

# **BICUSPISATION: A HOPE FOR THE HOPELESS**

## **ABSTRACT**

**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 1 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 biscuspidisation 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).

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



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).

Figure 2: Radiograph taken after completion of Root Canal therapy



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).

Figure 3: Tooth sectioned into two cusps



Figure 4: Radiograph taken after sectioning of the tooth



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 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 bicupidisation 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 non-surgically 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 rection procedures such as amputation, hemisection or biscupidisation 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, bicupidisation 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 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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