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Furcation Bone Loss Associated With Three Rooted Mandibular Molar

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ABSTRACT—Generally mandibular first molar consists of two roots, a mesial and a distal root with three canal occasionally the presence of a supernumerary root is seen which is mostly of disto lingual root (Radix Entomolaris). Periodontal disease is one of the major and common cause of furcation bone loss. Where tooth decay, malocclusion, trauma are some other possible causes. This case report exhibits the furcation bone loss in a three rooted mandibular tooth of a 14-year-old female patient.

I. INTRODUCTION

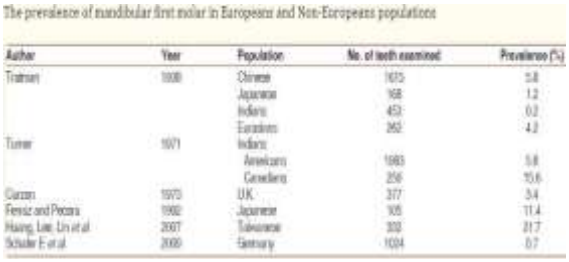
The accurate diagnosis, understanding, and appreciation of the correct morphology of the tooth, together with optimal biomechanical preparation and obturation, are essential for the success of root canal therapy.[1] For a proper diagnosis and to avoid mistakes, knowledge of roots and their anatomy is crucial. The outcome of endodontic treatment may change if these variances are not recognized. Therefore, it becomes important to know who they are in advance. Regarding the roots and root canals of mandibular molars, numerous anatomical differences have been proposed.[2]

The presence of an extra root discovered distolingually, known as radix entomolaris(RE), is a significant anatomical variant of the two-rooted mandibular first molar. This extra root was originally described in literature by Carabelli (1844). [3]

The etiology of how RE forms is currently unknown. The development of an additional root may be caused by external circumstances during tooth development or by the presence of an atavistic gene in a person's genetic makeup. [2,3] Relatively more genetic preponderance is shown in RE.[2,3]

The incidence of a third root is extremely uncommon in India, with a prevalence of only 0.2%. In populations having Mongoloid features (American Indian, Eskimos, and Chinese), it occurs with a frequency between 5% to more than 30%, compared to less than 4% in Whites and 2.8% in the African population. The RE is viewed as a common morphologic variant and an Asiatic characteristic in these populations (Yew SC, Chan K 1993).[4]

The prevalence of mandibular first molars in populations of Europeans and non-Europeans is shown in [Table 1] below[5,6].



The prevalence of mandibular first molar in Europeans and Non-Europeans populations

Author	Year	Population	No. of teeth examined	Prevalence (%)
Trairatvorakul	1988	Chinese	1615	5.8
		Japanese	168	1.2
		Indians	453	0.2
		Europeans	262	4.2
Turner	1971	Indians		
		Americans	1983	5.8
		Canadians	256	10.6
Curzon	1973	U.K.	377	3.4
Fernéz and Pecora	1982	Japanese	105	11.4
Hsiang, Lee, Lin et al	2007	Taiwanese	332	21.7
Schäfer E et al	2009	Germany	1034	0.7

The incidence of mandibular molars with three roots according to race and sex is mentioned in Table 2 below [7]

Race	Male	Female	Total
Mongolian	5	11	16
Negro	5	3	8
Caucasian	2	6	8
Total	12	20	32

II. CASE REPORT

A case of 14 year old female patient was reported to the dental department, in Medica Hospital (Maldives), with the chief complaint of pain in a deep carious tooth on the right first mandibular molar.

On clinical examination, deep distal proximal caries with grade 1 mobility and grade 3 furcation involvement (Glickman's classification) lingually and buccally were seen

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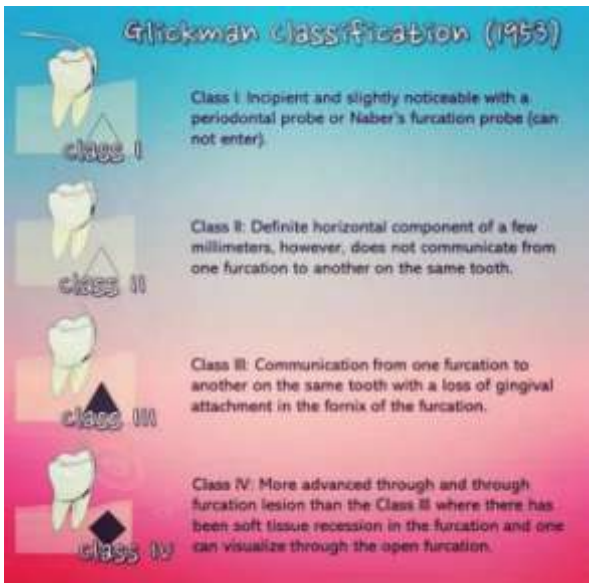
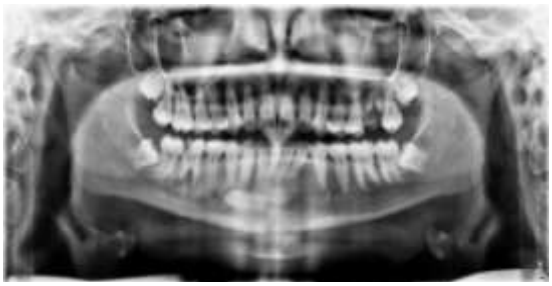


On radiographic examination, periapical lesion was seen in the distal root with bone loss and grade 3 furcation involvement. Loss of attachment noted in the mesial root



Antibiotics were prescribed prior to the procedure. Right mandibular first molar was extracted under mandibular nerve block. The socket was irrigated with povidone- iodine 10 % solution and sutured with 4-0 vicryl.Upon review of the patient after a week extraction site was uneventful.

Postextraction the mesial root of the extracted right mandibular first molar was seen completely covered with the infected granulation tissues which contributed to the severe bone loss.

III. DISCUSSION

Several studies have reported the anatomy of the lingual (supernumerary) root has contributed to the chronic localised periodontitis of the mandibular first molar. According to Huang's study, the existence of a distolingual root aids in the complex creation of a distal furcation. When advanced damage is present, this adverse furcation involvement is more obvious.[8]

Quackenbush (2002) found that the additional root appeared unilaterally in about 40% of patients, mostly on the right side.[9] According to Tratman (1938), there is a sex difference in the probability for females to exhibit the abnormality bilaterally symmetrically on both sides, while males frequently exhibit the anomaly asymmetrically on the right side.[10]

This characteristic is typical of females and mandibular first molars, according to Ferraz (1992), which is consistent with the case description.[7]

The chronic localized periodontitis with mandibular first molars in the current case was caused by type I Radix entomolaris. Inadequate oral hygiene, food impaction, deep proximal caries and the small root trunk of the mandibular first molar all contributed to the unfavourable distal furcation involvement becoming apparent.

Conservative therapy requires a thorough study of the connection between root shape and periodontal damage. Racial differences in the architecture of human teeth can cause therapy to fail if they are not identified.

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