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HEMISECTION -A WINDOW OF HOPE FOR FREEZING TOOTH: A CASE REPORT

Dentistry

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ABSTRACT

Hemisection is a multidisciplinary treatment approach comprising endodontic, restorative, surgery, and prosthodontics, that represents an alternative treatment option for teeth and bone structure preservation.

KEYWORDS

Hemisection, Endodontic surgery, Furcation, Bone loss.

INTRODUCTION

Hemisection is a useful alternative procedure to save those multirooted teeth which have been indicated for extraction.1 The treatment options for an extensively decayed and unrestorable molar are limited. Treatment modalities for such teeth may require extraction followed by a prosthesis to replace the missing tooth. But hemisection is an approach that is relatively simple, conservative, inexpensive treatment with successful results.[2]

The hemisection of multirooted teeth includes the endodontic treatment of the remaining roots and restoring them with appropriate restorative material and splinting it with the adjoining tooth to decrease the the possibility of displacement, followed by fixed prosthesis device to keep the occlusal equilibrium.[3]

Indications

According to Weine [4]

1. Periodontal Indications:
a) Multirooted tooth with severe vertical bone loss in one root.
b) Complete destruction of the furcation.
c) root exposure in case of dehiscence.
2. Endodontic and Restorative Indications:
a) Prosthetic failure of an abutment
b) Endodontic failure: instrument separation, unsatisfactory obturation which cannot be removed.
c) Vertical fracture of a single root
d) Traumatic injury, perforation of the root, furcation defect, subgingival caries.

Contraindications

a) Inoperable root canals should be kept.
b) Fused roots
c) Non-strategic teeth

Carnevale et al. reported a survival rate of about 93% over a 10-year follow-up among patients who received hemisection as the management of furcated molars. According to studies, hemisection of every molar extraction should be an option that can lead to long-term successful results.[5]

Case Report

A 36yrs old Female Patient reported to the Department of conservative dentistry and Endodontics with a complaint of pain in the lower right back tooth region since 20 days. The pain was mild, intermittent in nature, aggravated by mastication, and relieved on medication. There was No Relevant medical history. The patient visited a dentist three years back for Root Canal Treatment irt 36

On intraoral examination, the tooth was Tender on percussion. (Figure 1.a) On pulp vitality test of affected teeth with cold test (Roeko Endo-Frost,coltene) showed no response, and on heat test (Waldent) showed no response. On Radiographical examination, rct treated tooth irt 36, radiolucency showing in furcation and periapical area, and bone loss was evident irt 36 surrounding the distal root. (Figure 1.b) final diagnosis chronic apical periodontitis irt 36 was made.

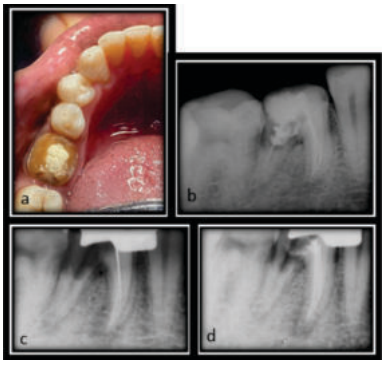

Figure 1.
(a) PRE-OPERATIVE PICTURE
(b) PRE-OPERATIVE RADIOGRAPH
(c) WORKING LENGTH
(d) OBTURATION

The patient has explained the condition and prognosis of the tooth with feasible treatment options including extraction, Bicuspidization, Hemisection, and placement of the dental implant. However, the patient chooses the hemisection of the same over other treatment modalities followed by a fixed dental prosthesis.

Procedure

Gutta Percha retrieved from all the canal and working length was determined. Biomechanical shaping and cleaning were done, followed by obturation. (Figure 1.(c,d)

Obturation Vertical cut was made in a bucco-lingual direction, the distal root was sectioned at the level of the furcation using long-tapered fissure carbide bur. Once the bur had reached the floor of the pulp chamber, the root was separated from the remaining part of the tooth. A fine probe was passed through the cut to check the separation. (Figure 2. a,b,)

After completion of sectioning, the severed portion of the distal root was removed with an extraction forcep. Thus, the distal root was atraumatically extracted. After curetting the extraction site sterile saline solution was used to irrigate the socket.

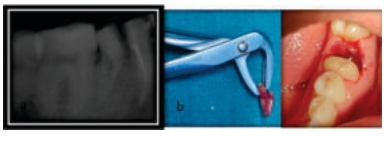

Figure 2.
a. VERTICAL SLIT
b. REMOVAL OF DISTAL ROOT irt 36

The furcation region was carefully smoothed with finishing diamond bur, to remove any sharp spicules as these structures are -potentially detrimental to periodontal maintenance to allow proper cleansing and thus prevent the accumulation of plaque.

The immediate postoperative radiograph was taken to ensure the well-retained mesial root and extraction socket of the distal root. After one-month follow-up crown preparation was done irt 36. After one-week cantilever crown placement was done. (Fig.3.a, b)

Figure 3
a. POST-OPERATIVE RADIOGRAPH
b. CEMENTATION OF CROWN

DISCUSSION

Hemisection of the multi-rooted tooth in which the sound tooth structure of the crown and its associated root is left in place at the level of the furcation, retaining the tooth's integrity within the socket.2 The treatment goal is the preservation of the remaining tooth structure and restoration of the function.[6]

In accordance with Park et al., hemisection of multirooted posterior teeth with questionable prognosis can maintain the teeth without a bone loss for a long period of time, provided that the patient has optimal oral hygiene.[7]

Hemisection is a conservative way of preserving teeth. The synonyms for “root sectioning” or “bisection” are“hemisection” or “root amputation”. These treatment modalities, preserve tooth structure, and alveolar bone and are economically good over other treatment options.[8]

The success of hemisected molars depends on many interrelated factors such as the periodontal condition of the tooth, root anatomy, maintenance therapy, endodontic and restorative therapy, and the surgical procedure itself.9 From the periodontal aspect, the amount of bone support and degree of furcation involvement are major determinants for case selection and prognosis.[2]

According to Langer et al., 36% of resected root mandibular molars failed over 10 years, the most common reason was endodontic or restorative complications such as root fracture, periapical lesions, and caries. Hence, an endodontist must try to preserve as much tooth structure as possible.[10]

CONCLUSION

Hemisection of a molar signifies the removal or separation of a root along with its crown. It is the most indicated treatment modality when caries, resorption, perforation, or periodontal damage is restricted to one root while the other root is relatively healthy. Hemisection followed by prosthetic rehabilitation gives a satisfactory result.

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