Case Report
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Periodontal-Prosthodontic Management of Furcation involved Radix Entomolaris and Two Rooted Maxillary Molar: Save a Tooth to Save Bone

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Abstract

Failure to identify developmental and morphological variations of teeth can lead to unsuccessful therapy. Most mandibular molars have two roots and maxillary have three roots. This article presents periodontal therapy of two cases with the variation in number of roots, one with three rooted mandibular first molar that has presence of extra distolingual root also called as radix entomolaris and other the two rooted maxillary third molar having mesial and distal root and absence of palatal root. Both the cases had advanced grade II furcation involvement and were treated with root resection and restored with final prosthesis as a functional component of the dental arch.

Keywords: Furcation Involvement, Radix Entomolaris, Root Resection, Two Rooted Maxillary Molar

1. Introduction

Deep palatogingival groove, and enamel pearl or cervical enamel projections are well known developmental and morphological abnormalities in periodontology, also the presence of a disto-lingual root in mandibular molar may contribute to localized periodontal destruction[1]. Knowledge of variation in number and morphology of roots is needed for successful periodontal therapy and this aspect is not much stressed in periodontology as compared to endodontics.

Mandibular molar usually has two roots, one distal root and one mesial root, variant of this is presence of third root or the supernumerary root, which is macrostructure, was first mentioned in the literature by Carabelli, and is called Radix Entomolaris [RE] commonly located distolingually[2].

The etiology for radix entomolaris is still unknown; it can be because of external factors during tooth formation or can be attributed to atavic gene or polygenic system[3].

Studies on the prevalence of RE showed to be high in mongoloid origin >30%, as compared to other races[2]. According to Tartman and R Bansal *et al.*, in Indian population is 0.2% and 1% where as bilateral RE have been reported to range from 37.14% - 67%.[3]

Third molar show much variation in morphology. Most of the maxillary third molars (45%) had three roots, 15% had one root, 32% had two roots, and 7% had four roots[4]. Periodontal or endodontic involved third molar can be treated and retained as functional component of dental arch if properly diagnosed and managed. Most commonly two rooted third molar, one fused buccal and other palatal root have been reported[5]. Two rooted

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maxillary third molar with mesial and distal roots and absence of palatal root is rarely reported.

This case report presents management of two cases of furcation involved teeth with variant root number and morphology.

2. Case Report

Case 1

A 43-year old female patient reported to the department of Periodontics, with a chief complaint of pain and swelling in right mandibular first molar region. On clinical examination there was probing pocket depth of 8 mm on the distolingually, grade I mobility, Millers class II recession and lingually grade II furcation involvement with 46 (Figure 1). Probing depth of 6mm and no mobility, and grade II furcation involvement with 36 was seen. IOPA were taken, an interesting finding was the presence of extra roots bilaterally was observed on IOPA but not visible on OPG (Figures 2 and 3). To confirm third root IOPA of 36 and46 were taken at 90° and at 30° mesial shift. According Carlsen and Alexander classification based on the location of RE it was classified as Type B, located lingually to the distal root complex which has one cone shaped macrostructures. According to De Moor et al., classification on root or root canal RE was Type 1, straight root or root canal. On vitality test both 46 and 36 were vital. The diagnosis was bilateral RE, chronic generalised periodontitis and periodontal abscess with 46.



Figure 1. Pre-operative clinical photograph showing furcation involvement with 46.



Figure 2. Preoperative IOPA of 36 and 46 showing presence of three roots (Radix Entomolaris).



Figure 3. Radix Entomolaris not detected on OPG with 36 and 46.

The treatment plan included phase one therapy, intentional root canal treatment with 46 followed by root resection and furcation plasty with 36.

After phase I therapy, grade I mobility of 46 was reduced to normal. Surgical procedure was carried out on both sides under local anesthesia 2% lignocaine. (LIGNOX 2% A, INDOCO REMEDIES LTD); conventional flaps were reflected (Figure 4) and with Gracey curette thorough debridement of the root surfaces and of osseous defect involving grade II furcation (Figure 5) between mesial and distolingual roots was done. Root resection of distolingual root of 46 was done due to advanced bone loss (Figure 6), while osteoplasty and odontoplasty was carried out for 36 (Figure 7). Then flaps were sutured with interrupted sutures using 4-0 mersilk (Johnson & Johnson Pvt. Ltd) and periodontal dressing (Coe-pack; GC America, USA) was given. Post operatively analgesic aceclofenac 100mg and paracetamol 325mg combination were prescribed to minimize postoperative pain. Healing at resected site was uneventful. After 6 months on clinical (Figure 8) and radiographic examination (Figure 9) elimination of furcation involvement with 46 and 36 was seen, with no further periodontal destruction.



Figure 4. Full thickness mucoperiosteal flap reflection.



Figure 5. Osseous defect involving Grade II furcation.



Figure 6. Root resection of distolingual root of 46.



Figure 7. Osteoplasty and Odontoplasty with 36.

Case 2

A 42-year-old male patient reported with a chief complaint of food lodgement in the upper right back teeth region. Food lodgement was seen in between 17 and 18 region. Clinically there was root caries of both adjacent roots in 17 and 18 regions. The probing depth of 12 mm in the interproximal area of grade II furcation involvement with 17 on the buccal aspect involving distobuccal root and palatal furcation involvement with 18. Intra oral radiograph showed third molar with two roots with absence of palatal root, which is rare (Figure 10). Distobuccal root of 17 and mesial root of 18 showed severe bone loss extending upto apical 1/3rd of the root and furcation involvement.



Figure 8. Clinical photograph at 6 months follow up showing elimination of furcation involvement with 36 and 46.

Treatment plan was phase I therapy, intentional root canal treatment with 17 and 18 followed by root resection of distal root of 17 and mesial root of 18.

Surgical phase included conventional full thickness mucoperiosteal flap under local anesthesia and on debridement with Gracey curette there was advanced grade II furcation involvement on palatal aspect of 18 (Figure 11) and buccal grade II furcation involvement with 17.

For root resection of distal root of 17 and mesial root of 18 was done using tapered diamond fissure bur for oblique cut near to CEJ, the sectioned root is gently elevated with small elevator (Figure 12 and 13) and remaining tooth structure is smoothened to prevent overhangs. Postoperative healing was uneventful, at one month follow up prosthetic crown preparation was done (Figure 14), and final prosthesis was given with 17 and 18 (Figure 15).



Figure 9. IOPA at 6 months follow up with 36 and 46.



Figure 10. IOPA of 18 showing absence of palatal root.



Figure 11. IOPA showing advanced bone loss with distobuccal root of 17 and mesial root of 18.



Figure 12. Root resection done with 17 and 18 due to advanced Grade II furcation involvement.



Figure 13. Root resection done with 17 and 18 due to advanced Grade II furcation involvement.



Figure 14. IOPA at 1 month follow up and Clinical photograph showing prosthetic crown preparation with 17 and 18.



Figure 15. Clinical photograph showing final prosthesis with 17 and 18.

3. Discussion

The studies have shown that the frequency of RE in population with mongoloid trait, including Chinese, Eskimo and American Indian populations varies in the range from 5% to >40%[6,7]. It has been suggested that this trait is common in females than males and mostly occurs in mandibular first molars.

According to Huang et al., the greater probing depth and attachment loss occurred at disto-lingual sites of three rooted mandibular molars with the disto-lingual root as compared to two rooted mandibular molar group. According to this above finding, concluded that the presence of a disto-lingual root may contributes to localized periodontal destruction[1]. In the case 1, lingually there was clinical attachment loss as compared to buccal aspect of the both bilateral RE. Class II recession on the RE and advanced grade II furcation of 46, root resection of disto-lingual root was carried out. With 36 grade II furcation was treated with odontoplasty and osteoplasty to eliminate furcation and facilitate plaque control. Case report by Shivani et al., performed regenerative therapy in three walled defects with bilateral RE was less successful[8].

Maxillary third molar usually have three roots or fused roots commonly as compared to two rooted variant maxillary molar. In case 2, the tooth had only two roots, one mesial with one root canal and distal with two root canals and no palatal root which was resembling mandibular molar like anatomy. Neslihan et al., reported maxillary second molar with two roots and no palatal root[9]. 18 had palatal furcation which is rarely seen with maxillary molars. Palatal grade II furcation involvement and root caries with mesial root, root resection of mesial root was done. On follow up visit at 6 months clinical and radiographic examination revealed acceptable healing of the defect with elimination of furcation on both sides with improved periodontal parameters with no further periodontal destruction.

4. Conclusion

Anatomical variations can be encountered any time during periodontal procedures, having knowledge and proper diagnosis of such variation can lead to successful periodontal therapy. Thus, this case reports describes comprehensive periodontal and prosthodontic management of the bilateral RE and two rooted maxillary third molar with palatal grade II furcation involvement.

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