

**SURGICAL MANAGEMENT OF COMMUNICATING INTERNAL EXTERNAL
RESORPTION USING BIOACTIVE MATERIAL: A CASE REPORT****Dr. Shikha Jaiswal¹, Dr. Sachin Gupta², Dr. Ayesha Ansari³ and Dr. Shreshtha Sharma^{4*}**^{1,2}Professor, Department of Conservative Dentistry and Endodontics, Subharti Dental College & Hospital, Swami Vivekanand Subharti University, Meerut.^{3,4}Post Graduate, Department of Conservative Dentistry and Endodontics, Subharti Dental College & Hospital, Swami Vivekanand Subharti University, Meerut.***Corresponding Author: Dr. Shreshtha Sharma**

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ABSTRACT

Internal resorption when left untreated may develop into perforating internal resorption, which might damage the remaining tooth tissue and perhaps include periodontal disease, complicating the prognosis of endodontic therapy. Such instances provide an endodontic challenge. The biomaterial used to treat such cases may also have an impact on the prognosis; newer calcium silicate materials may go a long way towards effectively treating patients that may otherwise have a bad prognosis. In this case report, the use of bioceramic repair material (Mineral Trioxide Aggregate) during surgery was used to treat communicating internal and external root resorption of maxillary left central incisor. The successful peri-radicular healing of 21 was observed at six-month follow-up.

KEYWORDS: Internal root resorption, Surgical management, Cone beam computed tomography, Mineral trioxide aggregate, External root resorption.**INTRODUCTION**

Internal root resorption is the progressive destruction of intraradicular dentin and dentinal tubules along the middle and apical thirds of the canal walls as a result of clastic activities.^[1] When left untreated, it may progress to perforating internal resorption which may complicate the prognosis of endodontic treatment due to weakening of the remaining dental structure and possible periodontal involvement and such cases pose an endodontic challenge.^[2] Conventional X-ray, being two dimensional in nature provide limited information regarding the extent, nature, invasion and destruction produced by these lesions, hence posing difficulty in diagnosis and treatment planning. Such cases can be managed better with the three dimensional imaging using cone beam computerized tomography (CBCT).^[3,4] The prognosis of such cases may also be influenced by the biomaterial employed for the treatment, newer calcium silicate materials may go a long way to successfully treat cases which may otherwise have poor prognosis. This case report would focus on surgical management of a perforating internal root resorption with the help of bioceramic repair material (MTA).

CASE REPORT

A 32-year-old male patient reported to the Department of Conservative dentistry and Endodontics in Subharti Dental College, Meerut with a chief complaint of severe pain in upper front tooth region. Medical history was not

significant. Past dental history revealed a 10 years previous root canal treatment of upper front tooth. Clinical examination revealed severely tender 21 and mildly tender 11 and 22 with mobility among physiologic limits. The periapical radiograph (Fig 1) showed several gutta-percha cones loosely packed inside a wide root canal space and the presence of communicating internal and external resorptive defect in 21. A non-surgical root canal treatment was planned initially with the patient's consent.

The access was reopened and the removal of gutta percha cones was attempted with the help of #50 H files (Dentsply, Maillefer) (Fig 2). During gutta percha removal, there was severe bleeding in the canal indicating acutely inflamed tissue at the resorptive area. To gauge the extent of resorption, a CBCT was advised, where sagittal and axial images of 21 showed extensive communicating internal and external resorption which was perforating at the labial part of root approximately 1-2 mm coronal to the apical area (Fig 3); hence surgical repair of the defect area was planned.

After local anaesthesia administration, a full thickness mucoperiosteal rectangular flap was raised. The surgical site was exposed (Fig 4a) after conservative removal of buccal cortical plate with surgical round bur No.6 (Mani, Inc.). The surgical site exhibited vertical bony defect with extensive granulation tissue which was removed

with the help of bone curette (Fig 4b). MTA was mixed in 3:1 ratio and initially an orthograde filling of 21 was done with the aid of Micro Apical Placement System (MAP System; Dentsply, Maillefer) using Absorbable Gelatin sponge (AbGel; Healthium Medtech Limited) as barrier at the resorptive site. Subsequently, retrograde packing of MTA was also done at the lateral resorptive defect (Fig 4c). After confirming adequate filling of radicular space by an IOPA radiograph, the flap was sutured back (Fig 4d) and postoperative instructions were given to the patient. Six month follow-up showed asymptomatic tooth and radiograph showed peri-radicular healing (Fig 5).

DISCUSSION

Root resorption has a poorly known pathophysiology and may be associated with varied etiologies which include trauma, pulpal infection, tooth bleaching, and orthodontic therapy. Root resorption which may be external or internal; is typically asymptomatic and during the initial stages it may be a chance radiographic finding. However, pain, discolouration or tooth mobility etc may occur as progressive clinical symptoms.^[5]

Internal resorption is recognized as one or more localized dilations of the pulp canal and may or may not extend to the root surface to cause perforation. External inflammatory root resorption is characterized/defined as radiolucent defects along the apical and middle thirds of the root surface, with or without pulp involvement.^[6]

Treatment of internal root resorption becomes more complicated when it communicates or perforates externally since necrotic tissue debridement becomes difficult.^[7] Continuous bleeding may be there in the

canal which may impede obturation and limiting the obturating material inside the root canal space also becomes a challenge. Although matrix repair materials are available for this purpose but a predictable treatment planning may be favoured by 3D viewing of the lesion.

In this context, CBCT was used for 3D imaging in this case as it was helpful in providing the precise information about the location and extent of the communicating root resorption and determining the proximity of the resorptive lesion to the canal or periodontal space thus facilitating vastly in deciding the treatment modality. Madani Z *et al* in their study concluded that when diagnosing root resorption, CBCT offers greater specificity and sensitivity than conventional radiography.^[8]

Calcium silicate materials are the material of choice for repair of root resorption. MTA was used in this case for obturating the resorbed root and was placed by an orthograde approach followed by retrograde placement. This ensured complete filling of the resorbed root canal with MTA. Due to its superior physiochemical and bioactive qualities, mineral trioxide aggregate (MTA)^[9] may have a significant benefit when employed as canal obturation material in such cases.

Compared with other tricalcium silicate cement, MTA demonstrates a number of significant characteristics with the most noteworthy being that moisture does not affect its physical characteristics rather: it is required for its setting (MTA is a hydraulic cement).^[10,12] Additionally, it is radiopaque, exhibits no shrinkage and encourages the periodontal ligament's biologic repair and renewal while offering an efficient seal at the apical margin.^[11,12]

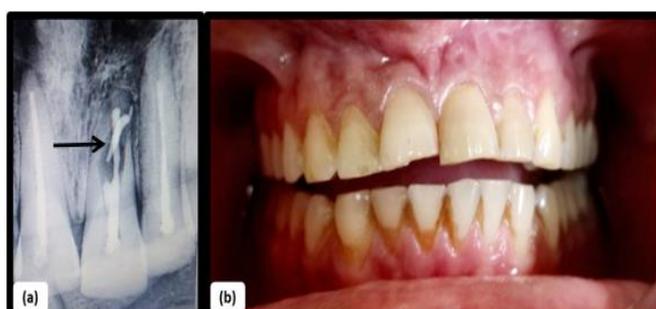


Fig. 1: Pre-operative radiograph (a) and Clinical view (b) Arrow shows resorption site.



Fig. 2: IOPA radiograph showing removal of Gutta Percha and Working length determination.

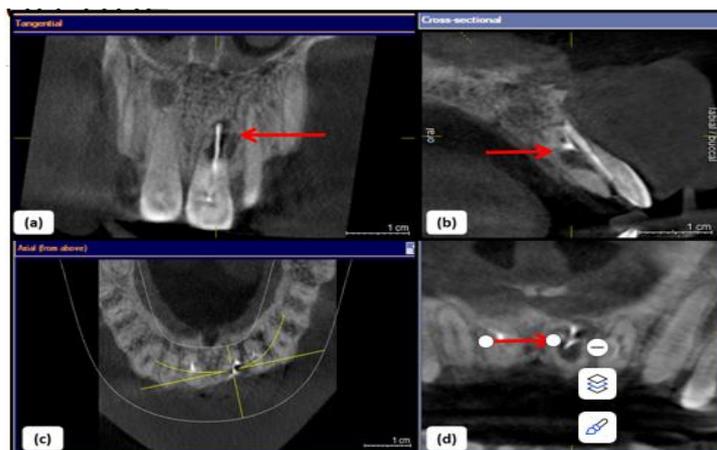


Fig. 3: CBCT images (a) Tangential view, (b) Cross-sectional view, (c, d) Axial view depicting communicating internal and external resorption Arrows show communicating internal resorption.



Fig. 4 (a)- Surgical site exposure, (b)-Curettage of granulation tissue, (c)- Placement of MTA, (d)- Suture placement.

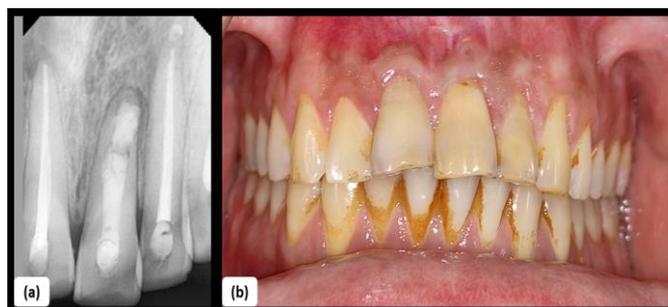


Fig. 5- 6: Months follow-up radiographic (a) and clinical view (b).

CONCLUSION

Diagnosis and treatment of such cases of communicating internal and external resorption becomes quite difficult. Therefore, use of newer modalities for diagnosis like CBCT becomes imperative for determining the nature and extent of lesion and its treatment planning. Newer bioactive materials like MTA can help in predictably managing cases of communicating resorption with successful clinical outcomes.

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