Internal Resorption in Mandibular First Molar: A Case Report

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INTRODUCTION

Internal inflammatory root resorption is a rare condition in permanent teeth, which is caused by transformation of normal pulp tissue into granulomatous tissue with giant cells, which resorb dentin. It is thought to stem from chronic inflammation of the coronal pulp, trauma, caries, and restorative procedures have been suggested to be contributory factors, but it also occurs as an idiopathic dystrophic change.

Usually, it is an asymptomatic condition and discovered during routine radiographic evaluation. But its extent is difficult to measure on traditional periapical radiographic films. Also, it becomes difficult to detect on radiographs in early stages due to their small size or the 2-dimensional method.

Therefore, the use of CBCT provides a 3-dimensional appreciation of the resorption lesion with axial, coronal, parasagittal views of the anatomy. In the serial of cross-sectional views, the size and the location of the resorption are clearly determined with high sensitivity and an excellent specificity.

Hence, this case report aims to focus upon the endodontic management of internal resorption in permanent mandibular first molar tooth CBCT imaging.

History

A 18 year old male patient came to the Department of Conservative Dentistry and Endodontics, ITS-CDSR, Ghaziabad with a chief complaint of pain in left lower back tooth region from past 1 week. The medical history was noncontributory.

On clinical examination, a deep carious lesion i.r.t. 36 was found. The tooth was tender to percussion with no mobility. The preoperative IOPAR (Fig. 1) examination showed radiolucency involving enamel, dentin and pulp i.r.t. 36. Periapical radiolucency was observed in mesial root

and marked periodontal ligament widening was found in relation to distal canal. No signs of internal resorption was observed on IOPAR.

Figure 1: Preoperative IOPAR

TREATMENT PLANNING

After extensive examination, a nonsurgical endodontic therapy was planned using thermoplastic gutta-percha technique for obturation of the defect.

CASE DESCRIPTION

After anesthesia was obtained, a rubber dam was placed and the access cavity was prepared. Upon opening the pulp chamber, microscopic inspection revealed superficial necrosis and vital tissue underneath.

After crown-down preparation with ProTaper Sx and Gates Glidden Burs (Maillefer Dentsply, Baillaigues, Switzerland) and irrigation with 2.5% sodium hypochlorite, a large resorptive cavity was observed in the middle third of the distal root. Working length was determined using an apex locator (CanalPro, Coltene) and confirmed radiographically (Fig. 3).

The two mesial and one distal canal were cleaned and shaped provisionally.

Figure 2: Clinical aspect of the internal root defect after cleaning and shaping under operative microscope

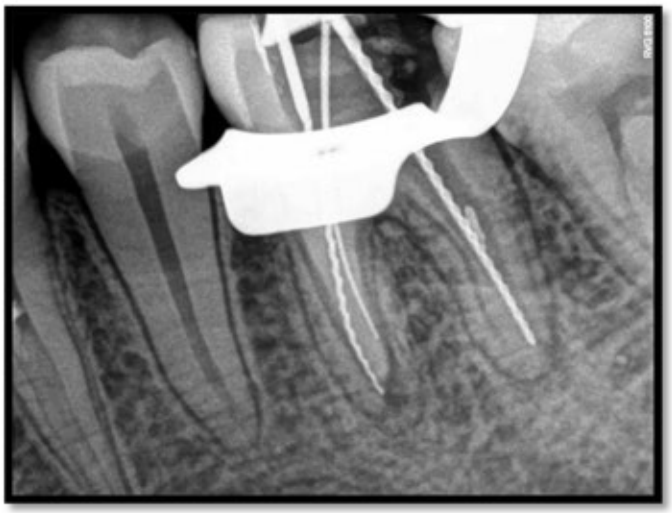

Figure 3: Working length measurement

A calcium hydroxide dressing was given. In subsequent visits, a fresh bleeding was observed in each appointment from the distal canal only, giving a hint of some pathology. This gave a signal to explore the defect using 3-Dimensional CBCT imaging.

On CBCT report (Fig. 4), ovoid well-defined radiolucency was noted in relation to the distal root canal, particularly covering the middle one-third of the canal. Since the lesion was extending buccolingually, it was not detected on IOPAR. But, CBCT images confirmed our diagnosis of internal resorption in the distal canal.

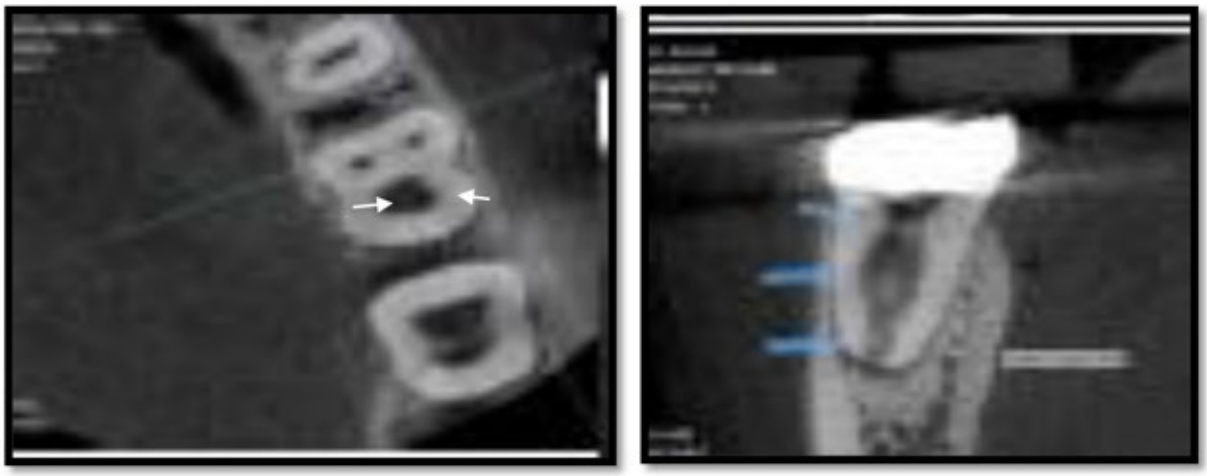

Figure 4: Intraoperative CBCT cross-sections confirm the internal resorption without perforation of radicular walls

Three dressings of Calcium hydroxide dressing were given, changed on weekly intervals for 3 weeks. Thereafter, irrigation was performed using 2.5 % NaOCl and agitated ultrasonically to remove necrotic tissue from the inaccessible areas of the resorbed cavity.

In the third office visit 3 weeks later, the resorptive cavity was completely free of pulpal tissue. An apical plug of 5mm with vertical condensation (Fig. 5) was prepared and the defect was backfilled using BeeFill obturation system(VDW, Munich, Germany) (Fig.6)

Figure 5: Filling of the apical third with vertical condensation of warm gutta-percha BeeFill obturation system(VDW, Munich, Germany)

Figure 6: IOPAR showing warm gutta percha thermocompaction in the resorbed part of the root canal

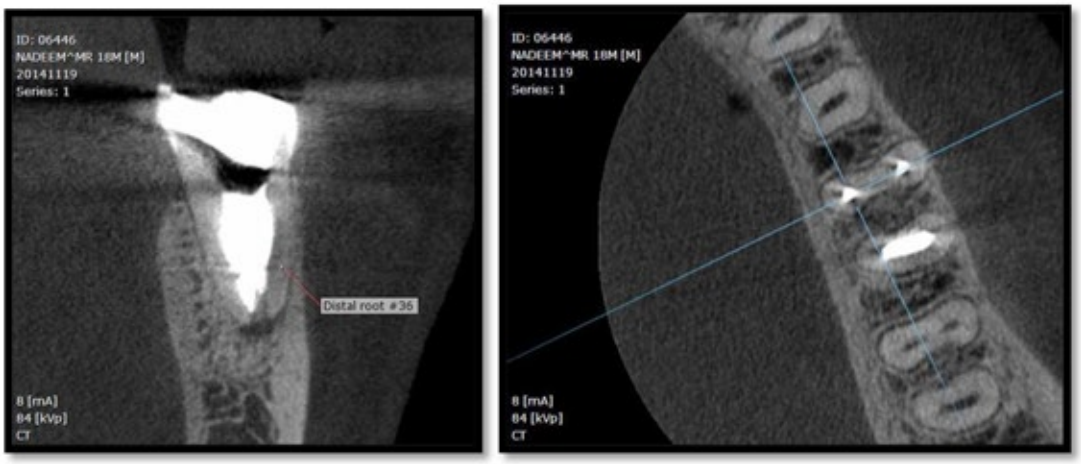

Figure 7: CBCT images of post treatment. Note the density of the filling and the absence of vacuity

Figure 8: Post treatment clinical view

Figure 9: IOPAR after Post Endodontic Restoration

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, ultrasonically agitated chemical debridement, and thermoplastic filling techniques should be used during the root canal treatment of internally resorbed teeth.

References

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