

## TREATMENT OF FURCATION DEFECTS IN MANDIBULAR FIRST MOLAR: CASE REPORT

Dr. Renu verma\*

MDS Periodontic \*Corresponding Author

Dr. Maya indurkar

Prof., HOD &amp; PG guide, GDCH, Aurangabad

### ABSTRACT

This case report describe multidisciplinary treatment approach for Glickman Class II and class III furcation involved in mandibular 1st molar that include guided tissue regeneration and hemisection followed by prosthetic rehabilitation using porcelain fused to metal crown showing satisfactory result over 6 month follow up.

**KEYWORDS :** furcation involvement, guided tissue regeneration, hemisection. Endo perio

### INTRODUCTION:

Modern dentistry is being practiced worldwide in present time, which has provided multiple treatment option to the patient for prevention and maintenance of an esthetic and functional treatment. The mandibular molars are the first permanent molar teeth to erupt<sup>1</sup> having a high susceptibility to dental caries and Periodontal diseases that necessitates maintenance of oral hygiene, failing of which can leads to complications like pulpal and periodontal involvement, furcation involvement, bone loss and eventually tooth loss.

Furcation involvement is the most commonly seen in mandibular molars which requires immediate treatment, followed by proper prosthetic management.

In literature, the treatments of furcation involvement described are regenerative procedure by guided tissue regeneration (GTR) and resective procedures like bicuspisation, hemisection, root amputation, and radisection etc based on degree of destruction of bone.

Gottlow et al.<sup>2</sup>, Becker et al.<sup>3</sup>, and Becker et al.<sup>4</sup> have presented clinical cases evaluated biometrically and a few histologically, indicating that GTR can lead to periodontal regeneration. According to Clinical experience GTR has the best possibility of success in Class II furcation involvement and deep intrabony defects.

Hemisection is considered a conservative treatment option of mandibular molars which includes removal or separation of root with crown portion that would otherwise require extraction. A hemisection procedure of an affected tooth helps to preserve the tooth structure and alveolar bone around the retained root and is more economical than other treatment options.

The present clinical report describes a treatment approach for a Mandibular first Molars with Class II and Class III furcation Involvement that includes GTR & hemisection, followed by prosthetic management.

### Case Report 1

40 year old male patient reported in the department of Periodontology with a chief complaint of pain and swelling in the lower right back region of mouth since past one week. He was asymptomatic previously. Afterwards he developed continuous, throbbing pain in same region, which got aggravated during mastication and upon lying down. No significant medical history was noted. On intraoral examination the right mandibular first molar was found to be primary endodontic involved and secondary Periodontally involvement was seen. Tooth was sensitive to percussion, periodontal abscess was present, showed Grade I mobility and periodontal pocket measured 14 mm, along with Class II furcation involvement of 46 (Figure 1) Pulp vitality test was

**negative.** Intraoral perapical radiographs (IOPA) confirmed Class II (Figure 2) with proximal dental caries. With above noted finding, a detail case history was taken. At the initial visit the abscess was drained, scaling and root planning was done followed by endodontic treatment which includes RCT. Followup was done after 3 months to evaluate the resolution of inflammation. After 3 months follow up bone loss at furcation area with PPD of 8mm was measured indicating of secondary periodontal involvement. Splinting was done with 46. Guided tissue regeneration procedure was performed. A full thickness mucoperiosteal flap was raised (Figure 3). On flap elevation the vertical and the horizontal component of the bone loss in the furcation was measured. The vertical component of the bone loss was around 5 mm and the horizontal component was 4 mm at the roof of the furcation. The defect was thoroughly debrided. DFDBA bone graft was placed in the defect (Figure 4), a resorbable chorion membrane was placed over it (Figure 5) and the flap was sutured. Post operative instructions were given. Reevaluation of the patient after six months revealed complete soft tissue healing and satisfactory bone fill (Figure 6 and 7). Finally prosthetic rehabilitation was done.



Figure 1: Baseline PPD 14mm



Figure 2 Bone loss in furcation and mesial & Distal interdental region



Figure 3: Flap reflection



Figure 4: Bone graft placed



Figure 5: chorion membrane placed



Figure 6: After 6 months

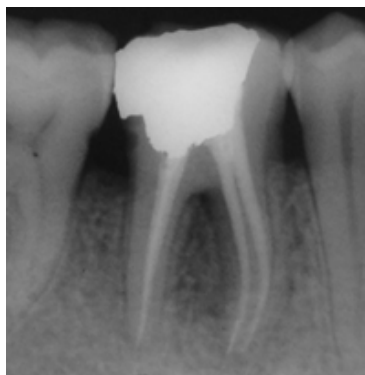


Figure 7: After 6 months

**CASE REPORT 2**

A female patient 35 years, reported with the chief complaint of pain and sensitivity in left lower side back region since 3 months (Fig A). The pain aggravate on mastication. No significant medical history was noted. On intraoral examination tenderness on percussion, dental caries, Periodontal pocket depth measured 13 mm and grade I mobility was present with 36. Clinically Glickman class III furcation involvement was noted with 36 by using naber's probe. Pulp Vitality was negative. Intraoral periapical radiograph showed bone loss up to periapical region on the distal root of 36. A decision was taken to save the tooth by hemisection Initially scaling and root planing was done followed by RCT. Surgical procedure includes reflection of mucoperiosteal flap with vertical incisions to expose the area of hemisection (Fig B). The area was debrided. Hemisection was carried out in 36. Distal root was extracted (Figure C). PRF was placed in distal root socket (Figure D). Sutures were placed. Postoperative instruction were given. Reevaluation of the patient after three months revealed complete soft tissue healing and reduction in tooth mobility. Prosthesis was placed after six months (Figure E).



Fig A: PPD 13mm



Fig B: Flap reflected



Figure C: Distal root extracted



Figure D: PRF placed in distal root socket



Figure E: After 6 month

**DISCUSSION**

Understanding of endo perio lesions is a vital part of successful endodontic and periodontal therapy. Patients with pulpal disease may have a healthy periodontium, gingivitis or attachment loss (periodontitis) on the affected or adjacent teeth. Patients with only pulpal disease present diagnostic and treatment decisions relative to the endodontic lesion. In these cases debridement of pulp chamber and canal, as well as the completion of appropriate root canal therapy, is sufficient to result in healing of the lesion. Periodontal treatment is not required when there is not any periodontal involvement. Sometimes patients with pulpal disease may also present with inflammatory periodontal disease. In these

cases the lesions can be independent of each other or can be combined or communicating with each other. The involvement of the periapical periodontium by a pulpal lesion may obscure the symptoms of periodontitis<sup>5</sup>. Since periodontitis is oftenly a chronic slowly progressing disease in such cases treatment of the pulpal involvement provides relief to the patient, therefore the coexisting periodontal involvement is ignored.

The healing of only endodontic lesion is highly predictable, but the regeneration of periodontal tissues is less predictable. Endodontic therapy should always precede a periodontal pocket elimination procedures. However endodontic therapy results in resolution of the endodontic lesion but they have little effect on the periodontal lesion. Therefore it is absolutely necessary that the periodontal problem also be treated to obtain optimal therapeutic outcome.

The present case reports results demonstrate the beneficial effects of GTR when treating Class II furcation defects, as evaluated clinically as well as hemisection when treating class III furcation defects. In an early case report (Gottlow *et al.* 1986), where histologic documentation of new attachment formation in human furcation defects treated by GTR therapy was provided, the results of several investigations on this form of treatment in furcation involved teeth have been presented. In these reports, a predictable outcome of GTR therapy was demonstrated only in degree II furcation involved mandibular molars, where a clinical soft tissue closure or a decreased probing depth of the furcation defect was recorded (Pontoriero *et al.* 1988; Lekovic *et al.* 1989; Caffesse *et al.* 1990).

Hemisection allows for physiologic tooth mobility of the remaining root, which is thus a more suitable abutment for fixed prosthesis. The under-contouring of the embrasure spaces, less occlusal forces, and proper crown margins are all factors in the high success rates observed with hemisection procedure. One of the important point to take into consideration is the divergence of the roots while making a case selection. Roots of the affected teeth should be spread apart to facilitate the clinician's ability to carry out root resection. According to Buhler *et al.*, hemisection should be considered before every molar extraction, because this procedure can provide a good absolute biological cost savings with good long-term success.<sup>6</sup> In addition, he reported that the failure rates of single-tooth alloplastic (titanium) implants and hemisections are not substantially different.

We used PRF to seal to distal root socket. PRF is an autologous source of platelets. Platelets are a rich source of growth factors such as platelet-derived growth factor, transforming growth factor- and insulin-like growth factor. The use of autologous PRF is said to enhance the wound healing process due to the high concentration of platelets present in it.

#### CONCLUSION:

The use of GTR produce better result in the treatment of Class II furcation defects. Also, Hemisection as a treatment modality to conserve the tooth structure and use it as an abutment is still very relevant. The decision of hemisecting the tooth should be based on the extent and pattern of bone loss, root trunk and root length, ability to eliminate the osseous defects and endodontic- restorative consideration.

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