



SURGICAL TREATMENT OF A NON HEALING PERIAPICAL PATHOSIS THROUGH APICOECTOMY & MANAGEMENT OF ASSOCIATED VERTICAL ROOT FRACTURE USING BIODENTINE – A CASE REPORT

INTRODUCTION

Traditional endodontic treatment aims to eliminate bacteria from root canal system and establish effective barriers against root recontamination¹. To achieve success, cleaning, shaping and filling of the entire root canal system are considered essential steps in endodontic therapy².

Failure factors in root canal conventional treatment are frequently related to presence of residual bacteria (persistent infection) or reinfection in a previously disinfected canal (secondary infection)⁴.

“A vertical root fracture (VRF) is a longitudinally oriented fracture of the root that originates from the apex and propagates to the coronal part¹.

Vertical root fracture is an important threat to the tooth's prognosis during and after root canal treatment². The diagnosis of vertical root fracture can be problematic, and it often requires prediction rather than definitive identification³.

The clinical scenario of vertical root fracture may resemble that of a periodontal disease or of a failed root canal treatment⁴. So it is important to differentially diagnose vertical root fracture from other similar clinical conditions⁵.

Radiographic diagnosis of vertical fracture of root is also difficult, as not all the classical radiographic signs of vertical root fracture may be present in every case⁵.



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CBCT has been used in recent studies with a high accuracy and sensitivity in detecting vertical root fracture⁶.

Preserving a vertically fractured tooth helps improving function, esthetics and maintaining the integrity of the arch by preserving the alveolar bone height⁶.

Hence early detection and diagnosis of VRF is essential for the long term survival of the tooth.

CASE REPORT

A 65 yrs old male patient reported to the Dept. Of Conservative Dentistry & Endodontics at our institution with C/O Swelling over the gums in upper front teeth region since 1 month.

O/E – a gingival swelling was observed at the periapical area of tooth 11, patient gave H/O RCT done on 11, one year back outside the institution. (fig-1)

On radiograph examination tooth 11, showed complete obturation of the canal with a persistent periapical radiolucency. (fig-2)

Since conventional RCT failed, we went for Retreatment. But the lesion didn't resolve after Re-Treatment, following which an Apicoectomy was planned for the tooth. (fig-3). Upon raising the flap, VRF was observed. (fig-4). Apicoectomy was 1st completed for the concerned tooth with proper retrograde restoration. For managing the VRF a trough was made along the fracture line for VRF restoration. Biodentin was placed on it (fig-5). An alloplastic bone graft was placed in the defect and flap was successfully sutured back (fig-6). Post operative x-ray of the concerned tooth was taken (fig-7). A 3 month and 6 month follow up of

the case revealed a considerable healing of the lesion with no complaint of pain from the patient(fig-8 &9).

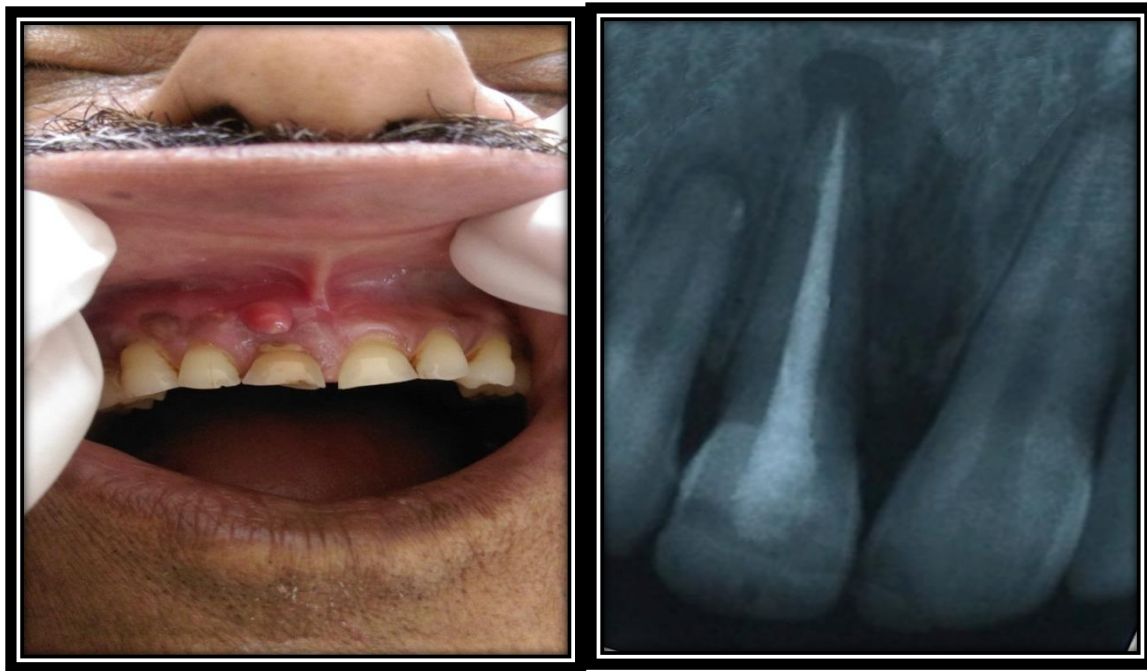


FIGURE-1FIGURE-2



FIGURE-3



FIGURE-4

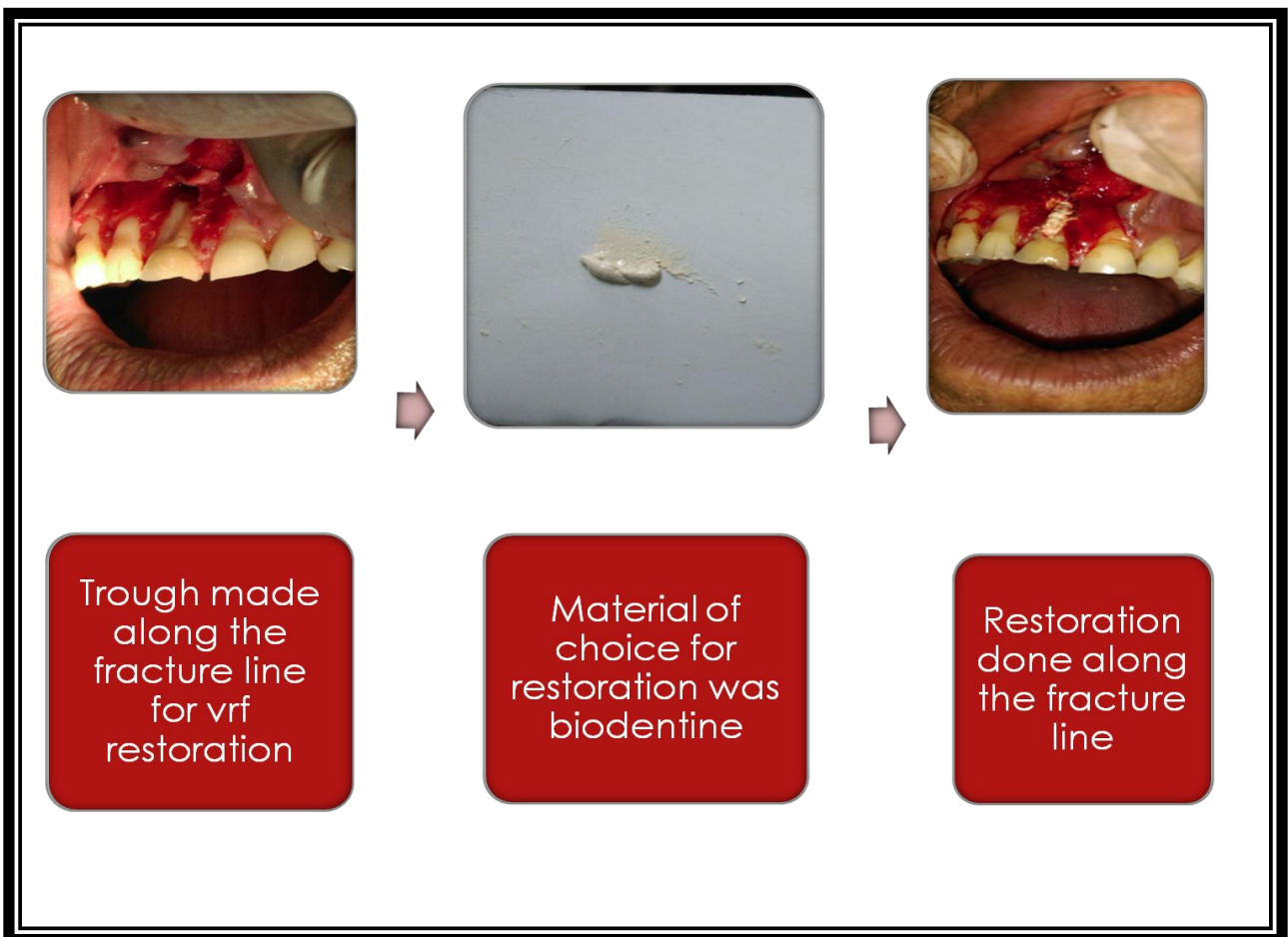


FIGURE-5



FIGURE-6



FIGURE-7



FIGURE-8



FIGURE-9

DISCUSSION

Within boundaries of this case presentation, it was found that VRF which are very conspicuous to diagnose may lead to long term failure in tooth survival⁴

VRF can be advocated to factors like post endodontic restoration, abnormal masticatory forces, para functional habits, poor cavity preparation, wrong restorative material selection or abnormal placement of restoration⁵.



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A common feature of VRF is the development of deep, narrow, isolated periodontal pockets, usually situated adjacent to the fracture site. Deep probing in one position around the circumference of the tooth in the presence of otherwise normal attachment usually indicates that the tooth is fractured⁶.

Taking the current case presentation into consideration, biodentine was the material of choice over MTA owing to its various drawbacks like difficult handling, long setting time, possible discoloration if used in the visible crown area, lower compressive and flexural strength than dentine and its high costs. Using Biodentine in the repair of VRF it may have some advantages compared to MTA like faster setting time, Vickers Hardness Number of 60 almost equivalent to that of dentine & resistance to hydrolysis on setting.

CBCT the desired method for VRF diagnosis provide high contrast three dimensional images at reduced radiation dose¹⁰. CBCT is superior to conventional radiography in the assessment of VRF as the plane of axial sections are perpendicular to the fractureline¹¹. Due to inavailability of CBCT in Jamshedpur we had to rely on the conventional radiograph which could not provide us the desired angulation and magnification for proper diagnosis¹¹.

CONCLUSION

Within the parameters of this case it can be stated that early detection and intervention of VRF , is a major determinant in improving the prognosis of tooth.



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Biodentine used in this case proved to be a good biocompatible material which can be successfully used in VRF cases.

REFERENCE

1. American Association of Endodontics. Endodontics: Colleagues for Excellence- Cracking the cracked tooth code: Detection and Treatment of Various Longitudinal Tooth Fractures. Chicago: American Association of Endodontics; summer 2008:1-8.
2. Pitts DL, Natkin E. Diagnosis and treatment of vertical root fractures. J Endod 1983;9:338-346.
3. Diagnosis and management of teeth with vertical root fractures. Australian Dental Journal 1999;44:(2):75-87
4. Vertical root fractures in endodontically treated teeth: diagnostic signs and clinical management. Endodontic Topics 2006, 13, 84–94
5. Vertical root fractures: An update review. Journal of Restorative Dentistry / Vol - 2 / Issue - 3 / Sep-Dec 2014 • 113
6. The histopathogenesis of vertical root fractures . JOE-Volume 10, Issue 2, Pages 48–56



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7. Paul Ladarola. Vertical root fracture . The journal of American dental association June 2017 Volume 148, Issue 6, Page 357

8. Vertical root fractures and their management. PUBMED 2014 Mar-Apr; 17(2): 103–110.

9. Diagnosis of vertical root fracture in endodontically treated teeth using computed tomography. Journal of dental sciences Sept 2015 Volume 10, Issue 3, Pages 227–232

10. M Georgios , E Elini. Diagnosis of vertical root fractures in endodontically treated teeth utilising Digital Subtraction Radiography: A case series report Australian endodontic journal December 2017

11. TN Mohan , K Sunil. CBCT in diagnosis of vertical root fracture Journal of Indian Academy of Oral Medicine and Radiology Oct-Dec 2012; 24(4): 311-314