angulations. Biomechanical preparation was done using Protaper Universal (Dentsply). Sonic irrigation with 5.25% sodium hypochlorite was done and 17% EDTA were used for simultaneous irrigation followed by 2% chlorhexidine irrigation. The canals were thoroughly rinsed with normal saline after each instrument, dried with paper points and calcium hydroxide dressing was given for 7 days and access cavity was temporized with Cavit-G (3M ESPE, USA) (Figure 3). In the next visit, if the patient does not show any symptom, root canals were irrigated again with

¹Corresponding author

normal saline and 5.2 NaOCl % alternately and dried using absorbent points master cone radiograph was taken and obturation was done in all four canals with bioceramic sealer along with the resorptive defect (Figure 4). The access cavity was sealed using the restoration of light-cured nano hybrid composite-resin Filtek Z250 XT (3M, USA). After 6 month follow-up, periapical healing was evident (Figure 5). Prosthetic rehabilitation was done following the successful results).



Figure 1: Pre- operative radiograph

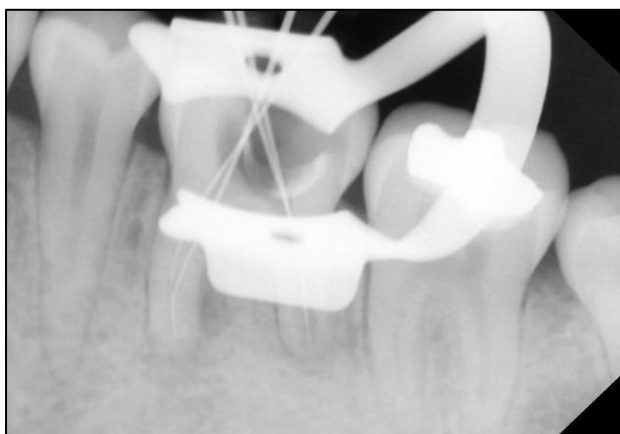


Figure 2: Working length determination



Figure 3: Master cone



Figure 4: Obturation



Figure 5: Prosthesis rehabilitation after six months follow-up

DISCUSSION

Resorption can be physiologic or pathologic condition leading to destruction of dentin, cementum, and/or bone. The clinical presentation of resorption is determined by the location and extent of lesions within the tooth. For a partially vital pulp, there may be symptoms pointing toward pulpitis, but if the resorption is inactive and pulp is necrotic, then the patient may complain of symptoms mimicking apical periodontitis. In such cases, a sinus tract indicating a root perforation or chronic apical abscess might be clinically detected. However, in the case presented, although there was a history of trauma along with occlusal caries. In these types of cases, mechanical debridement of the canal alone is not sufficient in removing the pulp tissues. So, sonic or ultrasonic irrigation along with instrumentation provides a better result (Aravelli *et al.*, 2019; Patel *et al.*, 2018; Kaval *et al.*, 2018; Fernandes *et al.*, 2013; Ikhar *et al.*, 2013; Santos *et al.*, 2011; Patel *et al.*, 2010; Estrela *et al.*, 2009; Silveira *et al.*, 2009).

CONCLUSION

Internal inflammatory root resorption is a particular category of pulp disease, which can be diagnosed by clinical and radiographic examination of teeth in daily practice. Today, the diagnosis of internal root resorption is significantly improved by the three-dimensional imaging. Furthermore, the CBCT's superior diagnosis accuracy resulted in an improved management of the resorptive defects and a better outcome of conservative therapy of teeth with internal resorption. Modern endodontic techniques including optical aids, ultrasonic improvement of chemical debridement, and thermoplastic filling techniques should be used during the root canal treatment of internally resorbed teeth. Alternative materials such as calcium silicate cements offer new opportunities for the rehabilitation of resorbed teeth.

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