

Coronoradicular Amputation – Novel Endodontic Procedure: A Case Series**Lakkam Ram Surender¹, Pinnamreddy Jyothi², Sindhoori Harikumar³, Sairam Reddy Mandadi³**

¹Professor and Head, SVS Institute of Dental Sciences, Department of Conservative dentistry and Endodontics, S.V.S Institute of dental sciences, Telangana, India; ²Senior Lecturer, Department of Conservative dentistry and Endodontics, S.V.S Institute of dental sciences, Telangana, India; ³Post Graduate student, Department of Conservative dentistry and Endodontics, S.V.S Institute of dental sciences, Telangana, India

Address for Correspondence:

Dr. Sindhoori Harikumar, Post Graduate student, Department of Conservative dentistry and Endodontics, S.V.S Institute of dental sciences, Telangana, India.

ABSTRACT:

Corono -radicular amputation or hemi section denotes surgical separation of crown and root portions of mandibular molar. This approach aims in preservation of tooth structure. This case report describes simple procedure of hemi section and its subsequent restoration.

Keywords: Corono - radicular amputation, Hemi section, Lower mandibular molars.

INTRODUCTION

Hemi section is the excision of multirooted tooth like mandibular molar into two halves involving coronal and radicular portions.¹ The main aim of this treatment is conservation of the remaining tooth structure and restoring its function.² Radisection is the new terminology used for removal of roots of maxillary molar. Bisection/Bicuspidisation is the separation of mesial and distal roots of mandibular molars along with its crown portion.³

Weine has given following indications for tooth resection⁴:

Indications:

- 1. Endodontic failure:** Hemi section is favourable in cases in which there is perforation through the pulp chamber floor or one of the root canal of an endodontically involved tooth which cannot be instrumented.
- 2. Vertical fracture of one root:** If there is vertical fracture of one root while the other roots are unaffected, fractured root may be amputated.
- 3. Severe destructive process:** It is a result of deep sub gingival caries or caries with furcation involvement and in cases of traumatic injury.

4. Periodontal Indications:

- a) Severe vertical bone loss involving only one root of multi-rooted teeth and severe root exposure.
- b) Teeth with through and through furcation involvement.
- c) Unfavourable concurrence of roots of adjacent teeth, preventing adequate hygiene maintenance in proximal areas.

Contraindications:

- 1.** Strong adjacent teeth available for prosthetic abutments.
 - 2.** Need for retaining inoperable canals.
 - 3.** Fused roots making separation impossible.
- Once the tooth has been diagnosed appropriate for the hemi section or radisection treatment the tooth has to undergo endodontic therapy and later restored with a crown³.

CASE SERIES:**Case 1**

30 years old Female reported with the complaint of pain and tenderness of mandibular left first molar. On radiographic examination there was instrument separation and strip perforation at the apical half of the mesial root.

Hemi section of mesial root was planned after completion of endodontic therapy of the distal root of the tooth. The canals were accessed, cleaned, shaped and obturated.

Under local anaesthesia, full thickness flap was raised after giving a crevicular incision at first premolar to the second molar region. All granulation tissue was removed with Gracey curettes after flap reflection. The crown was cut using the vertical cut method. Vertical cut was made with a long shank tapered fissure carbide bur towards the furcation area.

Separation was confirmed by passing a probe through the cut. Then the mesial half of the tooth was removed and the socket was irrigated adequately with saline. The extraction site was irrigated and debrided. Then the flap repositioning and suturing was done with 3/0 black silk sutures. Patient was recalled after a week for suture removal and the tooth was restored with fibre post (Para post, Coltene) and composite core (Ivoclar vivadent).



Resection of mesial root



Hemisected mesial root



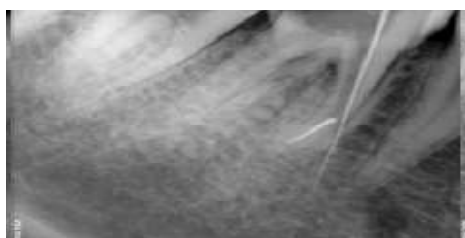
Tooth restored with Fiber post (Para post, Coltene)



Coronal build-up done with Composite core (Ivoclar Vivadent)



Intra oral view- pre operative



Radiographic view of instrument separation and strip perforation in apical half of mesial root



Post restoration



After biomechanical preparation of distal root, obturation was done in distal canal



Post Crown cementation

Case 2:

A 22 year old male presented with complaint of pain and tenderness of mandibular left first molar. On radiographic examination, severe vertical bone loss was seen surrounding the mesial root with resorption involving the furcation area and instrument separation in the apical third of the root after endodontic therapy. Hemi section of mesial root was planned and obturation of distal root was carried out. Under local anaesthesia, full thickness flap was reflected after giving a crevicular incision at the first premolar to the second molar region. Upon reflection of the flap, the crater-like bony defect along the distal root became quite evident. Curettage was performed to eliminate chronic inflammatory tissues. The vertical cut method was used to resect the mesial half of the tooth along with mesial root. Vertical cut was made with a long shank tapered fissure carbide bur towards the furcation area. to ensure Separation was confirmed by passing a fine probe through the cut. The mesial half was then removed and the socket was irrigated adequately with sterile saline. After ensuring adequate healing of the tissues at next follow-up appointment, fixed dental prosthesis involving retained distal half was performed.



Full thickness flap was raised



Mesial Root resected



Hemisected root



Pre-operative Intra oral view



Sutures placed



Radiographic view

DISCUSSION

Root amputation/hemi section is a useful alternative procedure to salvage those multi rooted teeth which have been marked for extraction. Before selection of a tooth for Root amputation, patient's oral hygiene, caries index and medical status should be considered.

Also, good bone support for the remaining root should be assessed.

Park et al. reported that hemi section of molars with questionable prognosis could maintain the teeth for a long-term period without detectable bone loss, provided the patient maintains optimal oral hygiene⁵

Saad et al. stated that hemi section of a mandibular molar may be a suitable treatment choice when the decay is confined to one half of the tooth and the other half is healthy and can very well act as an abutment⁶. Buhler noticed a failure rate of 32% in hemi section cases, attributed to endodontic pathology and root fracture, whereas other authors have shown greater success rates in hemi section cases in long-term studies⁷.

This case report suggests that hemi section can be a novel alternative to extraction in teeth with severe endo-perio problems as well as in cases of endodontic mishaps. Although such involvement curtails the long-term prognosis of the affected tooth, extraction is not always a sole option. Hemi section is one of the several treatment modalities that can be used as an alternative in such situations.¹

CONCLUSION

In conclusion hemi section can be considered as a novel conservative approach which helps in retention of natural teeth. With the recent advancements in Endodontics, Periodontics and Restorative dentistry, hemi section can be a suitable alternative for extraction and implant therapy.

REFERENCES

1. Espino DA, Esparza V, Fonseca CG. Coronal-Radicular Amputation or Hemisection? A Report Case in Lower Molar. *Open Journal of Stomatology* 2016;6(5):140.
2. Parmar G, Vashi P. Hemisection: a case-report and review. *Endodontology* 2003;15:26-9.

3. Weine FS(2004). Root amputation. In: *Endodontic Therapy*. 6th ed. Osaka: Mosby-Year Book, Inc. p. 606-39.

4. Mishra P, Sharma A, Mishra SK. Hemisection: A conservative approach of tooth preservation. *Journal of Current Research in Scientific Medicine* 2016;2(1):46.

5. Park JB. Hemisection of teeth with questionable prognosis. Report of a case with seven-year results. *Journal of the International Academy of Periodontology* 2009;11(3):214-9.

6. Saad MN, Moreno J, Crawford C. Hemisection as an alternative treatment for decayed multirrooted terminal abutment: a case report. *Journal-Canadian Dental Association* 2009;75(5):387.

7. Radke U, Kubde R, Paldiwal A. Hemisection: A window of hope for freezing tooth. *Case reports in dentistry*, 2012.

How to cite this article: Surender LR, Jyothi P, Harikumar S, Mandadi SR. Coronoradicular Amputation – Novel Endodontic Procedure: A Case Series. *Arch of Dent and Med Res* 2017;3(1):64-7.