

## Hemisection an Alternative to Implants and Extraction- A Case Report



### Medical Science

KEYWORDS :

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### ABSTRACT

*Dentists are challenged to save teeth that in another era would have been extracted without question. Hemisection refers to removal or separation of root with its accompanying crown portion of two-rooted teeth most likely mandibular molars. Hemi-section of the affected tooth helps preserve the tooth structure, alveolar bone and promote cost savings over other treatment options. This case report describes a simple procedure for hemisection in mandibular molar and its restoration.*

### Introduction:

Hemisection is the surgical separation of a 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. The treatment goal is preservation of remaining tooth structure and restoration of the function.<sup>1</sup>

Periodontal, prosthodontic and endodontic assessment for appropriate selection of cases is important.<sup>2</sup>

Once the tooth has been judged appropriate for this treatment, it must undergo endodontic therapy first and then must be prepared for complete crown coverage. Selected root removal allows improved access for homecare and plaque control with resultant bone formation and reduced pocket depth. This treatment may include endodontic therapy, periodontal therapy, tooth reconstruction, and prosthetic coverage so that the teeth are retained in whole or in part for longer time. Continued periodontal breakdown may lead to total loss of tooth unless these defects are repaired or eliminated and health of the tissues restored. Thus post treatment these teeth can be used as individual unit or can be used as an abutment for fix prosthesis which can restore the masticatory function. So this is a kind of conservative procedure which preserves tooth structure as much as possible and retains at least a part the tooth rather than extraction of the whole tooth.<sup>3</sup>

Weine has listed the following indications for tooth resection:<sup>4</sup>

#### Periodontal Indications:

1. Severe vertical bone loss involving only one root of multi-rooted teeth.
2. Through and through furcation destruction.
3. Unfavourable proximity of roots of adjacent teeth, preventing adequate hygiene maintenance in proximal areas.
4. Severe root exposure due to dehiscence.

#### Endodontic and Restorative Indications:

1. Prosthetic failure of abutments within a splint: If a single or multirooted tooth is periodontally involved within a fixed bridge, instead of removing the entire bridge, if the remaining abutment support is sufficient, the root of the involved tooth is extracted.
2. Endodontic failure: Hemisection is useful in cases in which there is perforation through the floor of the pulp chamber, or pulp canal of one of the roots of an endodontically involved tooth which cannot be instrumented.
3. Vertical fracture of one root: The prognosis of vertical fracture is hopeless. If vertical fracture traverses one root while the other roots are unaffected, the offending root may be amputated.
4. Severe destructive process: This may occur as a result of furcation or subgingival caries, traumatic injury, and large root perforation during endodontic therapy.

### Contraindications

- a. Strong adjacent teeth available for bridge abutments as alternatives to hemisection.
- b. Inoperable canals in root to be retained.
- c. Root fusion-making separation impossible.

### Case Report:

A 41 years old man reported with the complaint of pain and mobility of left mandibular first molar. On examination, the tooth was sensitive to percussion and revealed grade 2 mobility. On probing the area, there was a 8 mm deep periodontal pocket around the mesial root of the tooth (Fig 1). On radiographic examination, vertical bone loss was evident surrounding the mesial root with resorption of root. The probing pocket depth around the disal root was 3mm. It was decided that the mesial root should be hemisected after completion of endodontic therapy of the tooth. The canals were accessed, cleaned and shaped, obturated and the chamber was filled with Glass ionomer cement to maintain a good seal and allow interproximal area to be properly contoured during surgical separation. Under local anesthesia, full thickness flap was reflected after giving a crevicular incision from first premolar to second molar. Upon reflection of the flap, all granulation tissue was removed with Gracey curettes to expose the bone. The vertical cut method was used to resect the crown. A long shank tapered fissure carbide bur was used to make vertical cut towards the furcation area. (Fig 2) A probe was passed through the cut to ensure separation. The mesial half was extracted and the socket was irrigated adequately with sterile saline. The extraction site was irrigated and debrided. Then the flap was repositioned and sutured with 3/0 black silk sutures. After a week patient was recalled for suture removal. Full coverage restoration in the form of a bridge was given after complete periodontal healing. (Fig 3 and 4)



**Figure 1**



Figure 2



Figure 3

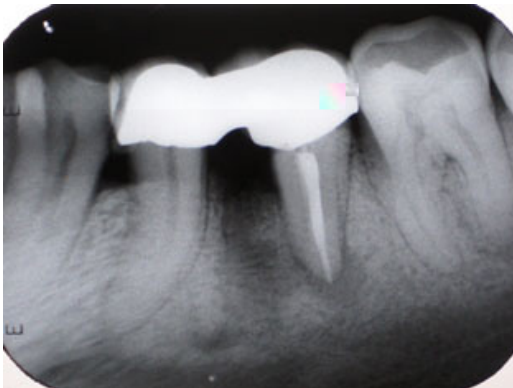


Figure 4

### Discussion:

Root amputation/hemisection is a useful alternative procedure to save those multi-rooted teeth which have been indicated for extraction. Before selecting a tooth for hemisection, patient's oral hygiene status, caries index and medical status should be considered. Also, accessibility of root furcation for easy separation as well as good bone support for the remaining root should be assessed. Recently, Park et al. have suggested that hemisection of molars with questionable prognosis can maintain the teeth without detectable bone loss for a long-term period, provided that the patient has optimal oral hygiene.<sup>5</sup> Saad et al. have also concluded that hemisection of a mandibular molar may be a suitable treatment option when the decay is restricted to one root and the other root is healthy and remaining portion of tooth can very well act as an abutment.<sup>2</sup> This clinical report illustrates solution to the endo-perio problem by hemisection and fixed partial dentures. Although such involvement diminishes the long-term prognosis of the affected tooth, extraction is not always an option. Root resection therapy is one of the several treatment modalities that can be used in such cases.<sup>1</sup>

**Conclusion:** In conclusion, hemisection may be a suitable alternative to extraction and implant therapy and should be discussed with patients during consideration of treatment options.

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