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Radix paraentomolaris- A rarest of rare structural entity

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Abstract: *The mandibular first molars (primary and permanent) usually have 2 roots located mesially and distally, but occasionally they have an additional root located distolingually requiring special attention when root canal treatment is being considered . The additional root is regarded as a normal racial and morphological variation rather than as an abnormality. It appears to be more common in races of Mongoloid origin, including Malay, Chinese, Japanese, Eskimo, and American and Canadian Indian populations.[1]To study about the rarest root and root canal anatomy using spiral ct and r.v.g. Computed tomography and radio visiography has long been used as a diagnostic aid in dentistry .With the advent of new diagnostic aids like spiral computed tomography it has become very easy for the dentist to diagnose different root and root canal anatomy and accordingly plan the treatment.*

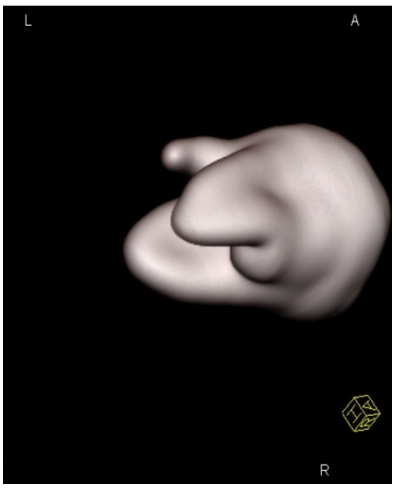
Keywords*: Radix Entomolaris, Radix Paramolaris, Radix Paraentomolaris, spiral computed tomography, radio visio graphy.*

I. Introduction

A patient turned up to the clinic with the chief complaint of diffused pain and bleeding with the left posterior region of mouth. Mandibular molars can have an additional root located lingually (the radix entomolaris) or buccally (the radix paramolaris).This tooth had one extra root on the buccal side and one on the ligual side. If present, an awareness and understanding of this unusual root and its root canal morphology can contribute to the successful outcome of root canal treatment. . Avoiding procedural errors during endodontic therapy demand an adapted clinical approach to diagnosis and root canal treatment.

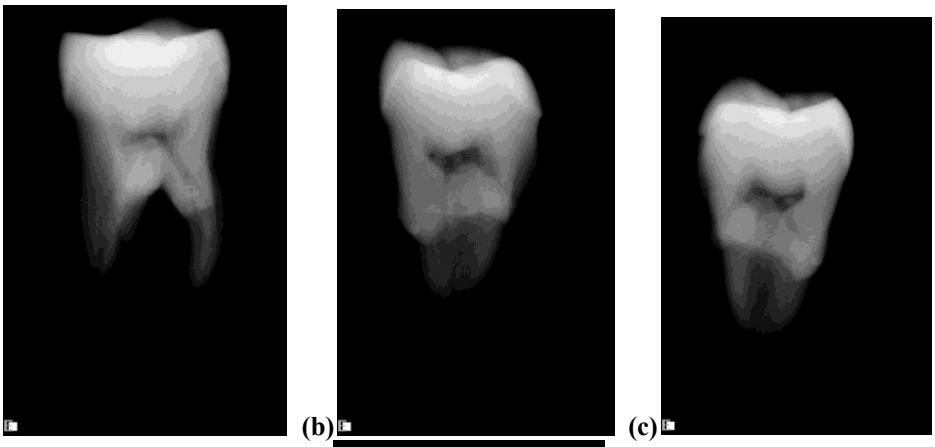
II. Case Report

A left mandibular first molar (36) was extracted from a 23-year-old woman at the our dental clinic because the tooth was periodontally compromised. During extraction the lingual root got fractured and then later removed surgically. The extracted tooth was observed after thorough cleaning with 5% NaOH and 10% NaOCl, and showed four distinct roots: one mesial root, one distal root, one buccal root and one lingual root (Fig. 1)

(a)  **(b)** 

(c)

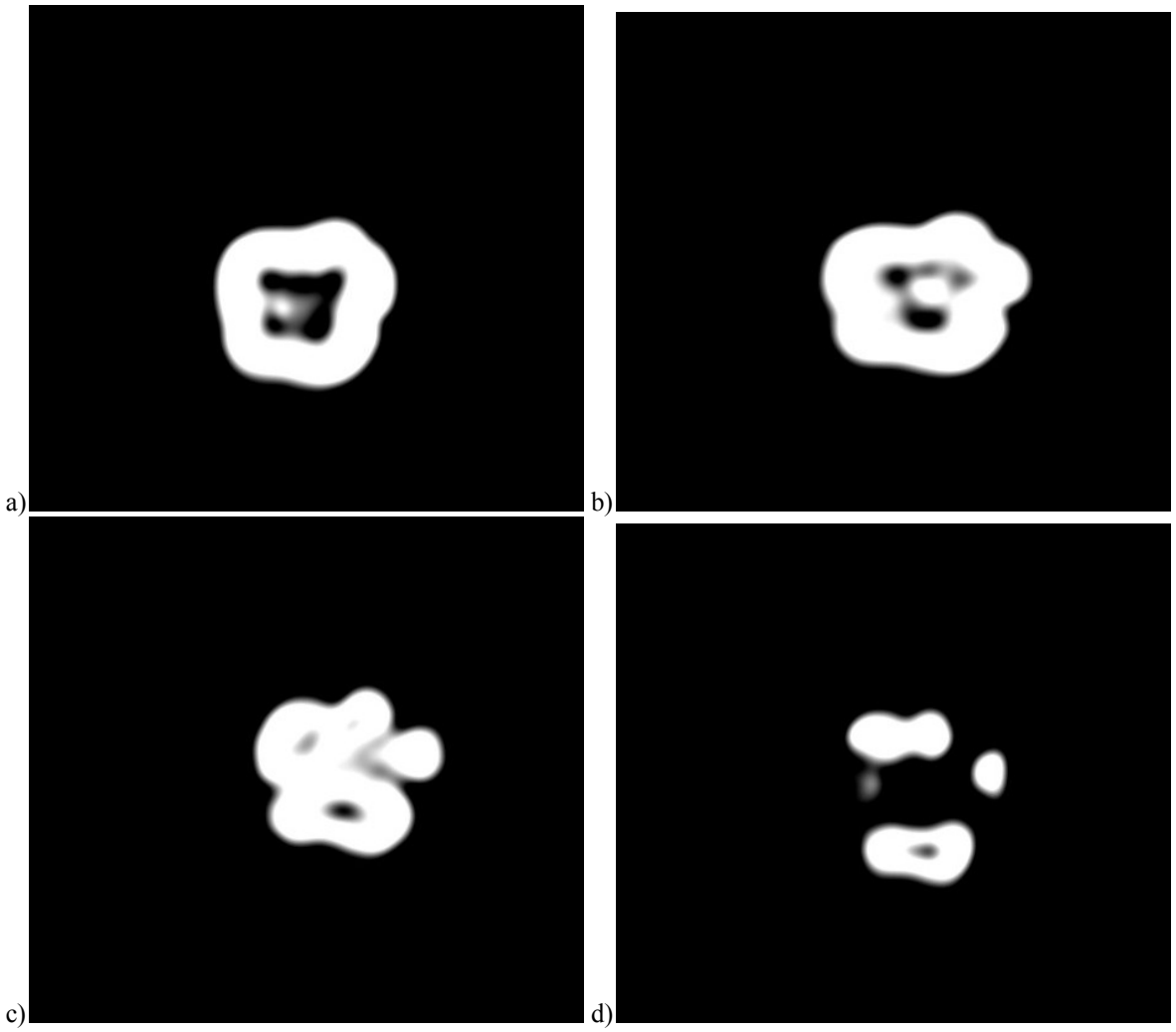
The occlusal crown morphology of the tooth showed a five-cusp pattern, with three buccal (protoconid, hypoconid, hypoconulid) and two lingual (metaconid, entoconid) cusps (Fig. 1). Basic crown and root measurements were made to the nearest 0.01 mm with a vernier caliper. The mesiodistal diameter of the tooth was 19 mm, and buccolingual diameter was 17 mm. Maximum mesial and distal root length were 24 and 21 mm, respectively.the length for the accessory buccal root is 15 mm[8] In order to detect the presence of extra canals in this multirooted madibular first molar radiographic evaluation was done .(Fig 2)



(a) **(b)** **(c)**

(d)

To support this information spiral ct scan was done and sections the sections were observed keenely.(Fig 3).



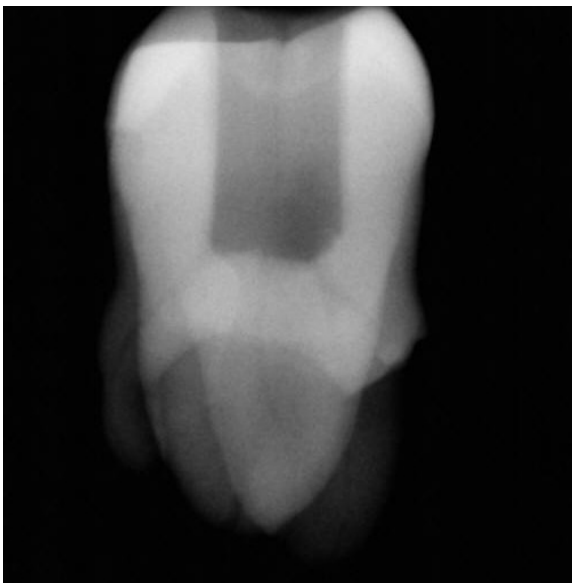
Hannsfield devised the computerized axial tomography during the 1970s. CT is an X-ray imaging technique that produces 3D images of an object by using a series of two-dimensional (2D) set of image data to mathematically reconstruct a cross-section of it.[2] This system measures the attenuation of X-rays entering the body from many different angles. The computer then reconstructs the part under observation in a series of cross sections or planes. CT is unique in that it provides imaging of a combination of soft tissues, bone and vessels, and the technique has become a widely used method for the diagnosis of pathologic conditions in the maxillary bones and plays a major role when used following a preliminary screening with a panoramic or a periapical radiograph. Historically, before dental CT was introduced to study the anatomy and pathology of the jaw bones, conventional orthoradial tomography associated with a complex blurring device (Scanora, Soredex, Helsinki, Finland) was applied to dental and oral tissues.[2]

After the access cavity preparation of the tooth it was found that the tooth had four roots :one mesial ,one distal,one buccal and one lingual ;with five canals.(Fig 4 b)

(a)

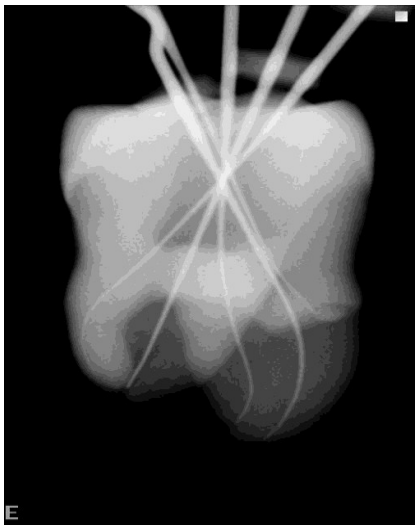
(b)

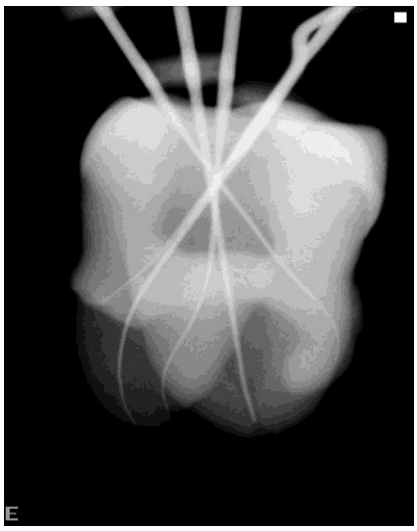
c)

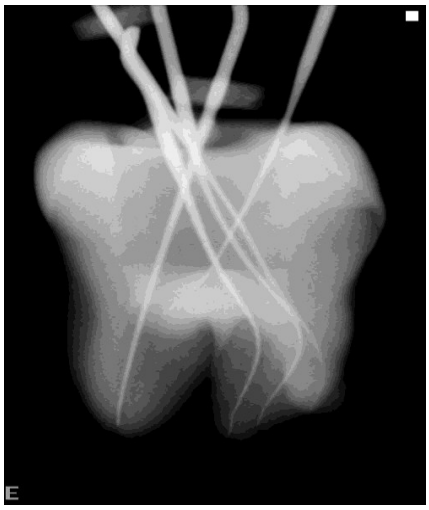


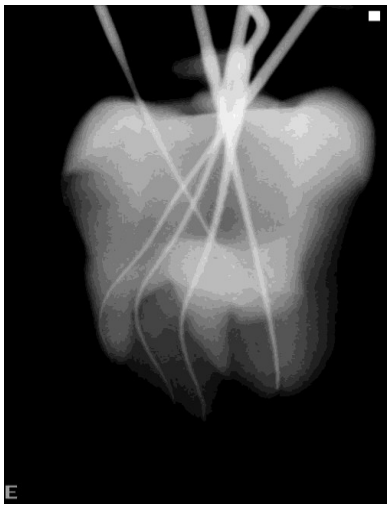
d) 

Interestingly the orifice of the mesiobuccal canal of the mesial root and that for the buccal root were the same. thus to analyze the extent of all the canals and there patterns small number k-files were placed into each canal till seen through the orifice and R.V.G were taken. (Fig 5 c)

a) 

b) 

c) 

d) 

According to Carlsen,[3] the primary elements of the root complex are root cones and supernumerary radicular structures. For consistency with other publications[4] we used the term "radical" rather than "cone" to refer to unseparated root-like divisions. When a root has two or more radicals, the individual root elements may be completely or incompletely divided. In completely separated roots, radicals are completely divided by an interradicular process at some point along the total length of a root, and the result is two or more separate roots. When radicals are incompletely divided owing to only minimal penetration of the interradicular processes, superficial development of grooves delimits the boundaries of the radicals.[5] Although four-rooted mandibular first molars have been observed on a few occasions in the literature,[6,7] to the best of our knowledge, four-rooted first mandibular molars with one buccal and with one lingual accessory root have not been reported to date. Therefore, the four-rooted first molar observed in the present case seems to be a rare developmental anomaly of the molar root form. As we know that RADIXENTOMOLARIS means a extra root on the distolingual aspect and RADIXPARAMOLARIS means an extra root on the mesiobuccal aspect ;a tooth with a combination of both the two anomalies according to us is termed as RADIX PARENTOMOLARIS .

III. Conclusion

This case shows the importance of having a thorough knowledge of the developmental aspects of the tooth root, which ultimately help in the working out the possible root and canal variations of a particular tooth. Although the incidence of these variations is not common, it is important for clinicians to be aware of unusual root morphologies and their canal confi gurations. This can assist them to better debride and obturate the teeth and to avoid uncompleted canal obturation and failure of treatment.[8]

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