

Surgical Management of an Upper Central Incisor Having File Extrusion and Periapical Pathology with Unusual Presentation: A Case Report

Nutan Mala^{1*} Smita² Akanksha³ Abhinav Kumar Singh⁴ C.K. Wang⁵

¹PG Student, Department of Conservative Dentistry & Endodontics, Buddha Institute of Dental Sciences & Hospital, Patna, Bihar, India.

²PG Student, Department of Conservative Dentistry & Endodontics, Buddha Institute of Dental Sciences & Hospital, Patna, Bihar, India.

³Medical Officer, Badh, Patna, Bihar, India.

⁴Professor, Department of Conservative Dentistry & Endodontics, Buddha Institute of Dental Sciences & Hospital, Patna, Bihar, India.

⁵Professor and Head, Department of Conservative Dentistry & Endodontics, Buddha Institute of Dental Sciences & Hospital, Patna, Bihar, India.

ABSTRACT

Background: The aim of this report is to discuss a case about the retreatment of a traumatized upper left central incisor presented with file separated and intruded beyond the canal having chronic periapical pathology with unusual presentation. The apical area was corrected by the removal of the file, apical curettage and retrograde filling with Mineral Trioxide Aggregate (MTA) as well as soft tissue managed with pedicle flap design. After 12 months follow up, the offending tooth was accepted functionally.

Keywords: Upper central incisor, periapical pathology, retrograde filling, MTA, separated file.

INTRODUCTION

Surgical endodontics is a reliable method for the treatment of teeth with periapical lesions and the only way to retrieve the separated file that was extruded periapical. Periapical lesion does not respond to conventional root canal treatment or when orthograde treatment is not feasible¹. The retrograde filling is necessary to fill the apical canal space and to obtain a three-dimensional seal between the periodontium and root canal system.

The ideal healing response after periradicular surgery is the re-establishment of an apical attachment apparatus and osseous repair.^{8,9} However, histological examination of biopsy specimens reveals three types of tissue response;¹⁰ healing with a reformation of the periodontal ligament; healing with fibrous tissue (scar); and moderate-to-severe inflammation without scar tissue. The deposition of cementum on the cut root face is considered a desired healing response and a prerequisite for the reformation of a functional

periodontal attachment.⁸ Cementum deposition occurs from the circumference of the root end and proceeds centrally toward the 'resected root canal. The cementum provides a 'biological seal,' in addition to the "physical seal" of the root end filling, thereby creating a 'double seal'.¹¹ Different studies showed better sealing ability regarding MTA¹²⁻¹⁷ while permitted cementoblast attachment and growth. The production of mineralized matrix gene and protein expression indicated that MTA could be considered cementoconductive.¹⁸

CASE REPORT

A 22 year-old-female patient reported with chronic pus discharge from the apical area of upper left central incisor for 2 years. She also gave a history of sports trauma about 9 years back, and the apical area of tooth begun to expose for the last 2 years. On clinical examination, upper left central incisor was dark greyish in colour, slightly intruded and the apex of the tooth was with an open apex. The apical

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*Correspondence Dr. Nutan Mala.

Department of Conservative Dentistry & Endodontics, Buddha Institute of Dental Sciences & Hospital, Patna, Bihar, India.

Email: Not Disclosed



Fig 1: Preoperative photograph.



Fig 2: Root resection



Fig 3: File retrieved.



Fig 4: MTA placement.



Fig 5: Radiograph (before & after).

area of the tooth was exposed with discharging pus, but no significant mobility was found. The radiograph showed apical bone resorption as well as apical root resorption with the extruded file. Surgery was the only way to remove the extruded file so treatment plan of the symptomatic tooth was to manage the apical problem by surgical management, simultaneously with apical curettage and retrograde filling followed by the management of an extruded file. After mouth preparation, local anaesthesia was administered at the surgical area. Then the inflamed and unhealthy gingival margin of exposed apical tooth area was removed to regain normal fresh margin with no. 15 BP blade. Then a pedicle flap was designed and the flap was reflected from the bone.

The apical area was curette and minimal root resection was done to gain new dentinal surface while applying less stress to avoid fracture of the apical root area.

The root end was prepared biomechanically thorough and thorough up to get a new dentin surface at canal wall. After preparation of the apical area for the purpose of retrograde filling, Mineral Trioxide Aggregate (Angelus MTA) was placed at apical 3-4 mm and a radiograph was taken. After radiological evaluation, the soft tissue of wound area was closed with suturing and a wet cotton pellet was in the canal orifice and the access was sealed with interim restoration (Cavit, GC, Japan). Antibiotics and analgesics were advised along with mouth wash during the immediate post-operative period. After 7 days, the suture was removed and prepared root canal coronal to the MTA placement was filled with gutta-percha by vertical compaction technique followed by composite resin restoration on the same day. Regular follow-up was done from the time of the operating procedure as 1 month, 3 months and every 6 months. After 3 months follow up, there was no significant sign and symptoms

clinically. The radiograph showed the formation of new bone at the periapical area and the lesion size was reduced. After 12 months follow up, the offending tooth was accepted functionally.

DISCUSSION

In this case, MTA was chosen as a retrograde filling material than others due to its ideal properties. Easy and moisture independent application, superior seal, biocompatibility and ability to increase the vulnerable root strength was the considerable factors. Also, at longer duration, new cementum was found on the surface of the material¹⁹. In a two-year follow-up study with MTA as root-end filling material resulted in a high success rate²⁰.

The periapical pathology regarding this case was a chronic abscess in nature where the buccal cortical bone was lost. But the most common type of periapical radiolucency is granuloma (73%) than cystic (15%) or abscess (12%) type of lesion^{21,22}. It is a well-accepted fact that a granuloma heals after endodontic therapy. However, there has been a long-standing debate among dentists as to whether periapical cysts improve after endodontic treatment. It is the prevailing opinion that pocket cysts heal after endodontic therapy²³, but true periapical cysts may not heal after nonsurgical endodontic therapy. precise root-end fillings that satisfy the requirements for mechanical and biological principles of endodontic surgery. Anatomical study of the root apex showed that at least 3 mm of the root-end must be removed to reduce 98% of the apical ramifications and 93% of the lateral canals²⁴; in this case, minimal removal up to a level of fresh root dentinal surface because of short root length by previously loss of tooth apex pathologically. The soft tissue was managed by flap surgery in a pedicle flap design but free gingival graft or periosteal pedicle flap may also be designed in different consideration. Also, bone cell formation initiating material or bone grafting along with surgery may cause beneficial sometimes.

CONFLICTS OF INTEREST

The authors declare they have no potential conflict of interests regarding this article.

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