

Root Resection: Management of Multirrooted Tooth with Furcation Involvement

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ABSTRACT

Multirrooted teeth in periodontitis patients are difficult to be treated with only conventional periodontal treatment (scaling and root planing). Multirrooted teeth are difficult to access in furcation entrance sites and in teeth with anatomic problems like (severe curvature, developmental grooves, root flutings, accessory, or multiple canals). In these cases root resection has resulted into better outcomes, where one or more roots are removed at the level of furcation. This case report presents a root resection done in upper left first molar after flap debridement with follow up at 12 months and 18 months.

Keywords: Furcation; multirrooted teeth; root resection.

INTRODUCTION

Root resection is the process of removal of one or more roots at the level of furcation while leaving the crown or remaining roots in function.¹ This procedure is mainly indicated in multirrooted teeth with grade III or IV furcation.²and (2 It is performed most commonly in endodontically treated tooth and sometimes in a vital tooth, though root resection in vital tooth is not widely indicated. Root resection is indicated in patient with good oral hygiene and for which any other cost-effective treatment is not available. There are several factors that need to be considered before deciding which root is to be removed. Usually root with least amount of remaining bone support and root that has greatest amount of anatomic problems (severe curvature, developmental grooves, root flutings, accessory, or multiple canals) are removed.³ In maxillary molars, distobuccal root are the most commonly resected root.

CASE REPORT

A 40 years old male patient came to the Periodontology and Oral Implantology Unit, Department of Dental Surgery, Bir Hospital with the chief complaint of pus drainage from upper left back region of the jaw. Patient was systemically healthy with no adverse habits. On clinical intraoral examination, he had generalised stains and calculus deposits with pus discharge from endodontically treated maxillary left first molar with grade IV furcation involvement and grade I mobility (Figure 1a). On intraoral periapical (IOPA) radiograph, the greatest amount of bone loss was present on mesiobuccal root (Figure 1b). Non-surgical periodontal therapy was done and on follow up, his oral hygiene was good but pus discharge was still present. The treatment plan was made for root resection of mesiobuccal root.

On the day of surgery, rinsing with 0.2% chlorhexidine mouthwash was done and under local anaesthesia (LA), crevicular incisions were given on the first molar and the adjacent teeth as in (Figure 2). A vertical incision was given on the mesial line angle of second molar for better accessibility. A full-thickness mucoperiosteal flap was raised to visualise the root as shown in (Figure 3). This was followed by debridement of granulation tissue and roots were planed along with irrigation with normal saline. The mesiobuccal root was resected (Figure 4) with an

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Figure 1a: Pretreatment (before non-surgical periodontal therapy) .



Figure 1b: Pretreatment intra oral periapical radiograph.



Figure 2: Crevicular incisions.



Figure 3: After debridement and root planing.



Figure 4: Resected root.



Figure 5: Tooth after root resection.



Figure 6: Flap approximation with suture (4-0 silk suture).

oblique cut directed from just apical to the contact point of tooth, through the tooth, and to the facial and distal orifices of the furcation. The resected root was removed and the mesiobuccal root orifice was sealed with Glass ionomer cement to avoid any contamination (Figure 5). The flap was closed and sutured with interrupted 4-0 silk suture (Figure 6). Post-operative instructions were given to patient. Tooth brushing on the treated area was not advised on that day. Chlorhexidine mouthwash 0.2% was prescribed for two weeks with analgesics if needed.

Follow up was done on one week (Figure 7a) after the

surgery and sutures were removed. Interdental brush was prescribed to allow patient to easily cleanse the area.

12 months after, follow up was done (Figure 7b) and then 18 months as in (Figure 7c). On clinical and radiographic examination, the tooth was found to be clinically healthy and still functioning with no mobility or pus formation. As the endodontic treatment was conservative with minimal amount of tooth loss, crown was not given. The IOPA radiograph was taken in 12 months follow up (Figure 8)



Figure 7a: Follow up after one week.



Figure 7b: Follow up after 12 months.



Figure 7c: Follow up after 18 months.



Figure 8: Intraoral periapical radiograph done after one year.

DISCUSSION

Periodontitis is a chronic multifactorial inflammatory disease associated with dysbiotic plaque biofilms and characterised by progressive destruction of the tooth supporting apparatus. Its primary features include the loss of periodontal tissue support, manifested through clinical attachment loss (CAL) and radiographically assessed alveolar bone loss, presence of periodontal pocket, and gingival bleeding.⁴ The basic treatment includes non-surgical therapy, the scaling and root planing. In cases of multirrooted teeth when the same therapeutic protocol was done, a high rate of tooth mortality has been documented (especially in molars with furcation involvement grade III and grade IV).⁵ It is difficult to maintain oral hygiene in multirrooted teeth with furcation involvement due to lack of accessibility. In an attempt to eliminate the defect and to create access within the interradicular area, a root-resective technique has been proposed.²

The rationale for root resection therapy was described in a study by Desanctis et al. in 2000. It is difficult to treat the areas with furcation invasion with either non-surgical or by surgical flap debridement. In this condition, root resection helps to eliminate the morphological characteristics and provide an area conducive to good oral hygiene.⁶

In this case, the root resection therapy has provided patient with an area where the oral hygiene could be maintained easily. The clinical signs improved with reduced mobility, no bleeding on probing or suppuration and the tooth is present in functional loading. The symptoms like pus discharge and pain were resolved resulting in patient satisfaction along with clinician satisfaction during one year follow up.

In a study by Falabella in 2021 where molars were treated with root resection, the survival rates was 97.73% five years of evaluation 95.35% for eight years, and 97.57% for 10 years.⁷

SUMMARY

Root resection can successfully treat specific furcation defects that cannot be treated by other surgical and nonsurgical approaches. In this case, root resection of the mesiobuccal root resulted in better outcome that is functional tooth with reduced mobility which could not be achieved by conventional periodontal therapy.

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