

CASE REPORT

Hemisection of Mandibular Molar: Hopeless to Hoping

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Abstract

Management of grossly decayed teeth with periodontal involvement may lead to total loss of tooth unless these defects can be repaired or eliminated and health of the tissues restored. Previously, many therapeutic measures were followed to retain such teeth so that they can be used as an independent unit of mastication instead of its limitation to dental extraction and replacement by prosthesis. Among all such procedures, hemisection is a wise viable option to retain such hopeless teeth and preserve the tooth structure and other associated tissues. The following case describes the procedure of hemisection in a brief manner and its follow up with a fixed prosthodontic rehabilitation in a young patient.

Keywords: Hemisection, Restoration, Alveolar bone loss, Prosthesis

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Introduction

The term “hemi section” or “root amputation” is a treatment modality, which saves the multi-rooted teeth by endodontic approach of the restorable half and deliberate excision of the compromised tooth structure. It not only preserves the tooth and alveolar bone but is also cost effective¹.

Hemisection is a treatment procedure where the involved crown-root is removed to preserve the remaining tooth rather than sacrificing it². Loss of the posterior teeth is undesirable and may lead to loss of mastication, drifting of teeth, which requires replacement of teeth and its maintenance³. Restoration of teeth with endo-perio lesion is often challenging and is limited to dental extraction and replacement with implants. However, hemisection is an alternative way of preserving such tooth.

Materials and Methods

In this case, obturation was carried out using lateral condensation gutta percha technique and sectioning of the diseased root was done by carbide bur.

Case Report

A 20-year-old male reported to the Department of Conservative dentistry and Endodontics, with a chief complaint of pain in the lower left back teeth region since 20 days. Pain was mild and intermittent in nature, which aggravated on mastication. Clinical examination revealed deep caries with no other detectable abnormality.

On radiographic examination, root canal treatment was done and caries was evident on distal root of lower left permanent first molar with furcation involvement [fig 1]. Hemisection of mesial root was planned after the completion of re-endodontic treatment for the distal root. Post-endodontic restoration was performed with ketac silver cement [fig 2]. Hemisection of mesial root was done [fig 3]. At 1 month recall visit, healing was uneventful with the absence of mobility. Tooth preparation of the distal portion of permanent first molar and second premolar was performed followed by ceramic bridge restoration [fig 4]. Radiographic success observed at 3, 6 months, 1 and 2 year of recall visit indicated the absence of the periodontal ligament widening and bone formation at the extraction site.



Fig 1

Fig 2

Fig 3

Fig 4

Results

It was seen that healing of treated tooth was uneventful at recall visits.

The hemisection is a useful alternative treatment to extraction which includes the root canal treatment of the remaining roots and restoring them with suitable restorative material. Nevertheless hemisection is a viable option to be considered before the extraction of molars especially in the presence of conditions such as:

1. The tooth is affected by caries⁴, vertical root fracture, periodontal disease or root perforation. (one root of a multi-rooted tooth)⁵
2. The healthy root must be amenable to endodontic treatment and the resulting fixed prosthetic restoration.
3. Severe vertical bone loss or furcation destruction.
4. Unfavorable proximity of roots of adjacent teeth, preventing adequate hygiene in maintenance of proximal areas.
5. Severe root exposure due to dehiscence.
6. Collapse of the vertical dimension of occlusion, supra eruption of opposing teeth, loss of supporting alveolar bone and occlusal dysfunction. The root morphology must be surgically accessible and must not compromise periodontal health of the final restoration⁶⁻¹².

Contra indications to using a tooth root as an abutment can include

1. Fused roots.
2. Non-negotiable root canals

Discussion

Regeneration of periodontal hard and soft tissues and to prevent further attachment loss is the main objective of regenerative therapy. Bone loss caused by periodontal disease is usually irreversible. So, multirooted periodontally

involved molars can be managed successfully depending on their extent of bone destruction¹³. Such procedure includes surgical approaches that provide better access to clean the root surfaces and apical lesions. Whereas, from endodontics perspective, the root must have sound straight root structure to allow adequate shaping and obturation as was found in this case. So, similarly in this case, the patient was motivated and was explained about the prognosis. Although hemisection is a successful procedure for conservation of badly damaged tooth but prosthetic rehabilitation should be adequate to support the long term success of the fixed bridge by equal distribution of occlusal forces. Hence, the use of hemisection to retain a compromised tooth offers a prognosis comparable to any other tooth with endodontic treatment.

Preservation of a hopeless tooth is possible by selecting patients with good oral hygiene, and careful surgical and restorative management. So, hemisection should be considered based on the extent and pattern of alveolar bone loss, fused roots, root trunk and root length, osseous defects and endodontic management.

Conclusion

Conservation of tooth by hemisection can be successful with an adequate post endodontic restoration to make the pulpless tooth function indefinitely as an integral part of the oral masticatory apparatus. In this regard, M.M.DeVan has beautifully written that “our objective should be the perpetual preservation of what remains than the meticulous restoration of what is missing”.

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