Case Report

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HEMISECTION-A CONSERVATIVE APPROACH FOR TOOTH SURVIVAL: A CASE SERIES

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ABSTRACT:

Modern dentistry, at the same time increase in awareness among the patients for their dentition maintenance, have increased the treatment of teeth which were once have been removed. In context to present day decree, teeth with advanced bone loss may retained well by removal of single or more of their roots. Present article illustrates a conservative simple procedure for hemisection in mandibular molar and their subsequent restoration. The results obtained with this tooth offer possibility of a successful repair technique for this otherwise hopeless complication of endodontic therapy.
Keywords: Hemisection, Furcation, Restoration.

INTRODUCTION:

Recent advances in dentistry provided favorable circumstances for patients for their functional dentition maintenance for prolonged time. Remedial measures done for retention of teeth differ in complexity. The treatment for the teeth to be retained as whole or in part may include combination of restorative dentistry, endodontics and periodontics. [1] The challenging problems in periodontal therapy for the treatment of furcated teeth with different degrees of lesions within the interradicular space have been most difficult. Thus various causes can lead to destruction of this area; therefore, correct diagnosis plays a crucial role in selecting the appropriate therapy. The reduced success rate of conservative nonsurgical and surgical therapy of multirooted lesions is most often related to the furcation area anatomical characteristics interfering with adequate instrumentation. The health of the tissues cannot be restored unless these continued periodontal breakdown defects are repaired or eliminated which may lead to total loss of tooth. Thus to preserve as much tooth structure as possible rather than sacrificing the whole tooth, tooth resection procedures are used.[2]

The term tooth resection denotes the excision and removal of any segment of the tooth or a root with or without its accompanying crown portion. Various resection procedures described are: root amputation, hemisection, radisection and bisection. Root amputation refers to removal of one or more roots of multirooted tooth while other roots are retained. Hemisection denotes removal or separation of root with its accompanying crown portion of mandibular molars. Radisection is a

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newer terminology for removal of roots of maxillary molars. Bisection / bicuspidization is the separation of mesial and distal roots of mandibular molars along with its crown portion, where both segments are then retained individually.[3]

Restoration may be unsuitable for a terminal abutment molar with extensive decay. The treatment options are limited in such cases and may include a removable partial denture or a dental implant to replace the missing tooth. Alternatively, if the decay is limited to one root, a hemisection procedure may be possible. This is a form of conservative dentistry, which aims to retain as much of the original tooth structure as possible. The results are predictable, and success rates are high if certain basic considerations are taken into account.[4-8] Furcation is an area of complex anatomic morphology that may be difficult or impossible to debride by routine periodontal instrumentation. Furcation involvement refers to invasion of the bifurcation and trifurcation of multi rooted teeth by periodontal disease.

The aim of this article is to present a case series of hemisection as a treatment option for furcation involvement.

Weine has listed the following indications for tooth resection

INDICATIONS

1. Furcation involvement is through and through.
2. Bone loss is Severe.
3. Perforation in endodontic treated teeth.
4. Severe root exposure.

CONTRAINDICATIONS

1. Inoperable root canals.
2. Strong adjacent abutment teeth.
3. Fused roots.

Therapeutic protocol for Root resection

A complete medical, dental history, thorough clinical, radiographic evaluations including periapical radiographs, diagnostic casts and consultation with the restorative dentist should be carried out. Treatment options should be explained to the patient, and the potential problems should be discussed. The decision concerning the final treatment to be performed should be made after the effects of the cause-related therapy have been evaluated.

Carnevale (1995) suggested the following sequence of therapy:

Phase 1: Endodontic treatment

Phase 2: Crown build-up

Phase 3a: Root resection or root separation during preliminary prosthetic preparation

Phase 3b: Relining and insertion of a prefabricated shell provisional restoration

Phase 3c: Impression for a metal reinforced provisional restoration

Phase 4: Insertion of the reinforced provisional restoration

Phase 5a: Periodontal surgery

Phase 5b: Root resection or root separation if not previously executed

Phase 5c: Tooth preparation during surgery

Phase 5d: Relining of the reinforced provisional restoration

Phase 6: Clinical and radiographic re-evaluation

Phase 7: Final prosthetic tooth preparation and impressions

Phase 8: Insertion of the definitive prosthetic reconstruction.[1]

CASE DETAILS:

CASE 1:

A male patient of 45 years age, reported to Department of Periodontics, Mamata Dental College & Hospital, with the complaint of pain and mobility of 46. On examination, tooth was sensitive to percussion and revealed grade II mobility in relation to 46.[Fig. 1]

On probing the area, PD> 13 mm around the distal root of 46, PD > 15mm irt 47 with grade III furcation involvement irt 46.

On radiographic examination, there was severe vertical bone loss which was evident surrounding the distal root, involving the furcation area. The bony support of mesial root was completely intact [Fig. 2]. It was decided that the distal root should be hemisected after completion of endodontic therapy of the tooth.[Fig. 3].and 47 was extracted.

Under local anesthesia, full thickness flap was reflected after giving a crevicular incision from second premolar to second molar. Upon reflection of the flap, the bony defect along the distal root became quite evident. All chronic inflammatory granulation tissue was removed with curettes to expose the bone. The vertical cut method was used to resect the crown. A long shank, taper fissure carbide bur in high speed handpiece was placed along the buccal groove and a cut was made. The cut was channeled towards the center of the tooth and then directed towards the interproximal furcation opening of the mesial root. The bur was moved in the lingual and apical direction until the furcation area was reached. Once the bur had severed the floor of the pulp chamber, A fine probe was passed through the cut to ensure separation. [Fg. 4] The distal half was extracted [Fig. 5] and the socket was irrigated adequately with sterile saline. Scaling and root planning of the root surfaces, which became accessible on removal of distal root was done. Then the flap was repositioned and sutured with 3/0 black silk sutures. [Fig .6]. The occlusal table was minimized to redirect the forces along the long axis of the mesial root. After 1 months healing of the tissues (Figure 7), temporary bridge involving retained mesial half and mandibular second molar with sanitary pontic was given. And final prosthesis was fixed usng glass inomer cement.[Fig . 8]. Occlusion

was checked with articulating paper. The occlusion was reverified and a periapcal radiograph was obtained to ensure proper seating. [Fig. 9]. At six months follow up, occlusion was stable, there was no inflammation and the patient was satisfied with outcome. No complcatons were noted when patient was seen 1 year later.[Fig .10].

Fig .1.

PRE OP

Fig 2.

PRE OP X RAY

Fig. 3

POST ENDODONTIC THERAPY

Fig. 4

HEMISECTED 46

Fig. 5

EXTRACTED DISTAL ROOT OF 46

Fig. 6

SUTURES PLACED

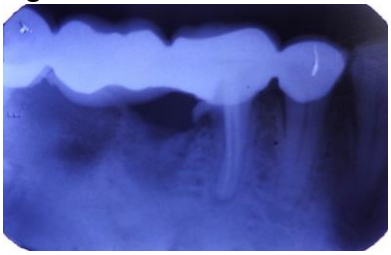
Fig. 7

INTERIM PROSTHESIS

Fig. 8

FINAL PROSTHESIS

Fig. 9



IOPA TO VERIFY SEATING OF PROSTHESIS

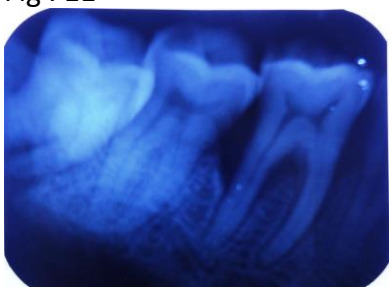
Fig. 10

1 YEAR FOLLOW UP

CASE 2:

A 44 years old man reported to Department of Periodontics, Mamata Dental College & Hospital, with the complaint of pain and mobility of right mandibular first molar. On examination, tooth was sensitive to percussion and revealed grade I mobility irt 46. On probing the area, PD> 11 mm around the distal root of 46, with grade III furcation involvement. On radiographic examination, there was severe vertical bone loss which was evident surrounding the distal root, involving the furcation area. The bony support of mesial root was completely intact [Fig. 11]. It was decided that the distal root should be hemisected after completion of endodontic therapy of the tooth.[Fig. 12]. Tooth was hemisected following the above mentioned procedure. [Fig. 13 to 19].

Fig . 11



PRE OP

Fig . 12

POST ENDODONTIC THERAPY

Fig . 13

PREOP

Fig . 14

HEMISECTED 46

Fig . 15

EXTRACTED DISTAL FRAGMENT

Fig . 16

SUTURES PLACED

Fig . 17

POST OP 3 MONTHS

Fig . 18

FINAL PROSTHESIS

Fig . 19

POST OP 1 YEAR

CASE 3:

A 25 years old man reported to Department of Periodontics, Mamata Dental College & Hospital with the complaint of pain and mobility of right mandibular first molar. On examination, tooth was sensitive to percussion and revealed grade I mobility irt 46.On probing the area, PD> 13 mm around the distal root of 46 with grade III furcation involvement. On radiographic examination, there was severe vertical bone loss which was evident surrounding the distal root, involving the furcation area. The bony support of mesial root was completely intact [Fig. 20]. It was decided that the distal root should be hemisected after completion of endodontic therapy of the tooth.[Fig. 21]. Tooth was hemisected following the above mentioned procedure. The distal half was extracted and the socket was irrigated adequately with sterile saline. [Fig. 22,23]. The crater like bony defect was grafted with hydroxyapatite bone graft (sybograft) [Fig. 24]. Then the flap was repositioned and sutured with 3/0 black silk sutures. [Fig. 25]. Clinically, the tissues were found to be healthy. A provisional restoration was given Patient was recalled after 6 weeks and a fixed bridge involving retained mesial half of mandibular first molar was planned. The final restoration with 46 was done [Fig. 26]. one year follow up [Fig. 27].

Fig. 20

PRE OP

Fig. 21

POST ENDODONTIC THERAPY

Fig. 22

HEMISECTED 46

Fig. 23

EXTRACTED DISTAL FRAGMENT

Fig. 24

BONE GRAFT

Fig. 25

SUTURES PLACED

Fig. 26

PROSTHESIS

CONCLUSION:

To conclude, I recommend hemisection as a treatment option to conserve tooth structure and use it as an abutment. The prognosis of root resected molars may not be as grim as previously believed; rather such teeth can function successfully for long periods. It is thus a conservative option with acceptable prognosis.

REFERENCES:

1. Basaraba N. Root Amputation and Tooth Hemisection. Dent Clin of N Amer 1969:13:121.
2. Weine FS – Endodontic Therapy, 6th Edition, 2004.
3. Carranza and Newman. Clinical Periodontology, 10th Edition, WB. Saunders Co.
4. Ross IF and Thompson RH. : A long term study of root retention in the treatment of maxillary molars with furcation involvement. J Periodontol 1978; 49: 238-244.
5. Philadelphia Ingle JL and Bakland LK – Endodontics, 4th Edition.
6. Staffileno HJ. Surgical treatment of Furca Invasion, Dent Clin of N Amer 1969; 103-119.
7. Jain et al . Hemisection as an alternative treatment for resorbed multirooted tooth – a

case report . Asian journal of oral health & allied sciences – vol 1, issue 1, jan- mar 2011.

8. Mukesh Hasija et al. Hemisection-hope for last survival. Natl J Maxillofac Surg. 2013 Jul-Dec; 4(2): 260–261