Hemisection with Autogenous Bone Graft for Treatment of Advanced Periodontic Endo Lesions- A case Report.

Abstract

Hemisection of a mandibular molar may be a suitable treatment option when the decay or resorption is restricted to one root and the other root is healthy. This article describes a simple procedure for hemisection in mandibular molar by vertical cut method and its subsequent restoration. A case with a complaint of pain and pus discharge in 46 and patient had increased desire to maintain the natural dentition. The decision was taken to hemi-sect the distal root, as mesial bone and furcation bone was relatively unaffected. The key to long term success appear to be thorough diagnosis, selection of patients with good oral hygiene and careful surgical and restorative management.

Running Title: *Hemisection, Endoperio Lesion, Mandibular Molar, Bone Graft*

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. The treatment may involve combining restorative dentistry, endodontics and periodontics so that the teeth are retained in whole or in part. Such teeth can be useful as independent units of mastication or as abutments in simple fixed bridges. The tooth resection procedures are used to preserve as much tooth structure as possible rather than sacrificing the whole tooth[1]. Weine et al has listed the following indications for tooth resection[2].

Periodontal indications[2]

1. Severe vertical bone loss involving only one root of multi-rooted teeth.

2. Through and through furcation destruction.

3. Unfavourable proximity of roots of adjacent teeth, preventing adequate

hygiene maintenance in proximal areas.

4. Severe root exposure due to dehiscence.

Endodontic Restorative Indications[2]

1. Prosthetic failure of abutments within a splint.

2. Endodontic failure: Hemisection is useful in cases in which there is perforation through the floor of the pulp chamber, or pulp canal of one of the roots of an endodontically involved tooth which cannot be instrumented.

3. Vertical fracture of one root.

4. Severe destructive process: This may occur as a result of furcation or subgingival caries, traumatic injury, and large root perforation during endodontic therapy.

a. Strong adjacent teeth available for bridge abutments as alternatives to hemisection.

b. Inoperable canals in root to be retained.

c. Root fusion-making separation impossible.

The term tooth resection denotes the excision and removal of any segment of the tooth or a root with or without its accompanying crown portion. Various resection procedures described are: root amputation, hemisection, radisection and bisection[3]. 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[4].

Case Report:

A 35- years old male patient reported with the chief complaint of pain in lower right back tooth since past one week. Patient was relatively asymptomatic before then. He developed continuous and throbbing pain in this region, which aggravated during mastication and sleep. Patient's medical history was not contributory.

On intra-oral examination, 46 was found to be pus discharge with 9 mm pocket depth was present (Figure 1). On vertical percussion 46 was found to be sensitive.

Figure 1: Intra oral Pre-operative View and RVG of 46

On probing, deep periodontal pocket was found in relation to 46. Vitality testing of 46 yielded no response.

Phase II (Surgical phase): A decision was taken that the distal root should be hemisected after completion of endodontic therapy of the tooth. The tooth could be saved as mesial root had good bone and furcation area had reasonably good bone support. The working length was determined and the canals were biomechanically prepared using crown-down technique using protaper rotary instuments as per manufacturer instructions. The canals were obturated with lateral condensation method and the chamber was filled with amalgam to maintain a good seal and allow interproximal area to be properly contoured during surgical separation.

Figure 2: Intra operative view with unaffected mesial root and hemisected of 46

Under local anesthesia, mucoperiosteal flap was reflected after giving a crevicular incision from first premolar to second molar. Upon reflection of the flap, the bony defect along the distal root became quite evident. All chronic inflammatory tissue was removed with curette to expose the bone. The vertical cut method was used to resect the crown. A long shank tapered fissure carbide bur was used to make vertical cut toward the bifurcation area (Figure 2).

The distal root was extracted and the socket was irrigated adequately with sterile saline to remove bony chips debris (Figures 2.b).

Figure: 3. Autogenous bone graft mixed with DMBM and packed in 46 socket.

The autogenous bone graft was placed in the socket by using Bone Scraper. The flap was then repositioned and sutured with 3/0 black silk sutures (Figure 3).

Phase III (Restorative phase): The occlusal table was minimized to redirect the forces along the long axis of the mesial root.

Figure: 4. Full crown restoration in 46

Hemisected molar was restored with full coverage with crown restoration (Figures 4).

Phase IV (Maintenance phase): Patient had been followed up since with regular recall visits and oral prophylaxis. He had good masticatory efficiency with the restoration was very happy with the treatment outcome.