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Hemisection: A Sentience to Extraction

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Abstract

Hemi-section is the process in multirooted teeth where the diseased root is removed with any accompanying crown pieces leaving the healthy root (with crown) in place. This treatment approach may be used when periodontal disease, blocked canals, resorption, inaccessible root perforation, or carious damage is restricted to one root and the other root is still substantially in good health. The most crucial factor in establishing the long-term success in such cases is the proper case selection.

The hemi-section of a right mandibular molar with separated unretractable gutta percha from periapical area, inaccessible root perforation and non-healing periapical lesion is described in this case report.

Keywords: Hemi-Section, Healthy Root, Blocked Canals, Teeth Drifting, Dental Cavities

Introduction

When teeth are lost, alveolar atrophy occurs, ultimately resulting in a short and narrow alveolar ridge.[2]

Thanks to dental advancements, people can now keep a healthy dentition for the rest of their lives. Losing the posterior teeth is a painful and unwanted event that frequently results in teeth drifting, loss of masticatory function, and shortening of the arch. Preventive and maintenance treatments are therefore necessary.[2] At least 600 distinct bacterial species may be found in the oral cavity, and more than 150 species may be present in any particular patient. These bacteria are in charge of a number of dental health conditions, including periodontal disease and dental cavities. The only option seems for treating extensively decayed molars that are engaged in the periodontal system is to take out the tooth and replace it with an implant. But, in order to preserve such teeth, a treatment plan that allows for stronger survival must include periodontal, prosthodontic, and endodontic evaluation for suitable selection in endodontics we find some cases of poor prognosis like deep carious lesions, one root fracture, a separated instrument in apical third, irretrievable apically extruded gutta percha in multirooted tooth, carious lesion involving furcation, still we can try to save that part healthy by doing root resection, hemisection, bisection provided that part is strong stable and can support the prosthesis. The terms "hemi section" and "root amputation" are interchangeable with "root sectioning" or "bisection." This type of treatment preserves tooth structure and alveolar bone while being less expensive than alternative approaches.

Case Report

A 19-year-old girl reported to the department of Conservative Dentistry and Endodontics with a chief complain of pain and swelling in lower right back tooth region since 10 days.

Patient had undergone RCT 2 years before was experiencing pain on mastication, she went for a retreatment which was attempted and gutta percha was pushed periapicaly and ledge formation was done before referring the patient to our department for further treatment. On clinical examination the tooth was reimposed with composite and tender on percussion.

Radiograph revealed radiolucency in the periapical region with 46. Preoperative RVG showed gutta percha periapically, RVG with instruments showed severe ledge formation and perforation of mesial roots, Hence re-treatment was decided and attempted but unable to reach the apical foramen. Distal root was reattempted and was re- obturated. Hemisection of Mesial root was decided.

Retreatment of distal root and post obturation restoration was done. After post obturation tooth was splitted and mesial root was removed.

Figure 1: Pre – Op Radiograph

Figure 2: perforation / separated instrument and periapical lession Ca[OH]2 was placed but not relief. It was decided to resect the mesial root /distal was treated

Figure 3: Distal Root GP Removed and Patency was Established and Working Length was Determined

Figure 4: Master cone in distal root

Figure 5: Obturation and Post Obturation Restoration was done

Figure 6: Mesial and Distal root separated

Figure 7: Mesial Root Extracted

Figure 8: One Month Follow up showing presence of some bony trabecula at an extraction site.

Figure 9: Three Month Follow up showing adequate amount of bony trabecula at an extraction site.

Figure 10: Six Month Follow up showing bone formation at an extraction site. Ortho treatment was continued.

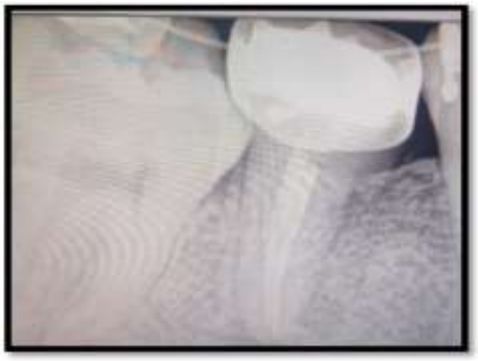

Figure 11: 1 year follow up, when site was completely healed and capping was done.

Discussion

In order to preserve multi-rooted teeth, hemisection is a helpful alternative to extraction. This endodontic approach entails treating the remaining roots with root canal therapy and replacing them with appropriate restorative material. It also entails splinting the tooth with the neighboring tooth to reduce the chances of displacement and then placing a fixed prosthodontic prosthesis to preserve the occlusal balance.[7] Because of its anatomical form, there is less literature on distal root removal in mandibular molars than on mesial roots.

However, hemisection is a viable alternative that should be taken into consideration prior to molar extraction[9], particularly in the presence of conditions like severe vertical bone loss (one root of a multi-rooted tooth), furcation destruction, the roots of neighboring teeth being in an unfavorable position, inadequate hygiene preventing the maintenance of proximal areas, and severe root exposure due to dehiscence, blocked canals, overextended unapproachable gutta percha and separated instruments beyond apex. The following endodontic/restorative situations need hemisection: non-restorable portions of multi-rooted teeth; endodontic failures; prosthetic failure of abutments within a splint; vertical fracture of one root.

In hemisection cases, Buhler (1988) reported a 32% failure rate that was linked to endodontic disease and root fractures; nevertheless, long-term investigations by other authors (0–9%) have demonstrated higher success rates in hemisection cases. [5,9,10]

The follow-up period of upto six months in the current case showed an excellent prognosis with appropriate occlusion, no movement, and a healthy periodontal state. According to earlier findings, hemisection is a viable therapeutic option for young children's molar teeth, which would otherwise need to be pulled owing to significant caries.[8] Therefore, careful treatment of a young patient's extensive carious molar tooth can prevent occlusal dysfunction, minimize financial stress, and preserve the tooth.

Conclusion

Conservative management of grossly carious multirooted teeth in young patients not only preserves the dentition but also reduces the financial burden, psychological trauma, and occlusal dysfunction associated with tooth loss. Hemisection seems to be a reliable treatment option for saving a non restorable molar which otherwise needs to be extracted.

With recent refinements in endodontics, periodontics and restorative dentistry, hemisection has received acceptance as a conservative and dependable dental treatment and teeth so treated have endured the demands of function.

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