Tooth Hemisection and Restoration an Alternative to Extraction- A Case Report
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Abstract
Hemisection denotes removal or separation of root with its accompanying crown portion of mandibular molars. This procedure represents a form of conservative dentistry, aiming to retain as much of the original tooth structure as possible. The results are predictable and success rates are high. In this paper a case is presented in a young female patient with severe class-IIc involvement of mandibular molar, which was treated with hemisection and restoration.

Key Words: Tooth hemisection; Root resection; Furcation defects

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.(1, 2) The treatment goal is preservation of remaining tooth structure and restoration of the function. This case report describes hemisection procedure which was chosen to retain the endodontically treated mesial root of mandibular left first molar and extraction of periodontally involved distal root.

Case Report
A 30 year old female patient reported to the Department of Prosthodontics for the restoration of endodontically treated mandibular posterior left tooth. Clinical examination revealed missing mandibular left first premolar and grade-I mobility of mandibular left first molar and 9mm deep periodontal pocket on the distal root (Figure1). Radiographic examination revealed an expansive radiolucency at the apical area of the distal root of the first molar and loss of inter-radicular bone (Figure 2) with Tarnow and Fletcher’s Class-C(3) furcation involvement. It was determined to be a case of Weine’s class-III type(4) of endodontic and periodontic problem. Treatment options for such furcation involvement includes: a) Scaling and rooting planning; b) Open flap clean out; c) Guided Tissue Regeneration and d) Resective surgery. First three options are limited by the extent of the furcation involvement and are ruled out. After reflecting a conservative flap hemisection of mandibular left first molar was performed using diamond cylindrical bur. Distal root was extracted (Figure 3). Biomechanical preparation of the crown of the remaining tooth portion was done and all the margins were smoothed before finishing the procedure. The reduced molar resembled premolar in shape (Figure-4). A temporary bridge was seated during healing and consolidation phase to prevent drifting of the remaining root. Definitive restoration therapy was accomplished 6 weeks after hemisection. A four unit bridge replaced the first premolar and retainers on the second premolar, remaining part of first molar, second molar and cingulum rest on the mandibular left canine (Figure 5, 6). The pontic lightly contacts the ridge. The interdental spaces are contoured so that hygiene can be accomplished with spiral brushes.
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. (2) 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. (5) 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. (6) 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.

Conclusion

In conclusion treatment planning of root resections is the joint responsibility of the prosthodontist and the periodontist. The technique of hemisection is one way to facilitate the treatment planning of mandibular molars that have exposed furcation areas conserving the remaining tooth structure. Proper case selection enhances the therapeutic success.

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Source of Support: Nil, Conflict of Interest: None Declared