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HEMISECTION: A HOPE FOR THE HOPELESS PROGNOSIS

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ABSTRACT

Hemisection is an invasive procedure of conservative dentistry, dealing with the disengagement of a molar tooth at the furcation area leading to the simultaneous removal of diseased root and crown portion. The assured predictability and higher success rates make it one of the common procedures carried out in preservation of sound structure of a molar with healthy periodontium.

CASE REPORT

INTRODUCTION

Hemisection refers to an invasive procedure of conservative dentistry where in the molar tooth is separated at the furcation to retrieve the diseased portion of the tooth, preserve and restore the remaining tooth structure to aid in function. Post extraction of the diseased structure, the remaining tooth undergoes root canal therapy followed by prosthetic rehabilitation.[1,2]

This article reports a case of 31 year old female in which hemisection was carried out.

CASE REPORTS

CASE 1

A 31 year old reported with a chief complaint of mobility of right mandibular first molar. On clinical examination, an amalgam restoration was noted on the occlusal aspect. Tooth was tender to percussion, grade III furcation involvement with grade II mobility. (Fig 1).

Fig 1: Photograph of preoperative clinical picture

Radiographic evaluation revealed severe vertical bone loss surrounding the mesial root of the tooth along with furcation involvement. There was also moderate bone loss around the distal aspect of distal root of molar and mesial aspect of second premolar. (Fig 2).

Fig 2: Photograph of preoperative IOPA

Treatment was planned as a two stage procedure. The first step included root canal of the affected tooth followed by hemisection It was carried out with diamond cylindrical bur through its furcation. (Fig 3).

Fig 3: Photograph depicting hemisection

Central cuts were given. (Fig 4)

Fig 4: Photograph depicting central cuts

Mesial diseased fragment was extracted.

Fig 5: Retrieval of the mesial root

Biomechanical preparation of the crown was done of the retained tooth portion. The reduced molar was shaped in the form of a premolar. A temporary crown was cemented

during healing. Bone graft was placed(fig 6), and the defect was sutured. (Fig 7)

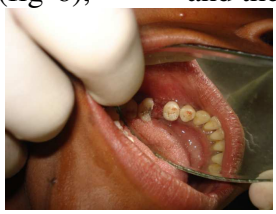

Fig 6: Photograph after bone graft placement

Fig 7: Photograph of closure

Immediate postoperative radiographs revealed no complications.(Fig 8)

Fig 8: Photograph showing postoperative IOPA

Prosthetic rehabilitation was done. (Fig 9) Patient was followed up for three months with no postoperative complications and excellent results. (Fig 10).

Fig 9: Photograph showing prosthetic rehabilitation

Fig 10: Photograph showing Postoperative IOPA -3 months follow up

DISCUSSION

Hemisection is a useful treatment modality in salvaging molars with questionable prognosis indicated for extraction. Root amputation or hemisection are the other synonyms of the said procedure. The procedure deals with preservation of as much as sound tooth structure as possible.[1]It is differentiated from bicuspidization, a procedure which deals with separation of the two roots of the molar at the furcation and restoration of individual roots as premolars.[2] Root resection refers to another procedure involving removal of only affected root at the point of confluence with the crown.[3]

Patient's oral condition, caries status, medical conditions, accessibility as well as bone support are some of the criteria to be considered before case selection. Factors determining the selection of treatment plan are broadly categorized into 3 types:

1. Local factors: anatomy of the tooth, crown root ratio, attachment loss severity, grades of mobility, occlusal relationship- intra as well as inter occlusal

2. Patient factors: medical condition of the patient, oral hygiene, economic value, time factor
3. Clinician factors: good case selection, diagnostic and treatment planning skills, availability of therapeutic options

Tooth resection can be done keep in mind either periodontal or restorative treatment. It is indicated in following cases[3]

1. Severe vertical bone loss involving only one root of a multi rooted tooth
2. Through and through furcation destruction
3. Proximity of roots of adjacent teeth preventing adequate maintenance of oral hygiene
4. Root exposure due to dehiscence
5. Periodontal failure of an abutment tooth in a fixed bridge
6. If one root cannot be completely instrumented due to anatomic reasons or due to iatrogenic causes
7. Vertical fracture of one root
8. Severe destruction of one root due to resorption, caries, trauma or perforation

Some of the contraindications listed are strong adjacent teeth for abutment, inoperable canals in retained root and fusion of root making the separation impossible.[4]

Park et al suggested that without optimal or good oral hygiene, the efficacy of the said procedure in maintaining the bone support for a longer period decreases. As per Shafiq et al, hemisection is a viable treatment option when the defect is restricted to a single root and other root is disease free and suitable for being an abutment.[2]

As per Buhler, 32% failure rate was seen in hemisection secondary to endodontic pathology and root fracture. Literature has also revealed greater success in long term studies. It is highly beneficial in younger patients in reducing the psychological trauma of missing tooth as well as maintains function.[4]

To conclude, hemisection is an excellent choice in retaining mandibular molars with adequate tooth structure despite being exposed at furcations and advised for extractions.

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