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Indian J.Sci.Res. 15 (1): 135-138, 2024 Case Report

HEMISECTION: AN ALTERNATIVE TO EXTRACTION: A CASE REPORT

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ABSTRACT

Hemisection of a molar denotes removal or separation of a root along with its accompanying part of crown. It is a suitable treatment option when the caries, resorption, perforation, or periodontal damage is restricted to one root while the other root is relatively healthy. Hemisection of the affected tooth helps to retain the tooth structure, surrounding alveolar bone, and may also facilitate the placement of fixed prosthesis. This case report describes the hemisection as a successful treatment method to save a grossly carious mandibular first molar with periodontal and periapical involvement. Hemisection and prosthetic rehabilitation yielded a satisfactory result. With careful treatment planning and precise surgical management, undesirable consequences of tooth loss were prevented.

KEYWORDS: Endodontic-periodontal Lesion, Furcation Invasion, Class II Furcation, Fixed Partial Denture

Modern dentistry has made it possible to have a healthy dentition for life. Losing posterior teeth leads to tooth migration, loss of masticatory function, and reduction in arch length hence, maintenance of posterior teeth is important. Bacteria are responsible for a variety of dental health disorders, including dental caries and periodontal disease. Extraction of the teeth and replacement with a prosthesis are the only options for treating periodontally affected molars with severe decay. Hemisection is the separating of multirooted teeth with their crown portion, resulting in the loss of periodontal attachment, to retain the natural tooth structure and make space for a fixed prosthetic appliance. The word hemisection is a treatment option that enables the preservation of tooth structure and alveolar bone. It is also a synonym for tooth sectioning, bisection, bicuspidization, odontosection, or tooth separation (Nasr and Nasr, 2001; Parmar and Vashi, 2003; Alaçam, 2012; Haueisen and Heidemann, 2002; Kurtzman *et al.*, 2012; Çalışkan, 2006).

CASE REPORT

A 54-year-old female patient came to the Department of Conservative Dentistry and Endodontics, Career Post Graduate Institute of Dental Sciences and Lucknow, complaining of decay and pain in the lower right back tooth area over the previous week. The patient reported of pain which was dull and continuous and aggravated on biting in relation to offending tooth. No relevant medical/family history was reported. The patient was conscious, cooperative, and well-oriented to time, place and person. Clinical examination of the right mandibular first molar revealed the presence of a large mesio occlusal carious lesion extending sub-gingivally which was tender on vertical percussion. A periodontal probing around the tooth revealed normal alveolar bone architecture, normal sulcular depth, no pockets, and mobility within physiological bounds. RVG with respect to 46 revealed coronal radiolucency involving enamel, dentin, and pulp with loss of lamina dura (Fig. A).The final diagnosis was symptomatic irreversible pulpitis with symptomatic apical periodontitis with respect to 46. Root canal treatment was initiated after obtaining the informed consent from the patient. During the first visit, access opening was performed using endo access bur (no. 2). Initial glide path was created using #10 k file. The working length (Distal-17.5 mm) (Fig. B). Apical enlargement was done up to #25 k file. Root canal instrumentation (crown-down technique) was completed using rotary files with canal lubricant up to 25(4%). Copious irrigation with saline and 2.5% sodium hypochlorite was done. Tooth was temporized with cotton pellet and Zinc oxide eugenol (Yadav *et al.*, 2012; Akki and Mahoorkar, 2011; Şahinkesen *et al.*, 2005; Saad *et al.*, 2009; Arora *et al.*, 2017; Sharma *et al.*, 2018).

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Figure A: Diagnostic RVG

Figure B: Obturation done

Temporary restoration was removed. During the second visit, initial irrigation was done using saline and 2.5% sodium hypochlorite. to ensure the master cone fit, a radiograph was taken. Final irrigation was performed using saline, 2.5% sodium hypochlorite, and 17% ethylenediaminetetraacetic acid. Using absorbent paper tips, the canal was dried. Using a single-cone technique, obturation was carried out with the corresponding master cone 25(4%) to ensure a good seal, the canal orifices were sealed with glass ionomer cement (GIC) (Figure B), and the chamber was restored with composite. After administration of local anesthesia, interdental papilla and gingival margins were reflected with a periosteal elevator extending from the second premolar to the first molar (45, 46). A tapered fissure carbide bur was used to cut a vertical segment from the buccal to the lingual. the bur was positioned more mesially than distal. A probe was passed after resection, to make sure the two roots were separated. the tooth's mesial portion was removed, and sterile saline was used to irrigate the extracted site. A final shaping of retained segment was done to obtain a smooth surface. With 3-0 silk non resorbable sutures, the interdental papilla and gingival borders were realigned and repaired. Tooth was kept out of occlusion (Fig. C to M)

Figure C: Pre-operative

Figure D: Furcation measured through Williams probe

Figure E: Hemisection done

Figure F: Root fragment

Figure G: Suture done

Figure H: Hemisection done

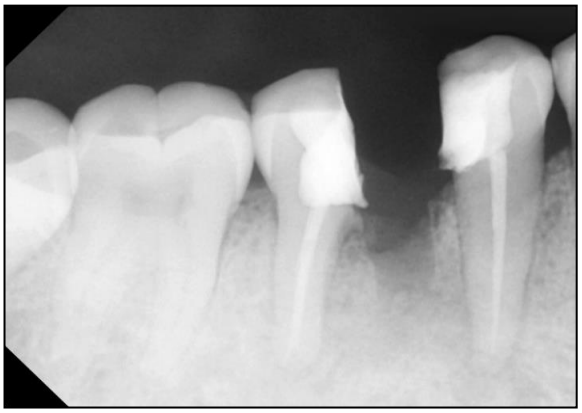

Figure I: GIC restoration done

Figure J: Tooth preparation done

Figure K: Cast fabrication

Figure L: Crown placement

Figure M: RVG showing 1 year follow-up

Crown preparation for Porcelain fused to metal crowns was done using distal segment of mandibular first molar and second premolar. Tooth preparations was carried out with respect to 45, 46. Alginate impressions of the arches were taken and cast was poured. PFM crown was given. At 1-month recall visit, healing was found to be satisfactory, Radiographs at 3 months and 9 months suggested progressive formation of bone in the extraction socket along with resolution of radiolucency around the distal root of tooth no. (46).

DISCUSSION

Hemisection requires the elimination of one or more roots with the corresponding coronal structure. this surgery is typically carried out as an alternative to total extraction when a patient's molar prognosis could be improved by eliminating roots that are severely weakened.The main justification for restoring these teeth was that fixed teeth are generally more functional than removable teeth and more cosmetically pleasing than no teeth. Due to the patient's reluctance to tooth extraction and inability to pay for an implant, hemisection was the treatment of choice. Hemisection of a mandibular molar may be a wise therapeutic option. In correct case evaluation is a key to this treatment's success. this technique can be used if the bone support around the root is sufficient, but adequate root size is also necessary for a good prognosis and course of therapy. Whether there is more root than bone, supporting the fixed prostheses is another aspect of restoration success to take into account.Hemisection is important from the standpoint of conservative dentistry to keep the tooth from being extracted. Hemisection, a multidisciplinary approach to treatment that combines endodontic, restorative, and prosthodontic procedures, represents an additional option for maintaining teeth and bone structure.

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.

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