

Salvage through endodontic surgical management: A case report

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Abstract

Dental implant/prosthetic rehabilitation revealed superior long-term outcomes in posterior regions of the maxilla and mandible, odontoplastic surgery might have become less important nowadays. Nevertheless, in certain situations hemi section or root amputation or premolarisation of molars could be indicated as alternative treatment while preserving the tooth. Mandibular molars which are most commonly extracted due to caries and periodontal issues are the major standpoint for occlusion. Loss of the posterior teeth leads to teeth drifting, loss of masticatory function and loss of arch length, which requires prevention and maintenance measures.

Keywords: Endodontic, Hemisection, Radisection, Mandibular molar, Furcation, Prosthesis.

Introduction

Modern advances in all phases of dentistry have provided the opportunity for patients to maintain a functional dentition for lifetime. [1] Management of periodontally involved molars with extensive decay is a challenging and is limited to dental extraction and replacement with implants. Nevertheless, treatment strategy to retain such teeth involves periodontal, prosthodontic and endodontic assessment for appropriate selection to allow for stronger survival. [2]. Hemisection and redirection is a conservative way of preserving tooth. [3] [4]. The term "hemi section" or "root amputation" are synonyms for "root sectioning" or "bisection" and is a treatment modality, which allows the preservation of tooth structure, alveolar bone and cost savings over other treatment options while [5]. Radisection is the process by which one or more of the roots of teeth are removed at the level of furcation while leaving the crown and remaining roots in function. Carnevale et al. reported a survival rate of about 93% over a 10-year follow-up among patients who had undergone hemi section as the management of furcated molars instead of extraction. [6]

Hemi section

Case Report 1: A 35-year-old female reported to the department of Conservative Dentistry and Endodontics, Rama dental college hospital and research centre, Kanpur with pain in the lower left back region of jaw since a week. The pain was intermittent and aggravated on chewing. On clinical examination revealed left mandibular second molar was sensitive to percussion with faulty restoration with respect to 37. Probing pocket depth measured 7mm in the distal aspect and 4mm pocket depth in the mesial root of 37 and there was grade 1 mobility.

On radiographic examination tooth was RCT treated with poorly obturated canals and a chronic periapical abscess was evident with respect to mesial root and a broken file was evident with respect to distal root. (Figure 1)

Endodontic Procedure: Considering the clinical and radiographic evaluation, primary endodontic therapy was performed by resection of the distal portion of the tooth along with the root. The canal of the roots were biomechanically prepared using the step-back technique. The canals were obturated by lateral condensation method using gutta-percha. To obtain good seal and strength for the tooth glass ionomer cement was used...

Hemisection

Under local anesthesia, Curettage was performed to remove chronic inflammatory tissues. The vertical cut method was used to resect the crown with distal root. A long shank, tapered fissure carbide bur was used to make a vertical cut toward the bifurcation area (Figure 2a, 2b). A fine probe was passed through the cut to ensure separation. The distal half was extracted and the socket was irrigated adequately with sterile saline. Intraoral periapical radiograph shows retained mesial half of crown and root (Figure 3). After 1 month healing of the tissues (Figure 4), fixed dental prosthesis involving retained mesial half of mandibular second molar, mandibular first molar was given (Fig 5)

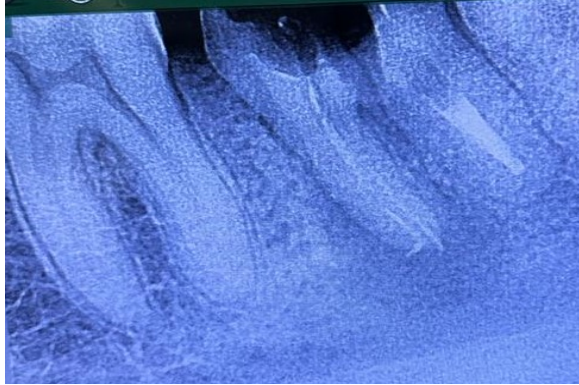


Figure 1

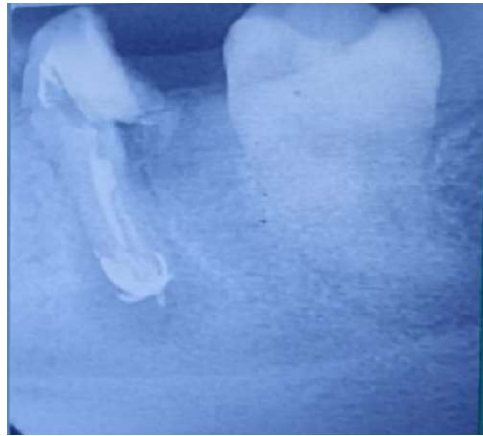


Figure 3



Figure 2a



Figure 4



Figure 2b



Figure 5

Radisection

Case Report 2: An 39 years old male patient reported to the Department of Conservative dentistry and Endodontics, Rama dental college hospital and research centre, Kanpur, referred from public health dentistry department with the chief complaint of excess pain and swelling in upper left back tooth region of jaw since 1 month. The pain was intermittent and aggravate on chewing on clinical examination the tooth was tender on percussion with respect to 26, grade 1 mobility along with 10 mm of pocket with mesiobuccal surface of root. On radiographic examination, tooth was retreated with two canals distobuccal and palatal were obturated by them. And an unnegotiated ledge was found on mesiobuccal root which was not by passed. (FIGURE-1)

Based on the examination, a final diagnosis of symptomatic chronic apical periodontitis was made. The treatment plan was formulated, and the postoperative restorative plan was discussed with the patient, a final treatment plan of completion of root canal treatment with distal and palatal roots, followed by root resection of the mesial buccal root of 26 was finalized, and the same was done as follows. The patient was thoroughly explained about the procedure and its complications, and the consent of the patient was taken. Root canal treatment was completed [Figure 1a-c], followed by Phase I periodontal therapy. Following premedication and disinfection protocol, root resection was carried out after a week's time. 2% lignocaine hydrochloride (Lignox 2%, Indoco Remedies Ltd., and India) with 1:200,000 concentration of adrenaline was administered locally in the area of 26. The full-thickness envelope flap was reflected after giving a crevicular incision from the distal line angle of the first premolar to the mesial line angle of the second molar [Figure- 2]. A small amount of bone was removed on the facial aspect in relation to 26 so as to aid in the root removal [Figure3a]. With the high-speed tapered fissure carbide bur directed below the cemento enamel junction, resection of the distal root was carried out, and the resected portion was removed [Figure 3b]. The sectioned area was evaluated, trimmed, and filled with mineral trioxide aggregate (Dentsply Proroot MTA). The extraction socket was debrided and irrigated with saline, and the tooth was checked for occlusion. Flap approximation was done secured with 3-0 Black Silk Suture (Sutures India Pvt. Ltd., India) [Figure 4]. Surgical site was covered with periodontal dressing (COE-PAK, GC). Postoperative instructions and medications were prescribed. The patient was recalled after a week for suture removal and assessed for healing. A permanent coronal seal with composite

was given, and crown was placed after a waiting period of 2 weeks [Figure 5]. The patient was periodically followed up for a period of 3 years



Figure-1



Figure-2



Figure-3a



Figure-3b



Figure-4



Figure-5

Discussion

Hemi section and Radisection is a useful alternative procedure to save those multirooted teeth which have been indicated for extraction. Before selecting a tooth for hemi section and Radisection, patient's oral hygiene status, caries index, and medical status should be considered. The success of this treatment depends on correct case evaluation. A resection method can be applied when there is adequate bone support around the root, but adequate root size is also important for appropriate prognosis and treatment. The hemi section of multicoated teeth by endodontic

approach, includes the root canal treatment of the remaining roots and restoring them with suitable restorative material and splinting it with the adjacent tooth to decrease the risk of displacement followed by a fixed prosthodontic prosthesis to maintain the occlusal balance. Shafiq et al. have also concluded that hemi section 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 the tooth can very well act as an abutment. Buhler observed 32% failure rate in hemi section cases attributed to endodontic pathology and root fracture, whereas other authors have shown greater success in hemi section cases in long-term. In the present case, the good prognosis was observed with proper occlusion, absence of mobility and healthy periodontal condition up to 4 months of follow-up.

Conclusion

Hemi section should be considered as another weapon in the arsenal of the dental surgeon, determined to retain and not remove the natural teeth. With recent refinements in endodontics, periodontics and restorative dentistry, hemi section and radisection has received acceptance as a conservative and dependable dental treatment and teeth so treated have endured the demands of function. Root resection is an economically feasible treatment plan equivalent to implant rehabilitation. Proper exhibition of this procedure leads to a successful and long-lasting outcome.

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