



Case Report

MANDIBULAR FIRST MOLAR WITH A RADIX ENTOMOLARIS

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Abstract

Mostly mandibular first molar has two roots, mesial and distal whereas there may be an additional root present either buccally (radix paramolaris) or lingually (radix entomolaris). For the success of treatment outcome it is important to understand accurate root canal anatomy. Aim of this paper is to illustrate case of permanent mandibular first molar with an additional third root named as radix entomolaris. Misdiagnosed additional third root in mandibular first molars may affect the prognosis of tooth. Proper diagnosis and visualization of variation in root canal anatomy is important for treatment success.

Key words: Mandibular first molar, Radix entomolaris, Radix paramolaris

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INTRODUCTION

A successful endodontic treatment includes locating the root canal orifice, chemo-mechanical cleaning and shaping of the root canals before a dense root canal filling with a hermetic seal. The common morphology

that first mandibular molars exhibit is two-rooted with two mesial and one distal canal (30% prevalence of four canals). Mandibular first molar is a tooth with an additional distolingual and third root: the Radix Entomolaris¹, first mentioned in the literature by Carabelli in 1844². If the root is

present buccally then it is called as the Radix Paramolaris^{3,4}. Etiology could be the external factors during odontogenesis or atavistic gene penetrance. Radix entomolaris can be found on all mandibular molars, with least frequency on the second molar. Classification for radix entomolaris as given by Ribeiro & Consolaro (1997) includes three classes: Class I includes a straight root/root canal, class II is initially curved entrance and the continuation as a straight root/root canals, class III is an initial curve in the coronal third of the root canal and a second buccally orientated curve starting from the middle to apical third⁴. Sperber and Moreau reported a maximum frequency of 3% in an African population⁵, while the frequency is less than 5% among Eurasian and Indian populations, higher than 5% (even up to 40%) in populations with Mongolian traits. In India the prevalence is reported to be 2.19%⁶.

CASE REPORT

A 11 year old male child reported to the Department of Pedodontics and Preventive Dentistry with a chief complaint of severe pain in the right lower back tooth region since four days. Pain was spontaneous, intermittent, aggravated on taking hot foods and persisted even after the removal of stimulus. Duration was 6 months which subsided after a course of antibiotics & analgesics. The tooth was tender on percussion. Clinical examination revealed a deep occlusal caries with an exposed pulp (Figure 1). Radiograph shows exposure of pulp with widening of periodontal ligament and Radix entomolaris was clearly recognizable (Figure 2). The diagnosis was

symptomatic apical periodontitis of tooth 46. The patient was informed about the endodontic treatment as a preservation attempt to retain the tooth.

After anaesthetizing the tooth, access preparation was done with endo-access bur no.1 The access cavity was a trapezoid shape to gain access to the additional root canal orifice. Working length was determined with K -file ISO 15 size radiographically (Figure 3). Irrigation was done with 2.5% sodium hypochlorite along with saline and shaping was done with protaper hand system till a size of F2 and patient was recalled after 3 days

At next appointment, Corresponding Master Protaper gutta percha cones of F2 size were selected and checked radiographically for an apical fit. Canals were dried with paper point and obturation done by using zinc oxide eugenol sealer (Figure 4). One week after the obturation, stainless steel crown was given for that particular tooth as an interim restoration (Figure 5 and 6) .

DISCUSSION

Ingle listed the most frequent cause of endodontic failure as apical percolation and subsequent diffusion into the root canals⁷. In additional roots cause can external factors during odontogenesis, atavistic genes or polygenetic system. Variation in palatal roots in the maxillary molar, is rarely seen. Carlsen has reported such variation in maxillary molars⁸. The incidence of finding an additional root in maxillary premolar is 0.5- 6%. A thorough inspection of the preoperative radiograph and particular marks or characteristics can indicate the

presence of Radix. Methods for revealing RE include Clark's rule, and Walton's projection (by which the third dimension of a radiograph may be visualized readily by

viewing the anatomy of the superimposed structure).Clinical significance of Radix entomolaris in dentistry include endodontic implication, oral surgery, as a contributing

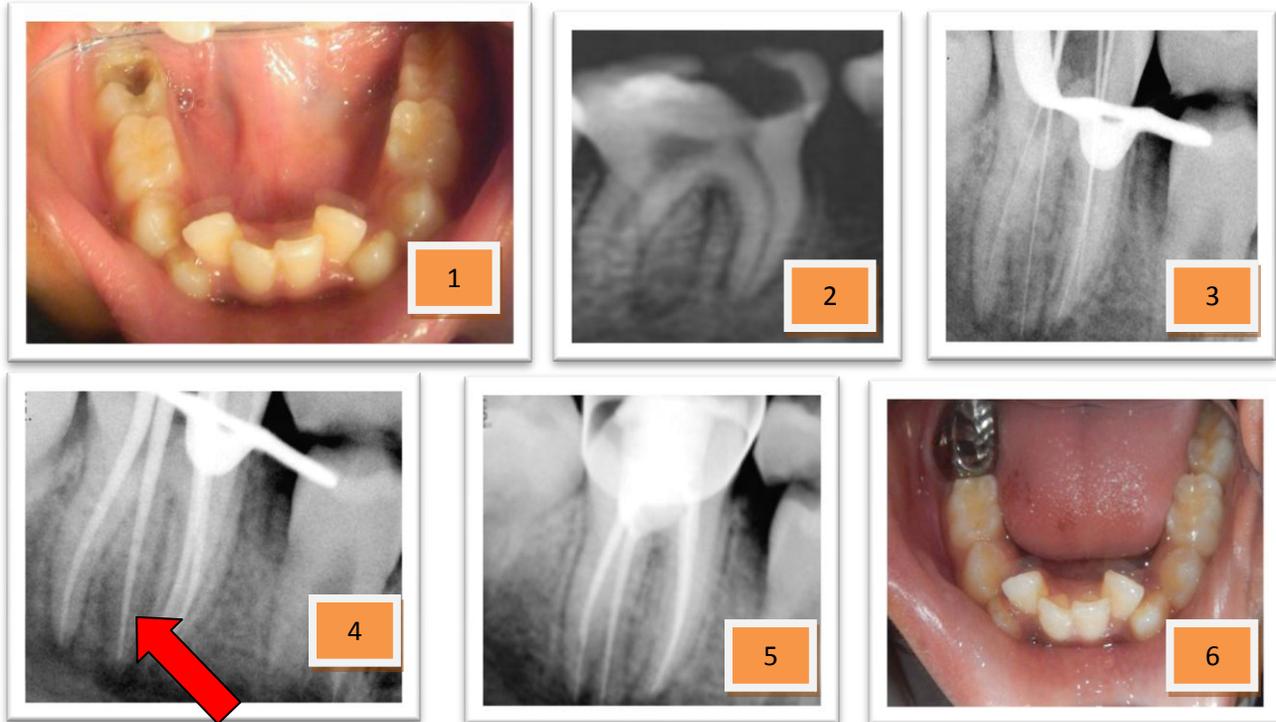


Figure 1 - 6. 1). Preoperative clinical view, 2). Preoperative radiographs, 3)Working length radiograph, 4) Master cone radiograph (Arrow pointing towards the radix entomolaris) 5) Obturation and stainless steel crown radiograph, 6). Postoperative clinical view.

factor to localized periodontitis and orthodontic implications. Proper inspection of the radiograph and interpretation of marks is important to see the presence of radix⁹. Aids such as a loupe, intra-oral camera or dental microscope can be useful to visualize radix. A dark line on the pulp chamber floor can indicate the precise location of the radix canal orifice. Once relocation and enlargement of the orifice of the Radix entomolaris are done, initial root canal exploration with small files (size 10 or 8) should be done along with radiographic

CONCLUSION

Proper diagnosis of a radix entomolaris or paramolaris before root canal treatment is important for the success of endodontic procedure, and to avoid missed canals & failure.

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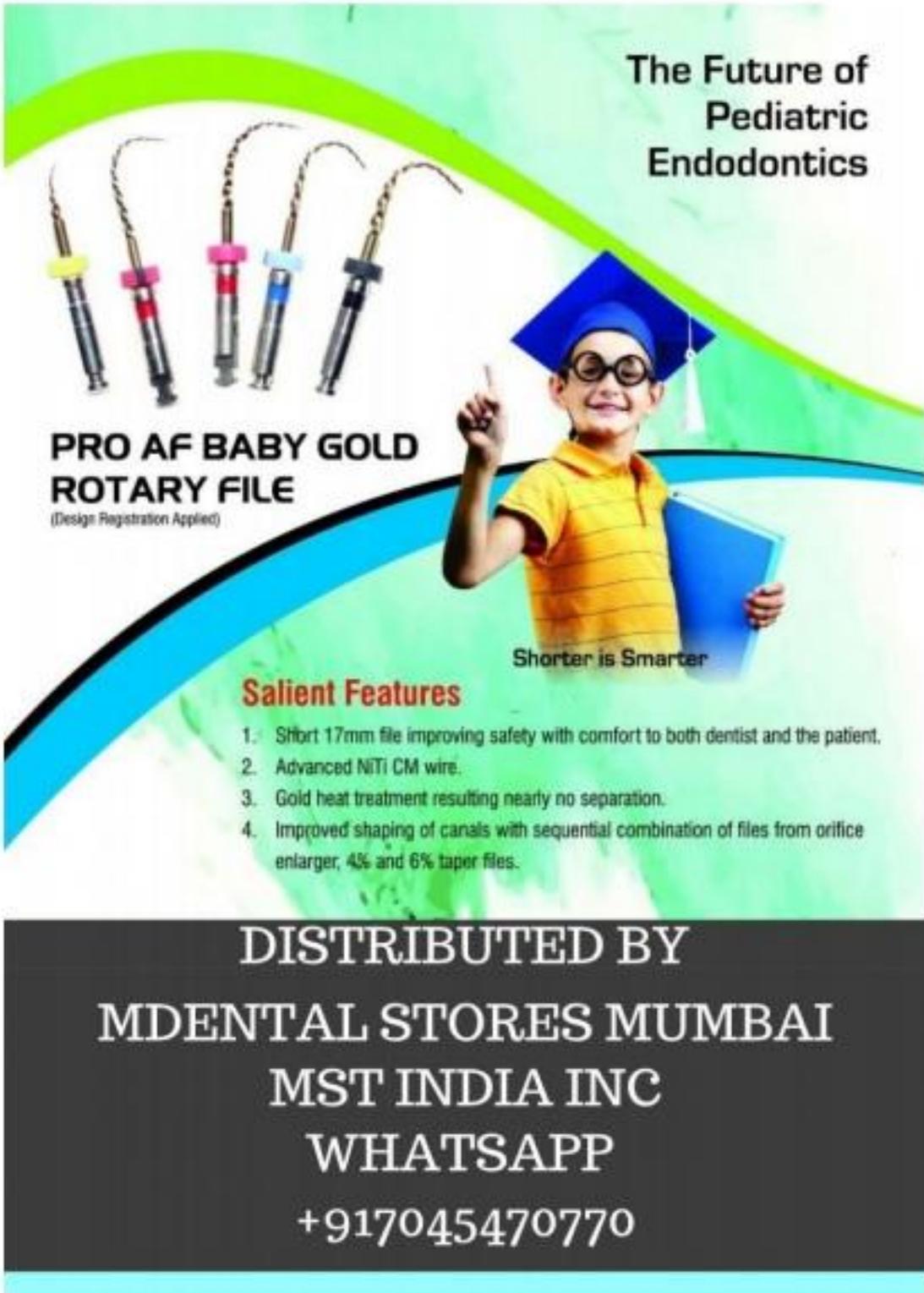
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