

Bicuspidization- A case report

Rahul Kumar^{1*}, Sachit Anand Arora², Shivjot Chhina³, Rupali Kalsi Mathur⁴

¹PG Student, ²HOD, ³Professor, ⁴Reader, Dept. of Periodontics, ITS Dental College, Hospital & Research Centre, Greater Noida, Uttar Pradesh, India

*Corresponding Author: Rahul Kumar

Email: rahulchaudhary8787@gmail.com

Abstract

Mandibular molars are the first teeth to erupt in the oral cavity having high caries susceptibility index, which actually necessitates cautious oral hygiene measures. Any deprivation in the upkeep may prompt significant issue like furcation involvement. Advances in dentistry, and the expanded wants of patients to keep up their dentition, have led to treatment of teeth that once would have been removed. Bicuspidization is a surgical procedure performed on the mandibular molars for the partition of the mesial and distal roots with their individual crown divides; this detachment takes out the existence of a furcation and encourages viable oral hygiene practice. A 30-year-old female patient reported with the chief complaint of pain and food lodgement in right mandibular first molar. On examination, the tooth was sensitive to percussion and revealed Grade I mobility. On radiographic examination, bone loss was evident in the intra- radicular area. Root canal treatment was done followed by bicuspidization of tooth.

Keywords: Bicuspidization, Furcation, Mandibular molars, Nabers probe.

Introduction

A mandibular molar is bisected into two parts post root canal treatment to form two units of single bicuspid molars which makes it easy for the patient to maintain the area.^{1,2} Bicuspidization procedure is indicated in cases of extensive grade III periodontal defects particularly of mandibular molar where tunnelling procedure is required for oral hygiene maintenance.³ Nabers probe is used for the diagnosis of furcation involvement and it passes through and through in the furcation area.^{4,5} Thus, treatment of furcation involved tooth includes endodontic treatment followed by open flap debridement procedure. Then the bicuspidization procedure is carried out and post endodontic restoration is established which helps in proper plaque control.^{6,7}

Case Report

A female patient aged 30 years reported to the department of periodontics along with complaint of pain and food lodgement in right mandibular first molar region. Patient was advised interproximal brushing technique to keep the furcation area disinfect, Moreover there was repeated swelling of the gums which reconciled by itself. During examination the tooth was sensitive to percussion and was having Millers Grade I tooth mobility. While probing there was 5mm pocket depth along with the furcation involvement and that was can evident radiographically. Endodontic therapy and post-endodontic restoration was done.

Postoperative radiograph of root canal therapy (Fig. 1). Surgical area was anesthetized and full thickness flap was raised by giving crevicular incisions (Fig. 2). Vertical cut was given in the center of the tooth to separate the crown into two cusps (Fig. 3,4). Area was debrided and irrigated, following which flap was repositioned and sutured by using 3/0 silk sutures (Fig. 5). After six weeks of the procedure the tooth was prepared for metal restoration (Fig. 6). Metal

crown was placed with the help of glass ionomer cement (Fig. 7).



Fig. 1: Radiograph after root canal therapy



Fig. 2: Post-operative after flap reflection



Fig. 3: Post-operative after flap debridement



Fig. 6: Crown preparation



Fig. 4: Showing hemisection



Fig. 7: Final prosthesis



Fig. 5: Post-operative after suturing

Discussion

Usually Grade III Furcation involved molars become a challenging aspect for the dentists because there is inaccessibility so patients are not able to maintain the area clean. Non-surgical periodontal therapy (NSPT) is not successful in the various patients due to inaccessibility which could not provide sufficient cleaning to the furcation area and also incomplete debridement.^{8,9}

Farshchian and Kaiser (1988)¹⁰ revealed that in the cases where adequate bony support around furcation involved molars the success rate chances become higher and there should sufficient separation between embrasure space of mesial and distal roots which helps in hygiene maintenance.. **According to Newell (1991)**¹¹ suggested that the advantage of bicuspidization procedure is the retention of some or all the tooth structure and disadvantage in this procedure that the tooth required root canal treatment prior to the procedure.

Saad et al. (2009)¹² evaluated that bicuspidization procedure require surgical exposure which can leads to postoperative pain and discomfort to the patient. Root canal treatment is also mandatory prior to the procedure if root

canal failure occurs it can lead to failure of the entire procedure.

Basten et al (1996)¹³ determined that furcation involved molars prognosis can be increased for a longer period of time by maintaining adequate oral hygiene and surgical management.

Various studies suggested that the tooth with furcation involvement can be kept in a healthy state upto 3-7 years. The success rate of bicuspidization procedure is depending upon the routine endodontic therapy and also proper case selection. Moreover, the proper restoration required which should not cause any discomfort with occlusion and periodontal health of the patient and the results showed an excellent bone healing response.¹⁴

Nevertheless, some of the disadvantages related with bicuspidization as it is a surgical procedure, it can lead to pain and discomfort to the patient. Also there is root canal treatment is required prior to the procedure, so the failure of root canal therapy can cause failure of the entire treatment.^{15,16}

Conclusion

Long term retention of mandibular molars with Grade III furcation is a challenging clinical dilemma but with an interdisciplinary approach of Periodontics, Endodontics and Prosthodontics promising results can be achieved. Bicuspidization is one such procedure by which we can conservatively restore masticatory function of mandibular molars without sacrificing the whole or a part of tooth. Long term success of the procedure depends on appropriate case selection, diagnosis and correct treatment planning by joint interdisciplinary approach.

Conflict of Interest: None.

References

1. Dalkiz M, Cilingir A, Beydemir B. Bicuspidization: a case report. *Gülhane Tıp Dergisi* 2008;50:42-5.
2. Flores MT, Andersson L, Andreasen JO, Bakland LK, Malmgren B, Barnett F et al. Guidelines for fractured and luxated permanent teeth. *Dent Traumatol* 2007;23:66-71.
3. Vandersall DC, Detamore RJ. The mandibular molar Class III furcation invasion. A review of treatment options. *J Am Dent* 2002;133:55-60.
4. Karthikeyan BV, Sujatha V, Prabhuji ML. Furcation Measurements: Realities and Limitations. *J Int Acad Periodontol* 2015;17(4):103-15.
5. Vandersall DC, Detamore RJ. The mandibular molar Class III furcation invasion. A review of treatment options. *J Am Dent* 2002;133:55-60.
6. Schettritt A, Steffensen B. Diagnosis and management of vertical root fractures. *J Can Dent Assoc* 1995;61:607-13.
7. Tamse A, Kaffe I, Lustig J, Ganor Y, Fuss Z. Radiographic features of vertically fractured endodontically treated mesial roots of mandibular molars. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2006;101:797-802.
8. Garrett S, Gantes B, Zimmerman G, Egelberg J. Treatment of mandibular Class III periodontal furcation defects: coronally positioned flaps with and without expanded polytetrafluoroethylene membranes. *J Periodontol* 1994;65:592-97.
9. Kaur J, Bala S, Sharma N. Bicuspidization –restoration of split molar – a case report. *IJAR* 2013;3(7):78-80.
10. Farschian F, Kaiser DA. Restoration of the split molar: bicuspidization. *Am J Dent* 1988;1:21-2.
11. Newell DH. The role of the prosthodontist in restoring root resected molars: A study of 70 molar root resections. *J Prosthet Dent* 1991;65:7-15.
12. Saad MN, Moreno J, Crawford C. Hemisection as an alternative treatment for decayed multirrooted terminal abutment: a case report. *J Can Dent Assoc* 2009;75(5):387-90.
13. Basten CH-J, Ammons WF, Persson R. Long-term evaluation of root-resected molars: A retrospective study. *Int J Periodontics Restorative Dent* 1996;16:207-19.
14. Haeuelsen H, Heidemann D. Hemisection for treatment of an advanced endodontic/periodontal lesion: A case report. *Int Endod J* 2002;35:557-72.
15. Gerstein KA. The role of vital root resection in periodontics. *J Periodontol* 1977;48:478-83.
16. Highfield JE. Periodontal treatment of multi-rooted teeth. *Aust Dent J* 1978;23:91-8.

How to cite the article: Kumar R, Arora SA, Chhina S, Mathur RK. Bicuspidization- A case report. *J Dent Specialities* 2019;7(1):33-5.