

REVIEW CONSIDERATIONS

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ARTICLE: “BICUSPISATION: A HOPE FOR THE HOPELESS”

TITLE

Review Title. The term “bicuspidation” does not exist. The term Bicuspidation is not regularly used when referring to hemisection and root resection. I found one article talking about “Bicuspidisation” but even in Lindhe’s textbook it is not used and is confused with heart valves condition. Title suggestions would be: Molar hemisection in teeth with advanced furcation lesion: a hope for the hopeless.

ABSTRACT

Review English. Some things are not right.

Aim: The preservation of a functional dentition is very important in young individuals. Mandibular molar teeth, the first to erupt in the oral cavity are highly susceptible to caries. Pulpal involvement of these teeth along with the furcation defects is a challenge to the maintain them in functional occlusion. Advances in Restorative and Periodontal dentistry have made this possible. Presentation of case: This is a case report of a 20 year old male patient who reported with pain and mobility in the mandibular left first molar. On examination, the tooth has a carious involvement, was sensitive to percussion and revealed grade I mobility with Glickman’s grade III furcation defect. On radiographic examination, bone loss was evident involving the furcation area. Root canal treatment was performed along with bicuspidization of tooth. Discussion: In the Past, cases exhibiting Glickman’s grade II or III furcal defects were considered untreatable. Root resection procedures help maintain a part or the entire tooth. These procedures are highly complex and their success depends upon a proper case selection. Conclusion: The conservative management of teeth in young patients showing furcal defects can not only help maintain the tooth in functional dentition, also reduce the financial burden, psychological stress and occlusal dysfunction.

KEYWORDS Bicuspidisation, Mandibular Molars, Furcal Defects, Root Resection Surgery, Root Separation

1. INTRODUCTION

The treatment, management and retention of mandibular molars having furcation defects have always been a challenge for clinicians [1]. Recent advances in all areas of dentistry have provided alternatives to ensure retention of the teeth in order to maintain a functional dentition. Treatment may involve the combination of restorative dentistry, endodontics and periodontics to retain the tooth as a whole or in parts [2-4]. Root resection procedures were introduced by Farrar, which have been used for the treatment of Glickman’s grade II and III furcation defects [5]. Several authors have listed the following indications such as [6-11]: i. Severe bone loss affecting one or more roots untreatable with regenerative procedures. ii. Root fractures or perforations iii. Root caries of furcation area iv. Systemic factors or poor oral hygiene v. Retained roots endodontically untreatable vi. Fused roots or unfavourable tissue architecture.

Bicuspidisation / Bisection is a surgical procedure carried out exclusively on the mandibular molars, where the mesial and distal roots are separated along with the crown portions and are further retained as individual teeth. These teeth when separated make it easier for the patient to maintain the furcation area with the use of interdental aids [12-14]. This article presents a case of carious tooth with Glickman’s grade III furcation involvement successfully treated by bicuspidisation procedure and its subsequent restoration.

2. CASE REPORT A 20 year old male patient reported to the clinic with pain in the mandibular left molar region. Pain was dull and intermittent, subsided on taking medication. On clinical examination, carious involvement was seen on the disto-occlusal aspect of mandibular left molar with a swelling on the buccal aspect. The tooth was tender on percussion, exhibited Millers Grade I mobility and a furcation involvement of 12mm (Figure 1). Vitality testing revealed a delayed response. After obtaining the patients consent, Endodontic treatment of the concerned tooth was carried out and radiographs taken (Figure 2). Local Anaesthesia using 2% lignocaine with 1:80000 adrenaline (Indoco remedies Ltd., Promoted by Warren pharmaceuticals, Goa, India) was administered and a full thickness mucoperiosteal flap was raised in relation to 36. Complete debridement of the area was carried out and bone defect visualised. The tooth was then sectioned and separated into two cusps (Figure 3 & 4). Osseous surgery was done in order to obtain a positive architecture. The flap was then approximated and direct loop sutures placed. Occlusal reduction was done and temporary crowns placed. Patient was recalled after 3 months. No signs pain or mobility was seen and the tooth was restored using metal crowns (Figure 5). Patient was kept on periodic follow-up and was constantly motivated to follow oral hygiene procedures.

Figure 1: Shows furcation involvement assessed using a Naber’s Probe

Figure 2: Radiograph taken after completion of Root Canal therapy

Figure 3: Tooth sectioned into two cusps

Figure 4: Radiograph taken after sectioning of the tooth

Figure 5: Tooth restored using Metal crowns

3. DISCUSSION

In the Past, cases exhibiting Glickman’s grade II or III furcal defects were considered untreatable. Farchian and Kaiser have stated that the success of molar bicuspidisation depends upon certain factors such as [14]: i. Stability of the individual tooth sections and the supporting bone structure. ii. Absence of severe root fluting on either the mesial or distal roots. iii. Adequate separation of the mesial and distal roots to aid in proper oral hygiene maintenance. In A systematic review carried out by Needleman, showed the survival rate of molars treated nonsurgically was >90% (follow up 5-9 years), those treated with surgical resective procedures was 62- 100% (follow-up 5-13 years), and GTR 83.3-100% (follow up 5-12 years) [15]. According to Newell, the advantage of root resection procedures such as amputation, hemisection or bicuspidisation is the retention of some or entire tooth. However, the disadvantage being that the remaining tooth requires endodontic treatment along with prosthesis in sole periodontal cases. The case presented in this article depicted pulpal involvement resulting in bone loss in the furcal area. Hence, bicuspidisation being the treatment of choice in order to maintain a functional dentition. A Good long-term survival rate of upto 100% can be achieved with resective surgery, but case selection plays an important role. It is essential to take some of the following factors into consideration before any root resection procedures [1]: i. Bone loss around furcation area, level of bone around the remaining roots. ii. Angulations and position of the tooth in the arch. A tilted molar cannot be separated and resected iii. Divergence of the roots - teeth with divergent roots is easier to resect. iv. Length and curvature of roots - long and straight roots are more favourable for root

Comment [A1]: Remove “the”

Comment [A2]: Remove “the”

Comment [A3]: Insert “a”

Comment [A4]: Remove “with”

Comment [A5]: Change verb for “had”

Comment [A6]: Change to “hemisection”

Comment [A7]: Change to “furcation”

Comment [A8]: Replace “untreatable” with difficult to treat and had poor prognosis.

Comment [A9]: Change to “furcation”

Comment [A10]: Insert “but it also reduces...”

Comment [A11]: Change to Hemisection

Comment [A12]: Change to Furcation

Comment [A13]: Hemisection is not a recent procedure. Remove this.

Comment [A14]: Remove “the”

Comment [A15]: Surgical resective

Comment [A16]: Like root resection, hemisection and furcation tunneling

Comment [A17]: Hemisection

Comment [A18]: Change text to: The compromised root can be extracted or both roots can be maintained and restored, as individual teeth.

Comment [A19]: Change to “toothbrushes and cleaning devices

Comment [A20]: Replace: Dental caries in a mandibular molar

Comment [A21]: Hemisection with roots maintenance

Comment [A22]: Replace for gingiva

Comment [A23]: Remove “Millers”

Comment [A24]: Change to “Pocket probing depth of 12 mm in the furcation area”

Comment [A25]: Remove this

Comment [A26]: Correct “therapy”

Comment [A27]: Replace for “past,

Comment [A28]: Replace for “furcation”

Comment [A29]: Replace for: difficult to treat and had a poor prognosis”

Comment [A30]: Hemisection with roots ... [1]

Comment [A31]: Write Guided tissue ... [2]

Comment [A32]: Change to resection

Comment [A33]: Change to “parts of the ... [3]

Comment [A34]: With periodontal involv ... [4]

Comment [A35]: furcation

Comment [A36]: Change to Hemisection ... [5]

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separation and resection. i. Feasibility of endodontics and restorative dentistry in the retained roots. Postoperative healing response was good in the case. Conservative management of extensive carious molar in young patients can not only help preserve the tooth but also reduce the financial burden, psychological trauma and occlusal dysfunction.

4. CONCLUSION Root separation or resection should be considered as other treatment options for clinicians, determined to retain the natural dentition. With recent advances in endodontics, periodontics and restorative dentistry, root separation and resection have received acceptance as a conservative and dependable dental treatment.

5. CONSENT All authors declare that 'written informed consent was obtained from the patient (or other approved parties) for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editorial office/Chief Editor/Editorial Board members of this journal.

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Comment [A38]: Help to preserve

Comment [A39]: reduces

Comment [A40]: it is questionable if it is cheaper to do this or place an implant. The reason for doing this procedure must be patient's age, not financial burden.

Comment [A41]: Remove. Replace for : a treatment option

Comment [A42]: What's "dependable"?

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