



Hopeless to Hopeful-Role of Periodontist in Multidisciplinary Approach of Endodontically Failing Cases

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Abstract

Introduction: The interdisciplinary approach has been a trend for a comprehensive dental treatment. Within modern dentistry, Periodontics, Endodontics and Prosthodontics share an intimate and inseparable relationship in multiple aspects, including treatment plan, procedures execution, outcome achievement and maintenance. To ensure an overall successful treatment since these specialties share a common goal: to create pleasing esthetic with a harmonious stomatognathic system.

Objective: This case series demonstrates the use of periodontal intervention in endodontically complicated cases with questionable prognosis which were finally rehabilitated with multidisciplinary approach. Surgical Periodontics is good option for salvaging such complicated cases which can be brought back to function by final prosthetic management.

Methodology: 02 clinical cases molars were treated with periodontal surgery involving, hemi section and followed by PFM crowns. Both cases were followed up for a period of 1 year by clinically and radio graphically.

Result: 1 year of follow up showed favorable and predictable result. Both patients presented adequate chewing efficiency with well-maintained oral hygiene around the prosthesis. None of the patients were shown any further deterioration one year post operatively. The patients are comfortably using the teeth for proper mastication without any further clinical discomforts.

Conclusion: In this case presentation, the scope of multi-disciplinary approach has been outlined to aid the dental team in salvaging endodontically complicated cases. Proper management by Periodontist, Endodontist and Prosthodontist as a team should be consider before suggesting extraction for such cases.

Keywords: Periodontist; Endodontics; Prosthodontics; Hemisection

Introduction

The combined utilization of the expertise and skills in various dental disciplines is called interdisciplinary therapy. The prefix "inter" signifies the working between the disciplines, instead of disciplines acting as separate entities. The relationship between periodontal health and restoration of teeth is intimate and inseparable which had been deliberated in the past extensively. For restoration to survive long term, the periodontium must be healthy so that the teeth are maintained for a long time. The real art of dentistry is to co-ordinate and interface these perspectives and provide the best quality of care to the patient [1].

As on today, endodontic-periodontal lesions present challenges to the clinician in terms of diagnosis and prognosis. A sound periodontium provides a firm foundation for an esthetic and functional prosthesis. Perforations in the furcation of molars or inter radicular are often cause inflammation and subsequent alveolar bone loss and these areas are difficult to manage. Accurate diagnosis can be achieved by careful history taking, examination and the use of special tests [2]. Timely diagnosis and management can salvage such complicated cases.

The loss of functional teeth can result in several undesirable sequelae. The loss of posterior teeth can result in several undesirable sequelae; hence a guiding principle should be followed to try and maintain what is present. Whether there is a functional need for the tooth or the tooth is restorable after the lesion has been treated or the patient is suitable for lengthy, costly and invasive treatments are factors that should be taken into consideration. If any of these factors are deemed negative, extraction is the treatment of choice.

This case report presents two different types of modalities with multidisciplinary approach. Both cases were reported to the OPD with endodontically failure which were treated with re root canal therapy, hemisection followed by post and core supported PFM prosthesis. 09 months follow up of both cases after treatment showed very good prognosis with good chewing efficiency. Root fracture is the main cause of failure after hemisection, so proper prosthetic and periodontal considerations are required to balance the occlusal forces on the remaining root [3]. All these cases were rehabilitated with best prosthetic principles to avoid further complications.

Case Report

Case 1

A 46-year old lady was referred to the unit with the chief complaint of pain and frequent swelling along with pus discharge in her left side lower molar teeth for three months. She was also worried about the discharge of pus from the first molar area. History revealed that 4 years back, she got root canal treatment done in left mandibular first and second molars followed by PFM crown. 6 months back re RCT was performed due to pus discharge from 36. Patient got her 2 unit fixed PFM crowns removed from a civil hospital few weeks back due to severe pain.

On clinical examination, tooth no 36 was tender on percussion. A sinus tract with purulent discharge was present in the buccal sulcus (Figure 1). Tooth no 37 was clinically a symptomatic. Intra-oral periapical radiograph revealed that both teeth are treated endodontically treated, but incomplete, with furcation involvement on 36 and interproximal bone loss (Figure 2). The RCT was incomplete in both teeth with perforation in the distal root of 36. The condition of the tooth was explained along with treatment plan to the patient.

margins of the remaining distal half-crown portion. Perforation was present at middle portion of the mesial surface of distal root (Figure 4). The mesial socket was curetted, irrigated with normal saline and osseograft was packed in the socket for enhanced healing (Figure 5). All necessary post op instructions were explained, and the patient was recalled regularly for follow up. Post-surgical IOPA showed complete removal of distal half (Figure 6).



Figure 1: Pre-op.



Figure 3: Distal half removal.



Figure 4: Perforation.



Figure 2: Pre-op IOPA- incomplete RCT.



Figure 5: Bone grafting.

Re RCT was performed in 36 and 37. The perforation on the distal root was not accessible for repair. Persistent pain was present in tooth no 36. The patient was offered two treatment options for tooth no 36; either removal of the tooth completely, followed by implant supported crown or removal of half of the tooth followed by PFM crown. She chose the second option and hence planned for hemisection.

The crown was sectioned and splitted carefully at the level of furcation and the distal half was removed with the help of periosteal elevators (Figure 3). A finishing bur was used to smooth on the



Figure 6: Post-surgical IOPA.

After 3 months of surgery, patient was reassessed for prosthetic rehabilitation. The healing was adequate without any post-operative discomfort. The sinus track was completely disappeared. The prosthetic rehabilitation was planned for the patient PFM crown. The crown was given in the subsequent sittings (Figure 7). 9 months follow up showed favorable result with adequate chewing efficiency (Figure 8).



Figure 7: PFM crown in 36 and 37.



Figure 8: 6-months post treatment..

Case 2

A 38-year-old serving officer reported to OPD with the chief complaint of pain and discomfort while chewing from the lower right side. He was also complaining of swelling in the gums which causes bleeding in the same area. History taking revealed that root canal treatment was done on 46 one and half year back. The pain and discomfort persisted, for which he underwent re RCT 8 months back. He was comfortable for a short while, but the similar kind of clinical symptoms restarted for which he visited to OPD. He wanted to remove the tooth and go for fixed partial denture.

On clinical examination, the soft tissue found to be normal except swelling present in the interproximal area of 46 and 47 (Figure 9). On probing 6 mm pocket was present on distal side of 46. Sinus or any purulent discharge was not present. The tooth was non-mobile. He presented moderate pain on percussion on 46. Grade 2 furcation lesion with horizontal probing depth of 6 mm was present on 46.

Intra-oral periapical radiograph revealed that tooth was endodontically treated. The distal canal was not filled with GP except, over extended gutta percha into the periapical area. The mesial root was also showing little bit of over filling into the periapical area. There was mild periapical radiolucency, furcation invasion, widening of PDL space around the distal roots, horizontal bone loss in the

inter proximal area of 46 and 47 seen in the RVG image (Figure 10).



Figure 9: C Pre-op swelling in 36 & 37 area.



Figure 10: Pre-op IOPA.

Re RCT was attempted on 46. It was difficult to remove the gutta percha from periapical area of distal root. The patient continued to present pain while undergoing re RCT. The mesial canals cleaned thoroughly, and BMP completed. Since it was beyond the removal of gutta percha from the periapical area of distal root, it was decided to remove the same half surgically. The case was taken up for hemisection procedure. The patient was informed about the procedure, written consent was obtained. Hemisection was performed subsequently and the distal half was removed (Figure 11). The case was reviewed at regular interval for assessment.



Figure 11: Hemisected tooth.

After 3 months of surgery, patient was recalled. 03 months post op IOPA showed healing of the lesion. Fiber post was placed in the mesial canal of 46 (Figure 12), core buildup done with paracore and PFM crowns was delivered on 46 (Figure 13 and 14). 9 months follow up showed favorable and stable result. Patient was able to use the tooth without any further clinical problems. The pain and discomfort on 46 which were present pre-operatively had disappeared completely.



Figure 12: 3 months post op- fibre post in situ.



Figure 13: Post op IOPA.



Figure 14: Post op with crown in situ.

Discussion

Diagnosis of endo-perio lesion remains the dilemma to a clinician. Proper history taking and sequential treatment planning is required by endodontist together with a periodontist. Depending upon the clinical condition, hemisection or regenerative furcation therapy is a useful alternative procedure to save those multi-rooted teeth which have been indicated for extraction. If hemisection is performed, the remaining root may be used as an abutment for a small bridge or for a single crown. Also, a successful furcation treatment can bring the entire tooth to a fully functional status. Park, *et al.* have suggested that hemisection of molars with questionable prognosis can maintain the teeth without detectable bone loss for a long-term period, provided that the patient has optimal oral hygiene [4]. In his study, Saad, *et al.* have concluded that hemisection 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 tooth can very well act as an abutment [5]. This clinical paper illustrates solution to the endo-perio problem by hemisection. Although such involvement diminishes the long-term prognosis of the affected tooth, extraction is not always an option.

There are various important factors which can determined the success of these kinds of procedures. Study by Buhler [6]. suggested that accessibility of root furcation for easy separation, adequate bone support for the remaining root, the smaller size of the occlusal tables, under contouring of the embrasure spaces and ensuring that the crown margin encompasses the furcation are the factors which determine the success rate of Hemisection therapy.

Weine [7] mentioned various indications and contraindication for tooth resection which are as follows. The main indications are severe vertical bone loss involving only one root of multi-rooted teeth, prosthetic failure of abutments within a splint, through and through furcation destruction, unfavorable proximity of roots of adjacent teeth, preventing adequate hygiene maintenance in proximal areas, severe root exposure due to dehiscence, endodontic failure with perforation through the floor of the pulp chamber, vertical fracture of one root and severe destructive process. The common two contraindications are poorly shaped roots or fused roots and poor endodontic candidates or inoperable endodontic roots.

Endodontic perforations often complicate endodontic treatment and pose problems to the periodontal health leading to varying degrees of periodontal destruction based on their locations. These may be due to operator errors during instrumentation or to resorptive defects in teeth that have undergone luxation or avulsion as a result of trauma. Perforations in the furcation of lower molars often caused alveolar bone loss and these areas are difficult to manage [8].

Adequate plaque control is one of the biggest determinants in ensuring long term success of this prosthetic design. In both cases at 9 months follow up the patient presented with well maintain oral hygiene around the prosthesis. Hemisection allows for physi-

ologic tooth mobility of the remaining root, which is thus a more suitable abutment for fixed partial dentures than an Osseo integrated counterpart [9]. Root surfaces that are reshaped by grinding in the furcation or at the site of hemisection are more susceptible to caries. Often a favorable result may be negated by decay after treatment. Failure of endodontic therapy due to any reason will cause failure of the procedure. In addition, when the tooth has lost part of its root support, it will require a restoration to permit it to function independently or to serve as an abutment for a splint or bridge. Unfortunately, a restoration can contribute to periodontal destruction, if the margins are defective or if non-occlusal surfaces do not have physiologic form. The clinician should consider aborting surgery if a multitude of minor negative factors are present in the same patient. Wherever possible, adverse factors should be modified to improve the prognosis [10].

Conclusion

The result of the present case report suggests that the successful multidisciplinary management of endodontically complicated teeth by an Endodontist, prosthodontist and Periodontist resulted in a significant amount improvement clinical attachment levels and healthy gingival. The use of these kind of therapy to retain a compromised tooth, offers a predictable treatment option with a prognosis comparable to any tooth with an endodontic treatment. Hemisection is a relatively simple, inexpensive treatment with a good chance of success. Proper case selection including load bearing capacity of the rest of the root enhances the therapeutic success. It should always be considered as an option before molar extraction. Proper diagnosis, case selection and treatment planning are the guiding factors for the success of this treatment. Both cases with 12 months of follow up, patients presented adequate chewing efficiency with well-maintained oral hygiene around the prosthesis. It is proven that when retention of a part of a tooth seems to extend the life of prosthesis, the patient certainly deserves the option of these kinds of treatment rather than extraction.

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