SURGICAL TREATMENT OF A NON HEALING PERiapical PATHOSIS THROUGH APCIoECTOMY & 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 recontamination\(^1\). To achieve success, cleaning, shaping and filling of the entire root canal system are considered essential steps in endodontic therapy\(^2\).

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 part\(^1\).

Vertical root fracture is an important threat to the tooth’s prognosis during and after root canal treatment\(^2\). The diagnosis of vertical root fracture can be problematic, and it often requires prediction rather than definitive identification\(^3\).

The clinical scenario of vertical root fracture may resemble that of a periodontal disease or of a failed root canal treatment\(^4\). So it is important to differentially diagnose vertical root fracture from other similar clinical conditions\(^5\).

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 case\(^5\).
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CBCT has been used in recent studies with a high accuracy and sensitivity in detecting vertical root fracture. Preserving a vertically fractured tooth helps improving function, esthetics and maintaining the integrity of the arch by preserving the alveolar bone height.

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 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-1

FIGURE-2
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FIGURE-3

Trough made along the fracture line for vrf restoration

FIGURE-4

Material of choice for restoration was biodentine

Restoration done along the fracture line
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FIGURE-5

FIGURE-6
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FIGURE-7

FIGURE-8
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.
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 fractured.

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 dose. CBCT is superior to conventional radiography in the assessment of VRF as the plane of axial sections are perpendicular to the fractureline. 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 diagnosis.

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

REFERENCE


