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Hemisection as a neoconservative approach for the treatment of a grossly carious Permanent Mandibular first molar

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Abstract

The term “hemi section” or “root amputation” is the deduction of the knotty root together with the crown after completely unravelling the tooth from the mesial to the distal in the upper molars and premolars and from the buccal to the lingual in the lower molars. When caries, resorption, iatrogenic hitches, or periodontal mutilation is circumscribed to one root and the other root is quiet typically in good shape, hemisection is an adequate salutary preference. Hemisection of the tormented tooth encouragements in the safeguarding of the alveolar bone that backgrounds and supports fixed dentures. Consequently, hemisection or management possibilities should be reserved in mind when a molar tooth needs to be taken because only one root has been impaired. This case pronounces hemisection as a efficacious treatment scheme to convalesce mandibular molars followed by prosthetic rehabilitation generated a pleasing outcome.

Keywords: Root hemisection, furcation defect, mesial root, mandibular molar

1. Introduction

Patients can now keep a fit, operative dentition for the rest of their lives because of contemporary dental encroachments. Diverse salutary attitudes are used to pledge that teeth are reserved in the mouth. Because of the alliance of endodontic treatment, prosthetic dental carefulness, and periodontology, the managements used may upshot in extensive or fractional preservation of the teeth ^[1]. There are scarce selections for treating molar teeth that have irretrievable caries, resorption, or iatrogenic impediments. Removable partial dentures, fixed dentures, or dental implants are the most standard treatments for copious categories of tooth loss. Nevertheless, hemisection can be a moderately forthright, conformist, and affordable practise with a high leeway of victory in the right patients ^[2].

Today's most operational treatment modalities include hemisection and root resection. According to Yuh *et al.* ^[3] the molars with root erasure had a mean survival rate of 91.1%. In their 10-year continuation study, Carnevale *et al.* ^[4] found a 93% endurance rate for patients who had hemisection for the treatment of molars with furcation disputes. Case selection and devotion to particular endodontic, surgical, and restorative standards have a momentous role in the efficacy of hemisection. Formerly extracting each molar, it has been projected that hemisection be engaged into version due of the long-term triumph, it has validated ^[5].

Case Presentation

A 34 years old male patient was referred to the department of “Conservative Dentistry and Endodontics” with the chief complaint of pain in the lower right back tooth region for the past 15 days. Pain was intermittent in nature and aggravated on mastication. On intraoral examination (Figure 1), tooth #46 was found to have deep carious lesion encompassing mesial and occlusal surfaces. In addition, it was severely tender on percussion but with no mobility. On radiographical examination (Figure 2), caries was evident on the occlusal surface and spreading towards the mesial root of tooth #46. Mild haziness was detected in the furcation zone. Tooth #45, on intraoral examination reveals deep carious lesion involving distal and occlusal surfaces with no mobility observed. According to radiographic analysis, the carious lesion has touched the cervical third of the crown. Between #44 and #45, there was apparent

interproximal bone loss.

With regard to tooth #45 & #46, a diagnosis of chronic irreversible pulpitis was determined, grounded on the patient's medical history, clinical examination, and radiographic verdicts. The patient was well-versed about the condition and prognosis of the teeth with workable treatment alternatives, including extraction and insertion of a dental implant, since the depth of the decay rendered the tooth irreparable. Nevertheless, the patient favoured hemisection over auxiliary treatment choices, tracked by a fixed dental prosthetic.

Henceforth, it was absolute that the mesial root of tooth #46 have to be hemisected after the completion of endodontic therapy of tooth #46 and tooth #45, shadowed by fixed dental prosthetic.



Fig 3: Post endodontic treatment done #45 & #46



Fig 1: Intraoral preoperative clinical picture



Fig 4: a) Surgical field after crown was divided into two portions—mesial and distal



Fig 2: Diagnostic Radiograph of #45 & #46



Fig 4: b) Surgical field after removal of resected mesial half of tooth structure

After the endodontic procedure (Figure 3), which also involved removing all carious dental components, the mesial root's hemisection was carried out under local anaesthetic. On the buccal and lingual surfaces of the affected tooth, full-thickness flaps were elevated. Under saline irrigation, a vertical cut was made toward the location of the furcation using a low-speed surgical length fissure carbide bur (Figure 4 & 5). The remaining distal portion of the mandibular right first molar and second premolar were prepared and restored with a metal-supported fixed prosthesis, once the soft and hard tissues wholly recovered from the surgery (Figure 6). It was discovered that the tooth was clinically asymptomatic and that the extraction cavity of the root had fully healed after an 18-month follow-up (Figure 7).



Fig 5: a) Mesial resected segment of tooth #46



Fig 5: b) Post-operative radiographic picture #45 & #46

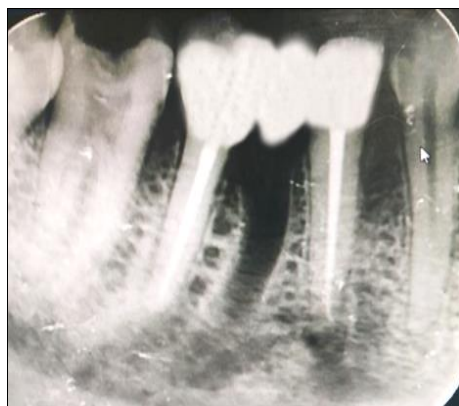


Fig 6: Post-operative radiographic picture with Fixed Dental Prosthetic.

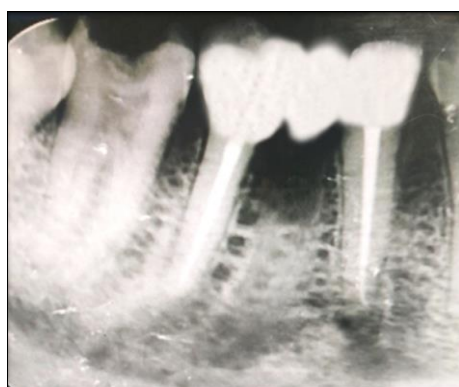


Fig 7: 12 month follow up radiograph

Discussion

The loss of posterior teeth may have a numeral of inauspicious penalties, counting mesial drifting, a drop in arch length, and a decline in masticatory role. As was formerly said, there are few varieties for treating a severely decaying, irretrievable molar. Liable on the patient's age, medical history, and aptitude for upholding oral hygiene, the clinician must elect a course of treatment. It is indispensable to take into account both the treatment's financial liability and the clinical figures on the effectiveness of the various modalities. Since the deterioration in the present case was only present in the mesial root of the tooth #46, the patient was educated of all accessible treatment varieties, counting hemi-section. The patient was reluctant to lose her teeth because he was young. He also declined the preference of a dental implant due to his financial position.

The periodontal health of the tooth, the structure of the root, maintenance therapy, endodontic and restorative therapy, as

well as the surgical process itself, altogether play a character in the enduring accomplishment of hemisected molars^[3].

From a periodontal perspective, the grade of furcation contribution and extent of bone provision are key dynamics in case selection and prognosis. According to studies, molars with Grade III furcations have a worse long-term prognosis than molars with less severe furcation involvement.^[4, 5] It sponsors that root excision or hemi-section carried out at the primary stages of furcation invasion has a higher likelihood of being efficacious. A fruitful outcome in the contemporary instance may be credited to the minimum level of furcation participation at the time of surgery, taking these facets into account. Furthermore, the integrity of the socket at the location of the excised root in this instance, helped to preserve the alveolar ridge's original topography.

Fiasco of resected molars is instigated by endodontic reasons including inoperable canals, deterioration of the lateral walls of the residual roots during endodontic instrumentation or post preparation, and scarce post design. According to Langer *et al.*^[6] edodontic or restorative issues (root fracture, followed by recurrent untreatable periapical lesions and caries) rather than periodontal disease were the primary cause of failure in 36% of root-resected mandibular molars over a 10-year period. To retain as much dental structure as viable, an endodontist must practice little force.

Sadly, there is inconsistent evidence in the literature on the enduring prognosis of root resection or hemisection.

According to Basten *et al.*^[7] 92% of all resected molars survived for an average of 12 years; disappointments were attributed to endodontic and therapeutic issues, recurrent caries, or both. Hamp *et al.* also noted this comparatively high success rate of resected molars. Nonetheless, Erpenstein found sub-standard endings of hemisected molars with an overall failure rate of 20.6%, with pathologic apical variables accounting for the gigantic majority of the failures^[9]. Through their respective research, Bühler^[10] and Langer *et al.*^[6] grasped the same conclusion: the initial product of resected molar teeth is beneficial but not so in the long run.

Only a small number of research have directly contrasted root resective therapy with dental implants, despite the fact that many studies have analysed the prognosis and success rate of root-resected molars. Fugazzotto^[11] exposed that the cumulative victory rates for root resected molars were 96.8%, compared to 97.0% for molar implants, and came to the decision that both procedures, when combined with the proper restoration, disclosed a high level of achievement in function. With an average reported failure rate of 13.1% among hemisected teeth, Bühler specified that let-down rates of two treatment options were not suggestively different.^[12] In contrast, Zafiroopoulos *et al.* found that hemisected mandibular molars were more vulnerable to problems than dental implants in patients with periodontitis.^[13] While the success rates of both techniques vary depending on the treatment plan that is well followed and the existence of harmful variables, they cannot be used interchangeably in clinical settings.

Conclusion

If the right case is elected, the endodontic procedure is carried out correctly, and the restoration is tailored to be appropriate for the patient's occlusal and periodontal demands, hemi-section success is equivalent to that of standard endodontic procedures. Therefore, while discussing treatment choices with patients, hemi-section therapy might be recommended as an acceptable substitute to tooth extraction and implant therapy.

References

1. Yuh DY, Lin FG, Fang WH, Chien WC, Chung CH, Mau LP, *et al.* The impact of medical institutions on the treatment decisions and outcome of root-resected molars: A retrospective claims analysis from a representative database. *J Med Sci.* 2014;34:1–8. [Google Scholar]
2. Carnevale G, Di Febo G, Tonelli MP, Marin C, Fuzzi M. A retrospective analysis of the periodontal-prosthetic treatment of molars with interradicular lesions. *Int J Periodontics Restorative Dent.* 1991;11:189–205. [PubMed] [Google Scholar]
3. DeSanctis M, Murphy KG. The role of resective periodontal surgery in the treatment of furcation defects. *Periodontol.* 2000;2000(22):154–68. [PubMed] [Google Scholar]
4. McGuire MK, Nunn ME. Prognosis versus actual outcome. III. The effectiveness of clinical parameters in accurately predicting tooth survival. *J Periodontol.* 1996;67:666, 74. [PubMed] [Google Scholar]
5. Dannewitz B, Krieger JK, Hüsing J, Eickholz P. Loss of molars in periodontally treated patients: A retrospective analysis five years or more after active periodontal treatment. *J Clin Periodontol.* 2006;33:53–61. [PubMed] [Google Scholar]
6. Langer B, Stein SD, Wagenberg B. An evaluation of root resections. A ten-year study. *J Periodontol.* 1981;52:719–22. [PubMed] [Google Scholar]
7. Basten CH, Ammons WF, Jr, Persson R. Long-term evaluation of root-resected molars: A retrospective study. *Int J Periodontics Restorative Dent.* 1996;16:206–19. [PubMed] [Google Scholar]
8. Hamp SE, Nyman S, Lindhe J. Periodontal treatment of multirrooted teeth. Results after 5 years. *J Clin Periodontol.* 1975;2:126–35. [PubMed] [Google Scholar]
9. Erpenstein H. A 3-year study of hemisectioned molars. *J Clin Periodontol.* 1983;10:1–10. [PubMed] [Google Scholar]
10. Bühler H. Evaluation of root-resected teeth. Results after 10 years. *J Periodontol.* 1988;59:805–10. [PubMed] [Google Scholar]
11. Fugazzotto PA. A comparison of the success of root resected molars and molar position implants in function in a private practice: Results of up to 15-plus years. *J Periodontol.* 2001;72:1113–23. [PubMed] [Google Scholar]
12. Bühler H. Survival rates of hemisectioned teeth: An attempt to compare them with survival rates of alloplastic implants. *Int J Periodontics Restorative Dent.* 1994;14:536–43. [PubMed] [Google Scholar]
13. Zafiroopoulos GG, Hoffmann O, Kasaj A, Willershausen B, Deli G, Tatakis DN. Mandibular molar root resection versus implant therapy: A retrospective nonrandomized study. *J Oral Implantol.* 2009;35:52–62. [PubMed] [Google Scholar]