

Bicuspidization: Conservation for Prevention

Anjana Sharma¹, Pankaj Mishra², Manish Singh³, Pushpraj Singh⁴

¹Post Graduate Student, ²Senior Lecturer, Department of Conservative and Endodontics, ⁴Post Graduate Student, Department of Oral and Maxillofacial Surgery, Rishiraj College of Dental Sciences and Research Centre, Bhopal MP, ³Post Graduate Student, Department of Conservative and Endodontics, Babu Banarsi Das Dental College, Lucknow, India

Corresponding author: Anjna Sharma, Rishiraj College of Dental Sciences and Research Centre, Bhopal, India

How to cite this article: Anjna Sharma, Pankaj Mishra, Manish Singh, Pushpraj Singh. Bicuspidization: Conservation for Prevention. International Journal of Contemporary Medicine Surgery and Radiology. 2016;1(1):3-4.

A B S T R A C T

Introduction: The first teeth to erupt in oral cavity are mandibular molars having high caries susceptibility index, which actually necessitates cautious oral hygiene measures. Any deprivation in the maintenance may lead to serious problem like furcation involvement. Advances in dentistry, as well as the increased desire of patients to maintain their dentition, have led to treatment of teeth that once would have been removed.

Case Report: Here is case report of 24 years old male patient reported with the complaint of pain and mobility of right mandibular first molar. On examination, the tooth was sensitive to percussion and revealed grade 1 mobility. On radiographic examination, bone loss was evident involving the furcation area. Root canal treatment was performed along with bicuspidization of tooth.

Conclusion: Bicuspidization is a surgical procedure performed on the mandibular molars for the separation of the mesial and distal roots with their respective crown portions; this separation eliminates the existence of a furcation and facilitates effective oral hygiene practice.

Keywords: Furcation, Fixed Partial Denture, Bicuspidization.

Introduction

The treatment, management and long-term retention of mandibular molar teeth exhibiting furcation involvement have always been a challenge to the discerning general dentist or dental specialist¹. Modern advances in all phases of dentistry have provided the opportunity for patients to maintain a functional dentition for lifetime. Therapeutic measures performed to ensure retention of teeth vary in complexity. The treatment may involve combining restorative dentistry, endodontics, orthodontics, and periodontics so that the teeth are retained in whole or in part.²⁻⁴ Bicuspidization is a surgical procedure carried out exclusively on the mandibular molars, where the mesial and distal roots are separated with their respective crown portions; this separation eliminates the existence of a furcation and makes it easy for the patient to use an interdental brush for hygiene maintenance.^{1,5-7}

Case report

A 24 years old male patient reported with the complaint of pain and mobility of right mandibular first molar. On examination, the tooth was sensitive to percussion and revealed grade 1 mobility. On radiographic examination, bone loss was evident involving the furcation area (Figure 1). The bony support of both roots was completely intact. Access opening done and working length was determined.

Biomechanical preparation was done in the mesial and distal root. Master cone radiograph taken. The canals were obturated with crown down method and the chamber was filled with silver amalgam to maintain a good seal and allow interproximal area to be properly contoured during surgical separation (Figure 2). Under local anesthesia, full thickness flap was reflected after giving a crevicular incision from first premolar to second molar. Upon reflection of the flap, curettage was performed to remove chronic inflammatory tissues. A long shank tapered fissure carbide bur was used to make vertical cut toward the bifurcation area. A fine probe was passed through the cut to ensure separation. The working area was irrigated adequately with sterile saline. Postoperative radiograph was taken to confirm the procedure (Figure 3). After 1 month healing of the tissues, fixed dental prosthesis involving mesial and distal root mandibular first molar was given (Figure 4).

Discussion

Earlier the cases of furcal caries and large perforations were considered untreatable. If there is a severe bone loss involving either of the surfaces of the root, another approach called hemisection can be used.^{8,9} Farshchian and Kaiser have reported the success of a molar bisection with subsequent bicuspidization.¹⁰ According to Newell¹¹ the advantage of bisection is the retention of some or all the

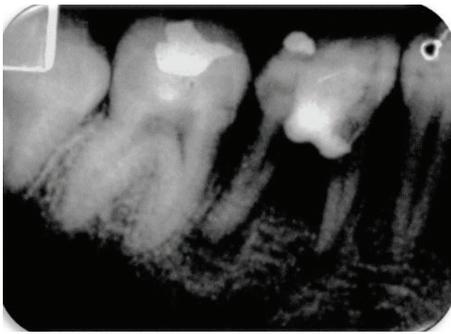


Figure-1: IOPA showing furcation involvement

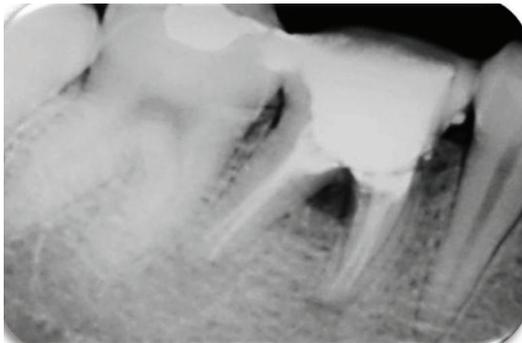


Figure-2: Root canal treated teeth

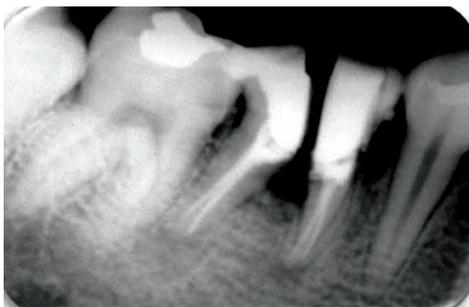


Figure-3: Fixed dental prosthesis.



Figure-4: Fixed dental prosthesis involving mesial and distal root mandibular first molar

tooth structure and the disadvantage is that the tooth has to undergo endodontic therapy. Basten et al in 1996 have reported that furcation involved tooth can be maintained for a prolonged time with appropriate treatment and adequate oral hygiene regimes. A number of studies confirmed that teeth treated for furcation involvement can be maintained stable for 3-7 years.¹² Various resective procedures include root amputation, hemisection and bicuspidization. As the clinical and radiographic

parameters were satisfactory (wide roots with adequate separation and periodontal support and moderate bone support around individual roots), bicuspidization was planned for the patient. Postoperative healing response was good. Conservative management of extensive carious molar tooth in young patients can not only preserve the tooth but also reduce the financial burden, psychological trauma and occlusal dysfunction.

Conclusion

Bicuspidization has received a wide acceptance as a conservative dental treatment and teeth so treated have fulfill the demands of function. A dentist should discuss with his patients during consideration of treatment options so that patient can choose best and conservative treatment available.

References

1. Dalkiz M, Cilingir A, Beydemir B. Bicuspidization: a case report. *Mart*. 2008;50:42-5.
2. Andreasen FM, Andreasen JO, Cvek M. Root fractures. In: *Textbook and Color Atlas of Traumatic Injuries to Teeth*. Andreasen FM, Andreasen JO, eds. Copenhagen: Blackwell Publishing Ltd, 2007: pp337– 371.
3. 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.
4. Trope M, Blanco L, Chivian N, Sigurdsson A. Pathways of pulp. In: *Role of Endodontics after Dental Traumatic Injuries*. Cohen S, Hargreaves KM, eds. Missouri: Mosby, 2006: pp610–649.
5. Arhun N, Arman A, Ungor M, Erkut S. A conservative multidisciplinary approach for improved aesthetic results with traumatized anterior teeth. *Br Dent J*. 2006; 201:501–512.
6. Luebke RC. Vertical crown-root fractures in posterior teeth. *Dent Clin North Am*. 1984;28:883–895.
7. Schettrich A, Steffensen B. Diagnosis and management of vertical root fractures. *J Can Dent Assoc*. 1995;61: 607–613.
8. Vandersall DC, Detamore RJ. The mandibular molar Class III furcation invasion. A review of treatment options. *J Am Dent*. 2002;133:55-60.
9. Pontoriero R, Nyman S, Lindhe J, Rosenberg E, Sanavi F. Guided tissue regeneration in the treatment of furcation defects in man. *J Clin Periodontol*. 1987; 14:618-20.
10. Farshchian, F and Kaiser, DA. 1988. Restoration of the split molar: bicuspidization. *Am. J. Dent*. 1988;1:21-22.
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. Basten CH-J, Ammons WF, Persson R. Long-term evaluation of root-resected molars: A retrospective study. *Int J Periodontics Restorative Dent*. 1996;16:207-219.

Source of Support: Nil; **Conflict of Interest:** None

Submitted: 22-09-2016; **Published online:** 06-11-2016