

Hemisection : Case Report

ABSTRACT :

Background: The increased desire of patients to maintain their dentition has forced conservative dentistry to conserve the teeth in the mouth which are planned to be removed. In order to carry out this present day mandate, periodontally diseased teeth with severe bone loss may well be retained by removal of one or more of their roots. In this case report hemisection of the right first mandibular molar with a simple procedure and subsequent prosthetic treatments are presented.

Method: In this case mesial canal of molar were unnegotiable and furcation involvement was there so ,after obturation of distal root canal ,mesial root were removed with vertical cut method.

Result : At the end of treatment patient is having three premolars using distal half of molar and second premolar.

Conclusion: Periodontally diseased teeth with severe bone loss may well be retained by removal of one or more of their roots.

Introduction

Modern advances in all phases of dentistry have provided the opportunity for patients to maintain a functional dentition for lifetime. The treatment may involve combining restorative dentistry, endodontics and periodontics so that the teeth are retained in whole or in part. Continued periodontal breakdown may lead to total loss of tooth unless these defects can be repaired or eliminated and health of the tissues restored. Thus tooth separation and resection procedures are used to preserve as much tooth structure as possible rather than sacrificing the whole tooth (1).

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. Bisection or bicuspidization is the separation of mesial and distal roots of mandibular molars along with their coronal portion, where both segments are then retained individually(2,3).

Authors have listed the following indications and contraindications for hemisection (4,5,6):

Periodontal indications

1. Severe bone loss affecting one or more roots untreatable with regenerative procedures
2. Class II or III furcation invasions or involvements
3. Severe recession or dehiscence of a root.
4. Unfavourable proximity of roots of adjacent teeth, preventing adequate hygiene maintenance in proximal areas.

Endodontic and Restorative Indications

1. Prosthetic failure of abutments within a splint: If a single or multirrooted tooth is periodontally involved within a fixed bridge, instead of removing the entire bridge, if the remaining abutment support is sufficient, the root of the



Dr. H P Trivedi
Professor & Head

Dr. Manju Gupta
Assoc. Professor

Dr. Sachin Jain
Post-graduate student

Dept. of conservative dentistry & endodontics
Govt. Dental College & Hospital, Jaipur 302016

involved tooth is extracted.

2. Endodontic failure: Hemisection is useful in cases in which there is perforation through the floor of the pulp chamber, or pulp canal of one of the roots of an endodontically involved tooth which cannot be instrumented.
3. Vertical fracture of one root: The prognosis of vertical fracture is hopeless. If vertical fracture traverses one root while the other roots are unaffected, the offending root may be amputed..

CONTRAINDICATIONS

1. Strong adjacent teeth available for bridge abutments as alternatives to hemisection.
2. Inoperable canals in root to be retained.
3. Root fusion-making separation impossible.

Under local anesthesia, the vertical cut method was used to separate the crown. A long shank tapered fissure carbide bur was used to make vertical cut toward the bifurcation area.. The mesial root was extracted (Figure.2,3). The furcation area was trimmed to ensure that no spicules were present to cause further periodontal irritation. Scaling and root planning of the root surfaces, which became accessible on removal of mesial root was done. The occlusal table was minimized to redirect the forces along the long axis of the distal root. After healing of the tissues, fixed bridge involving retained distal half and mandibular second premolar with sanitary pontic was given. Thus patient treatment end up with having 3 premolars (Figure. 4,5).

Discussion : According to Newell the advantage of the amputation, hemisection or bisection is the retention of some or the entire tooth (8). However, the disadvantage is that the remaining root or roots must undergo endodontic therapy and the crown must undergo restorative management.). However, failure to perform endodontic treatment first is not a contraindication for root resectioning, if it can be determined that a successful root canal filling is practical and possible (9). It has been shown that vital root resections are possible, especially in the maxilla, with symptoms not being manifested until several weeks after the placement of a sedative dressing of choice (10).

Success of root resection and separation procedures depends, to a large extent, on proper case selection. It is important to consider the following factors before deciding to undertake any of the root separation and resection procedures.

1. Advanced bone loss around furcation area with acceptable level of bone around the remaining roots
2. Angulations and position of the tooth in the arch. A molar that is buccally, lingually, mesially or distally tilted, can not be separated and resected.
3. Divergence of the roots - teeth with divergent roots is easier to resect. Closely approximated or fused roots are poor candidates
4. Length and curvature of roots - long and straight roots are more favorable for root separation and resection than short, conical roots
5. Feasibility of endodontics and restorative dentistry in the root/roots to be retained

Hemisection has been used successfully to retain teeth with furcation involvement. However, there are few disadvantages associated with it. As with any surgical procedure, it can cause pain and anxiety. Root surfaces that are reshaped by grinding in the furcation or at the site of hemisection are more susceptible to caries. Often a favorable result may be negated by decay after treatment. Failure of endodontic therapy due to any reason will cause failure of the procedure. In addition, when the tooth has lost part of its root support, it will require a restoration to permit it to function independently or to serve as an abutment for a splint or bridge.

Unfortunately, a restoration can contribute to periodontal destruction, if the margins are defective or if non-occlusal surfaces do not have physiologic form. Also, an improperly shaped occlusal contact area may convert acceptable forces into destructive forces and predispose the tooth to trauma from occlusion and ultimate failure of hemisection.(11,12)

In the case reported, various aspects of occlusal function such as location and size of contacts and the steepness of cuspal inclines may have played a significant role in causing mobility before treatment. During treatment, occlusal contacts were reduced in size and repositioned more favourably. Lateral forces were reduced by making cuspal inclines less steep and eliminating balancing incline contacts.

Conclusion

The prognosis for hemisection is the same as for routine endodontic procedures provided that case selection has been correct, the endodontics has been performed adequately, and the restoration is of an acceptable design relative to the occlusal and periodontal needs of the patient.

Root amputation and hemisection should be considered as another treatment modality to the dental surgeon, determined to retain and not remove the natural teeth. 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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Legends:

1. Figure- 1: IOPA radiograph showing blockage of mesial root canal
2. Figure- 2: IOPA radiograph showing mesial half of root removed and distal half retained
3. Figure- 3: Picture shows retained distal half of molar..
4. Figure- 4: IOPA radiograph after completion of treatment
5. Figure- 5: Picture shows three premolars in patient mouth

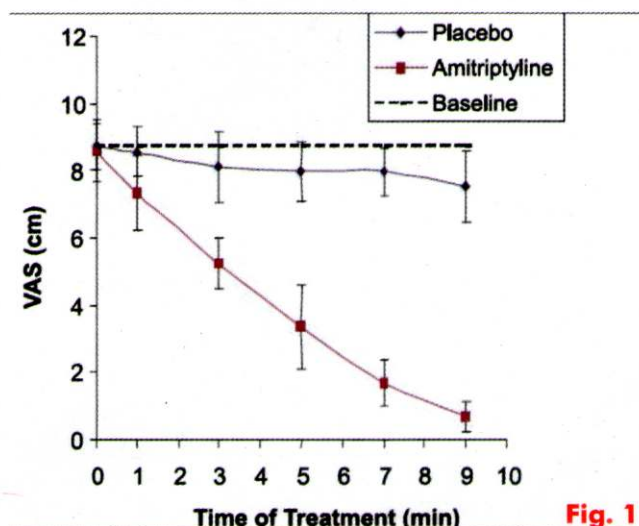


Fig. 1

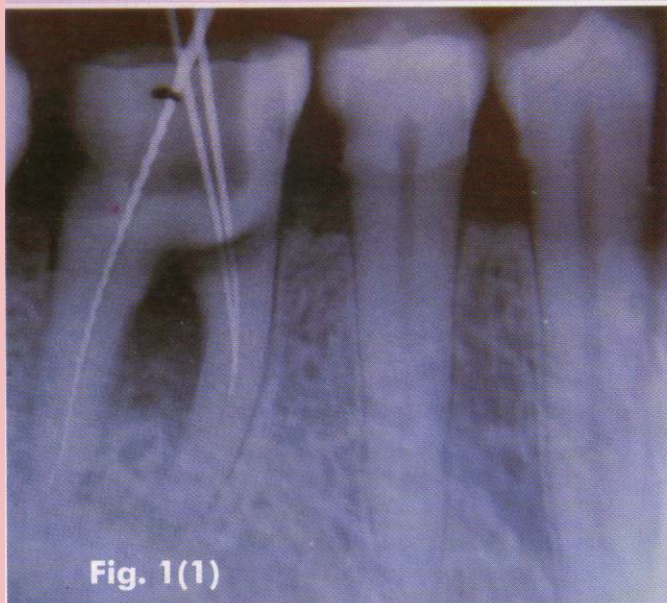


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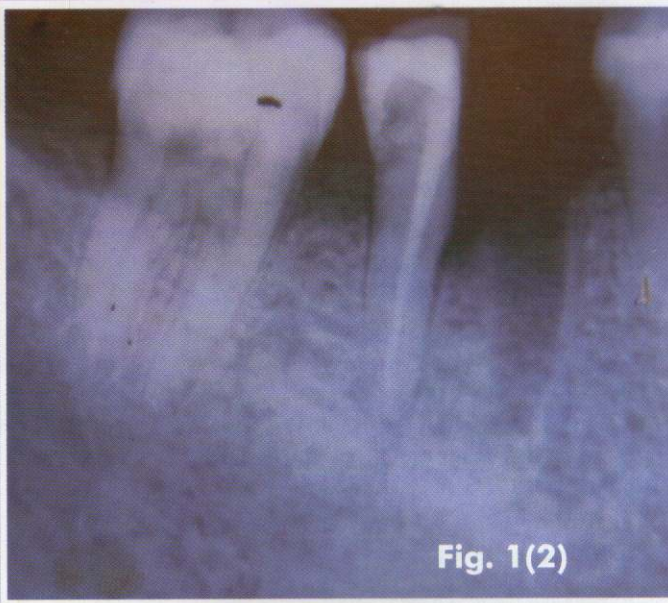


Fig. 1(2)

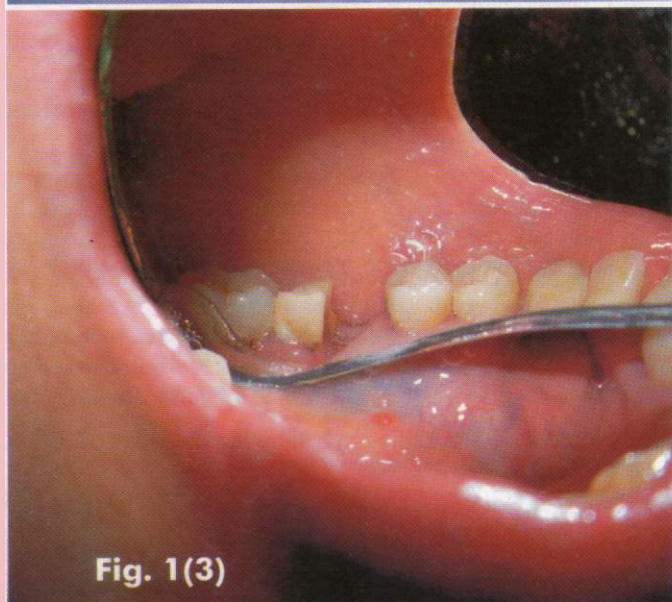


Fig. 1(3)

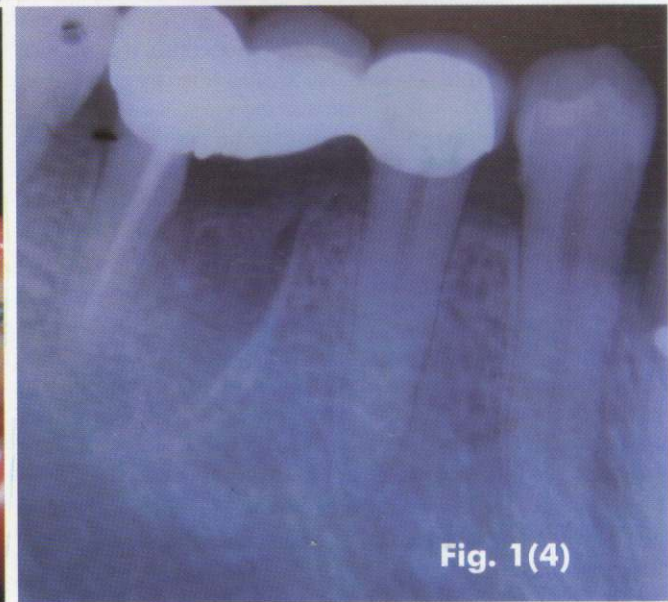


Fig. 1(4)

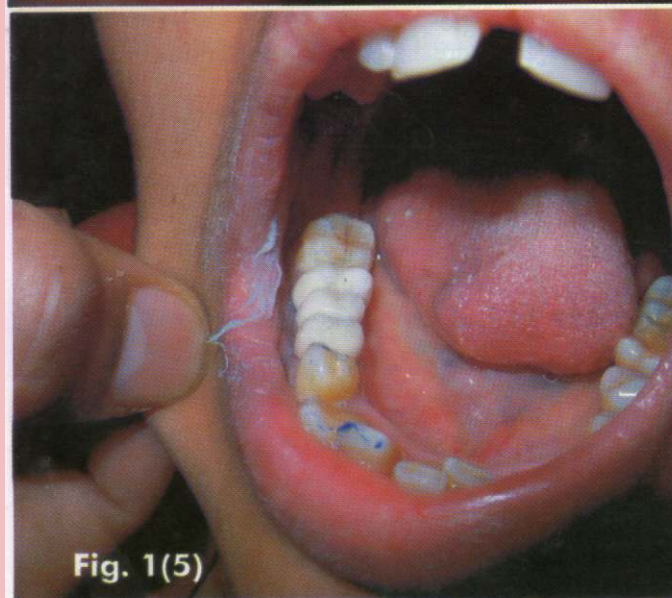


Fig. 1(5)

You can communicate with us through all the following E-mail ID:

healtalk08@gmail.com

healtalk08@yahoo.com

healtalk08@hotmail.com

dentalk@ymail.com

dentalk08@yahoo.in