HEMI SECTION: A CONSERVATIVE APPROACH TO SAVE THE TOOTH -

CASE REPORT

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Abstract

Advancements in dentistry and awareness among patients made it possible to treat tooth that once would have been extracted. Hemisection is a treatment modality which involves separation of root at furcation area with selective removal of one root with its accompanying crown portion. This conservative treatment helps us to retain as much healthy tooth structure as possible. This article presents a case of advanced endo-perio lesion successfully treated with hemisection followed by restoration.

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INTRODUCTION

A posterior tooth which is grossly decayed, having periodontal problem, furcation involvement and fracture of root is difficult to restore.[¹] The treatment modalities for such tooth are very limited and depending on root involvement, it can be root amputation, hemisection and lastly extraction followed by replacement with partial denture or implant.[²] It is well known fact that natural tooth is
always superior to artificial one. Hemisection is defined as surgical separation of multi-rooted tooth especially a mandibular molar, through the furcation in such a way that a root and the associated portion of the crown may be removed.\(^3\,^4\) By using the technique of hemisection, we can save as much healthy tooth structure as possible and prognosis is also satisfactory if restorative, endodontic, periodontics and prosthetics requirements are taken into consideration.\(^5\) This article presents a clinical case of hemisection in which distal half of tooth removed and mesial half saved followed by restoration of remaining healthy tooth.

**CASE REPORT**

A 25 year old patient reported to department of conservative dentistry and endodontics with chief complains of intermittent pain in left mandibular posterior region for 6 months. Pain was non-radiating and relieved on taking medicine. Patient also gave history of root canal treatment with respect to 37 one year back from a private clinic. In medical history patient gave no history of any haematological or systemic disease. On clinical examination, tooth (37) was tender on percussion and showed no response to pulp vitality test. Radiographic examination showed radiopaque filling material filled only in coronal pulp chamber and no filling material in root canals. Also, radiolucency extended up to furcation area with loss of inter-radicular bone (Figure 1).

![Figure 1: Preoperative radiograph showing furcation involvement](image)

Depending on clinical finding it was decided to do complete root canal treatment, hemisection involving the removal of distal half of tooth (37) followed by post with respect to mesial root and full coverage crown. Treatment procedure and possible complications explained to patient and informed consent was taken.

Tooth was anesthetized using local anaesthesia followed by removal of filling material from pulp chamber and location of orifices of root canals. After working length measurement with hand K file, root canals...
were cleaned and shaped using NiTiprotaper rotary files. Calcium hydroxide was placed as intracanal medicament for one week followed by obturation (Figure 2).

Figure 2: Radiograph after obturation

After one week patient was recalled for hemisection. After administrating local anaesthesia, full thickness flap was reflected to expose furcation area followed by separating the distal half of tooth by giving vertical facio-lingual cut till furcation area with help of carbide bur at high speed with air water as coolant. After complete bifurcation of tooth, distal portion of tooth was extracted (figure 3).

Figure 3: Distal half of hemisected tooth removed

The empty socket was irrigated, cleaned and furcation area was smoothened to prevent any further periodontal problem. Flap was then repositioned, sutured and patient was recalled after one week and radiograph was taken (figure 4).

Figure 4: Radiograph after one week of hemisection
After healing post space prepared with respect to mesial root, post was luted with resin cement followed by core build up and tooth preparation for full coverage crown (figure 5, 6).

Final impression was made using putty impression material, master cast prepared and sent to laboratory for fabrication of porcelain fused to metal crown. Prosthesis was cemented using glass ionomer cement (figure 7).

**DISCUSSION**

Hemi section is a process which provides alternative treatment approach for multirooted teeth which are indicated for extraction. Lesions which extend up-to furcation area of tooth, many factors such as tooth anatomy, crown root ratio, severity of attachment loss, occlusal relationship, medical status of patient, patient oral hygiene, caries index, diagnostic and clinical treatment planning skill of clinician determine prognosis of tooth.[6] In addition to these, accessibility to furcation area for easy separation and adequate bone support for remaining root also required for success of hemisection.[7] Park et al have suggested that for success of hemisection patient should maintain optimal oral hygiene.[8] Saad et al concluded that when only one root is decayed and other is healthy, hemisection of mandibular molar may be suitable treatment option.[9] Fugazzotto found
in his study cumulative success rates for root resected molars was 96.8% and 97% for molar implants.\cite{10} However, hemisection as compared to implant provide physiologic tooth mobility of the remaining root, which is thus more beneficial abutment for fixed partial dentures.\cite{11}

Although, a single root can fracture under masticatory load in posterior region, to avoid that reduced occlusal table, less steep cuspal incline and undercontoured embrasure spaces were prepared in prosthesis.\cite{12,13} In addition to this for success of hemisection proper case selection, careful treatment planning and patient compliance in maintaining good oral hygiene are mandatory.\cite{14}

**CONCLUSION**

With recent progress in the field of endodontics, periodontics and restorative dentistry, hemisection provides a conservative and dependable dental treatment for hopeless teeth advised for extraction. Hemisection helps to retain natural tooth structure which abates the rate of alveolar ridge resorption and also provide proprioception. Hence hemisection can be considered an alternative to extraction and should be explained to patients as a treatment option if they want to save the tooth.

**REFERENCES**