International Journal of Community Medicine and Public Health
Devi WP et al. Int J Community Med Public Health. 2023 Nov;10(11):4444-4446
http://www.ijcmph.com
pISSN 2394-6032 | eISSN 2394-6040

DOI: https://dx.doi.org/10.18203/2394-6040.ijcmph20233492

Case Report

Stress control and bicuspidization

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Received: 08 September 2023
Revised: 10 October 2023
Accepted: 12 October 2023

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ABSTRACT

Mandibular molars being the first teeth to erupt in the oral cavity have high caries susceptibility index, deprivation in its maintenance may lead to serious problem like furcation involvement. Recent advances in dentistry and the desire of patients to maintain their dentition, have lead to treatment of teeth that once would have been removed. Bicuspidization is a procedure in which separation of distal and mesial roots of mandibular molar with their coronal portion are done. This separation helps to eliminate the existing furcation and ensure effective oral hygiene maintenance. The mandibular molar teeth with severe bone loss at interradicular area may be retained of their roots. In this case report, a basic procedure of bicuspidization of right first mandibular molar followed by prosthetic treatment has been presented.

Keywords: Bicuspidization, Mandibular molar, Furcation involvement

INTRODUCTION

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.

Bicuspidization is a surgical procedure carried out exclusively on mandibular molars, where the mesial and distal roots are separated with their respective coronal 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] A mandibular molar is bisected into two parts post root canal treatment to form two units of single bicuspid molar which makes it easy for the patient to maintain the area.[2]

Thus tooth separation and resection procedures are used to preserve as much tooth structure as possible rather than sacrificing the whole tooth.[3]

CASE REPORT

A 55-year-old female patient presented with the chief complaint of pain in the right first mandibular molar. On examination, there was tender on percussion and on radiographic examination, the tooth was already root canal treated and bone loss in the furcation area was evident (Figure 1). By using a long tapered fissure carbide bur a vertical cut was made toward the furcation area. Naber probe was used to pass through the cut to make sure the separation. The occlusal table was reduced so as to redirect the masticatory forces along the long axis of each root. The separated area was irrigated with sterile saline. To ensure the procedure a post-operative radiograph was taken (Figure 2). Tooth preparation was done on both the parts. Final impression was made using monophase after isolation with gingival retraction cord (non-threaded 00 size) (Figure 3). After one-week metal try in was done (Figure 4). At this stage, the occlusal contacts were reduced in size and repositioned more favorably. Moreover, balancing cuspal inclinations were eliminated and lateral excursive forces were reduced by making

cuspal inclines less steep. Subsequently cementation of pfm crown involving mesial and distal root done (Figure 5).

Figure 1: Furcation involvement seen in IOPAR.

Figure 2: IOPAR after the vertical cut.

Figure 3: Isolation with non-threaded size 00 gingival retraction cord.

Figure 4: Metal try-in.

Figure 5: PFM crowns involving mesial and distal root.

DISCUSSION

If there is a severe bone loss involving either of the surfaces of root, another approach called hemisection can be used. According to Newell, the advantage of bisection is the retention of some or all the parameters were satisfactory (wide roots with adequate separation and periodontal support and moderate bone support around individual roots), in this case also postoperative healing response was good and bisection not only preserve the tooth but also reduce the financial burden, and occlusal dysfunction.[1] According to Farschian and Kaiser (1988) 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 help in hygiene maintenance.[2,3,7,9] In this case Naber probe was used to pass through the cut to make sure the separation and separated area was irrigated with sterile saline. According to Park, hemisection of molars with questionable prognosis can maintain the teeth without detectable bone loss for a long-term period, provided that the patient has optimal oral hygiene. Saad et al have also concluded that hemisection of a mandibular molar may be a suitable treatment option when the decay is restricted to one root and the other root is healthy and remaining portion of tooth can very well act as an abutment. However, there are few disadvantages associated with bicuspidization. As with any surgical procedure, it can cause pain and anxiety. An endodontic therapy failure can also cause the failure of this procedure if the tooth is not relieved from lateral excursive forces or proper marginal adaptation is not there, the restoration may lead to periodontal destruction.[7] The prognosis for bicuspidization is the same as for routine endodontic procedures provided that case selection has been performed correctly and the restoration is of an acceptable design relative to the occlusal and periodontal needs of the patient.[10] Like how it was in this case.

CONCLUSION

Bicuspidization is a widely accepted dental procedure as it is a conservative treatment which helps in restoring the masticatory function of mandibular molars without sacrificing the whole tooth or a part of it.

The success rate of the procedure depends on proper case selection, diagnosis, appropriate treatment planning and management. This case report presents a successful bicuspidization.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

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Cite this article as: Devi WP, Chirom B, Mushahary T. Stress control and bicuspidization. Int J Community Med Public Health 2023;10:4444-6.