

Case Report

Role of Prosthodontist in the Treatment of Mandibular Molar with Furcation Defect

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Abstract

Recent advances in dentistry and higher patient's expectations have encouraged more conservative approaches in saving the teeth with hopeless prognosis. Bisection or bicuspidization of the decayed molars can be a feasible treatment option when there is angular bone loss involving root/roots with furcation defect. This case report describes an interdisciplinary treatment for decayed mandibular molar that includes bicuspidization followed by prosthetic rehabilitation using a double crown system. Bicuspidization and prosthetic rehabilitation yielded a satisfactory result.

Key words: Bicuspidization, Double crown, hemisection, Furcation defect.

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Introduction:

Mandibular molars are very crucial as they are the first teeth to erupt and are having high susceptibility to develop caries that necessitate good oral hygiene measures failing which may lead to serious complications like furcation involvement. Though, furcation involvement is the most common phenomenon in mandibular molars it requires immediate attention with respective and prosthetic management. In literature various resection procedures described are: root amputation, hemisection, radisection and bisection. Root amputation refers to removal of one or more roots of multirooted tooth while

other roots are retained. Hemisection denotes removal or separation of root with its accompanying crown portion of mandibular molars. Radisection is a newer terminology for removal of roots of maxillary molars. Bisection/bicuspidization is the separation of mesial and distal roots of mandibular molars along with its crown portion, where both segments are then retained individually. Interdisciplinary treatment procedure for such clinical situations is necessary to preserve the teeth. Such teeth can be useful as independent single units of mastication or as abutments in simple fixed bridges.^{1,2}

Thus tooth resection procedures are used to preserve as much tooth structure as possible rather than sacrificing the whole tooth. This case report describes a multidisciplinary treatment procedure for decayed mandibular molar that includes bicuspidization followed by prosthetic rehabilitation using double crowns technique.

Case Report

A 44 year old male reported with a chief complaint of pain in the right and left back region of his mouth since two week. Pain was continuous, throbbing pain and aggravate during mastication and sleep. No relevant medical history was given. On examination both mandibular first molars was grossly carious, sensitive to percussion and revealed Grade I mobility. On probing the tooth, there was a 7 mm deep periodontal pocket in root furcation area with a Class II furcation involvement. Vitality testing of 36 and 46 yielded no response. The mandibular second and third molar of both sides was sound. In radiographic examination, intraoral periapical radiographs (IOPA) confirmed Class II furcation involvement with the evident vertical bone loss surrounding the roots (Figure 1).



Figure 1: Intraoral periapical radiographs confirming the Class II furcation defect.

In the view of above findings, it was decided to first carry out 1) periodontal prophylactic therapy which included scaling, 2) endodontic treatment of

involved molars, 3) under local anesthesia, bicuspidization to separate the crown by vertical cut method using a long shank tapered fissure carbide bur. These would also aid in maintenance of good hygiene and plaque control. The patient responded well to the treatment. After satisfactory tissue healing, restoration of molar bicuspids and definitive prosthodontic treatment were started. Various treatment modalities for restoring the tooth were thought which included temporary acrylic crowns, all metal crowns, porcelain fused to metal crown and all ceramic crowns. Porcelain fused to metal crown and all ceramic crowns were ruled out as the patient could not bear the expenses. The patient desired a fixed prosthesis; hence all metal double crowns were the best option considering the patients needs. Tooth preparation was performed and a supragingival chamfer finish line was placed to aid in oral hygiene procedures roots. Gingiva was retracted using No. 2 retraction cord (Stay-put, Coltene-Whaledent, Switzerland) and final impressions were made in custom acrylic tray using heavy and low viscosity elastomeric impression materials (Dentsply, India). Temporary crown was cemented and the whole procedure was repeated on right mandibular first molar roots (Figure 2).



Figure 2: Post operative view of patient

All metal full veneer double crowns were evaluated for occlusal interference (corrected if any) on master cast and in patient's mouth and permanently cemented using luting Glass inomer cements.

Discussion

Bicuspidization is a valuable treatment option to save multirooted teeth having the hopeless prognosis. Appropriate case selection and thorough investigation is crucial prior to the bicuspidization procedure. Also, patient's oral hygiene status and attitude, caries susceptibility index and medical and drug history should be taken into account

Farshchian and Kaiser have reported the success of a molar bisection with subsequent bicuspidization.³ According to Newell the advantage of the bisection is the retention of some or the entire tooth.⁸ Nevertheless, the disadvantage is that the remaining root or roots must undergo endodontic therapy and the crown must undergo restorative and prosthodontic management. In dentistry, endodontic care prior to bicuspidization procedure has a long history and it has remained today as a necessity in treating furcally involved mandibular molars.^{4,5} In case 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 crown or bridge. Unfortunately, a restoration may lead to periodontal destruction, if the margins are defective or if non-occlusal surfaces do not have anatomic and physiologic form. This confirms the significance of accurate marginal adaptation of the final restoration.^{5,6} In the present case, a variety of occlusal factors were considered during wax pattern fabrication for double crown. This includes the location and size of centric and eccentric contacts and the steepness of cuspal inclines that may play a

significant role in causing tooth mobility. At the metal trial stage, the occlusal contacts were reduced in size and repositioned more favorably. Also, lateral excursive forces were reduced by making cuspal inclines less steep and eliminating balancing cuspal inclinations.

Conclusion

Prosthodontic rehabilitation of bisectioned molars with double crown may be considered as a suitable alternative to extraction in multi-rooted teeth with poor prognosis. The clinical outcome and long term performance of bicuspidization and double crowns are predictable with high success rates.

References

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