



Case Report

Hemisection- A Baton for Extracting Teeth

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ARTICLE INFO

Received 22 Aug. 2015
Received in revised form 12 Sep. 2015
Accepted 03 Oct. 2015

Keywords:

Chronic periodontitis,
Mandibular molar,
Furcation involment,
Hemisection.

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ABSTRACT

Preservation of tooth structure has always been the prime aim of any of the dental procedures carried out by the dentist such as restoring caries teeth. It is believed that hemisection can be considered as the treatment modality that fall into the conservative treatment approach for multirooted teeth. The outcome of the treatment is determined by proper case selection and various other clinical parameters. This case report presents hemisection as a treatment modality for management of mandibular molar with furcation involvement HEMISECTION-HOPE FOR LAST SURVIVAL.

Introduction

Periodontal disease is a chronic inflammatory condition characterized by formation of pockets around the diseased tooth, destruction of the periodontal tissues, resulting in loss of connective tissue attachment, alveolar bone, and may ultimately result in tooth loss. When the tooth is relatively indicated for extraction and the patient is eager on retain the tooth, many a times we as clinicians would face situations, where tooth should be saved.¹

Various treatment modalities including restorative, endodontic and periodontic therapy to save teeth have been

tried, whether it may be as a part or whole tooth.² So that the survived teeth can act as independent units for functional purpose such as for mastication or as abutments in simple fixed bridges.

The management and treatment for the furcation involved mandibular molar teeth has always been challenge in periodontal treatment procedures. Hemisectionis one of the treatment modality to save un-involved root of involved tooth more successfully.^{3,4}



“Weine” listed some of the indications and contra-indications for Hemisection of the teeth⁵

Periodontal Indications

- Severe vertical bone loss involving only one root of multi-rooted teeth.
- Through and through furcation destruction
- Unfavorable proximity of roots of adjacent teeth, preventing adequate hygiene maintenance in proximal areas.
- Severe root exposure due to dehiscence.

Endodontic and Restorative Indications

- Prosthetic failure of abutments within a splint: If a single or multirooted 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 involved tooth is extracted.
- Endodontic failure: Hemisection is useful in cases in which there is perforation through the floor of pulp chamber or pulp canal of one of the roots or an endodontically involved tooth which cannot be instrumented.
- 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 amputated.
- Severe destructive process: This may occur as a result of furcation or sub gingival caries, traumatic injury and large root perforation during endodontic therapy.

Contraindications

- Strong adjacent teeth available for bridge abutments as alternatives to hemisection
- In-operable canals in root to be retained.
- Root fusion making separation impossible.

Case Report

A 31-year-old male patient reported to the Postgraduate Department of periodontology, Rajarajeswari Dental College and Hospital, Bangalore with a complaint of intermittent pain and sensitivity in right mandibular first molar since 6 months. Pain was intermittent, aggravated on chewing food and relieved on medication. Patient also complained of food lodgment in interdental area between right first and second molar teeth. His medical history was non-contributory to the condition.

Clinical Examination

On examination, the tooth was sensitive to percussion with respect to 46, and probing pocket depth measured 9mm in distal aspect of 46 and there was grade 1 mobility, periodontal abscess, and grade 3 furcation irt 46 on examination. And 6mm pocket depth in distal of 44 was found clinically.

Radiographic Examination

On radiographic examination, severe vertical bone loss was evident surrounding the distal root and involving the furcation area. The bony support of mesial root was completely intact. Perforation of furcation area and through and through defect was noticed in furcation region with Nabers's probe clinically. [Figure 1]

Endodontic Procedure

Vitality test was done by gutta-percha stick method, and showed negative results. Considering the clinical and radiographic evaluation, primary endodontic therapy was performed by resection of distal portion of tooth along with root. The canals of the roots were biomechanically prepared using step back technique. The canals were

obtured by lateral condensation method using guttapercha. To obtain good seal and strength for the tooth glass ionomer cement was used.

Hemisection Procedure

After adequate local anesthesia, crevicular incision was given from first premolar to second molar. Full thickness flap was reflected to expose the furcation area. Then granulation tissue was removed by curets to expose the bone. Vertical cut was made in bifurcation area using tapered fissure carbide bur. Adequate cut was given to ensure the separation of the resected tooth portion.

The distal root was removed and the socket was irrigated adequately with sterile saline to remove bony chips and debris [Figure 2,3]. The furcation area was rounded off to avoid further periodontal irritation. The flap was then repositioned and sutured in place with single interrupted 3/0 black silk sutures to obtain primary closure. Forces acting along the long axis of the mesial root was redirected by reducing the occlusal table. Patient was recalled after one week for suture removal. The case was followed up for 3 months for survival of resected molar. A fixed bridge was fabricated using adjacent 2nd molar and the resected molar as abutments to replace edentulous area.[Figure 4, 5].

Discussion

Hemisection suggests a form of conservative procedure, which aims at retaining as much of the original tooth structure as possible. Taking certain basic consideration the results are durable, and high success rates have been reported.

Although success of root resection procedures depends to a large extent on proper case selection. In our case the distal root was resected because of the bone loss.

The literature on distal root resection is limited as compared to mesial root in mandibular molars because of its anatomical structure that is the conical shape of mesial root stabilize more occlusal load when compared with distal root. Few case reports done by *Saad et al 2009* and *Balsaraf, et al 2014* showed on distal root resection at follow-up for 1 year no complication was noted. Patient was satisfied with the outcome^{6,7}

Nevertheless hemisection is a viable option to be considered before the extraction of molars specially in the presence of conditions such as severe vertical bone loss (one root of a multi-rooted tooth), furcation destruction, unfavorable proximity of roots of adjacent teeth, preventing adequate hygiene in maintenance of proximal areas and severe root exposure due to dehiscence and this procedure provided a good, absolute, and biological cost saving alternative with good long-term success.

Conclusion

Hemisection is a baton for the extracting teeth. It preserves tooth structure, alveolar bone and cost savings (time and money) over other treatment options the suitable alternative for extraction and implants therapy. With recent refinements in endodontics, periodontics and restorative dentistry, hemisection has received acceptance as a conservative dental treatment for a hopeless tooth.

Conflict of Interest

The authors declare no conflicts of interest.

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Figure 1: IOPAR shows severe vertical bone loss surrounding the distal root and involving the furcation area



Figure 2: Vertical cut towards the bifurcation area was done



Figure 3: Distal root was extracted



Figure 4: A fixed bridge fabricated using adjacent 2nd molar and the resected molar as abutments to replace edentulous area

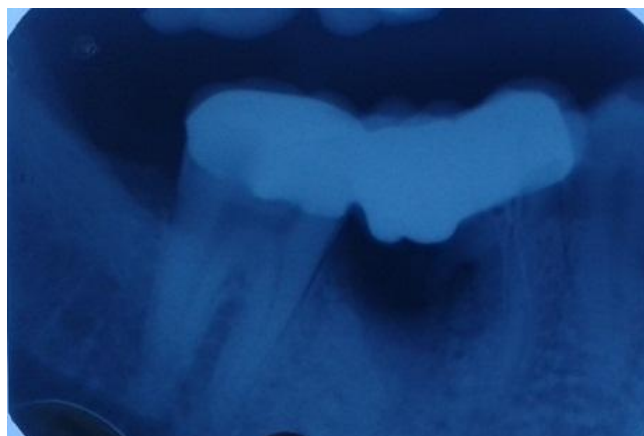


Figure 5: IOPAR after prosthesis ridges