



OLGU SUNUMU / CASE REPORT

Diagnostic considerations while utilizing intraoral periapical radiographs for diagnosing radix entomolaris

Radiks entomolaris teşhisi için intraoral periapikal radyografiler eşliğindeki tanısal yaklaşımlar

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Abstract

Radiopacity seen in periapical area in periapical radiographs can be sometimes be tricky to interpret and diagnose. Occurrence of radix entomolaris is rare in mandibular first molar and mandibular second premolar. This rare entity may probably be misdiagnosed if the practitioner does not acquire periapical radiographs using appropriate techniques. A male patient aged 28 years presented with chief complaint of decayed teeth in right lower back region of mouth. On intraoral examination, 46 was observed to be decayed and non tender on vertical percussion. An intraoral periapical radiograph (IOPA) was advised for the same. Well defined radiopacities were observed in between roots of 46 and 45. A tentative diagnosis of idiopathic osteosclerosis was made. However, since the radiopaque structure resembled that of a tooth root, another IOPA at a different horizontal angulation was taken. To our surprise, 46 exhibited an additional supernumerary root. Also, the presence of an additional lingual root in relation to 45 was noted. The present case report demonstrates the impact on interpretation/diagnosis an angulation difference can make while taking a periapical radiograph through example of case which exhibited the rare occurrence of radix entomolaris and concurrent additional root in second mandibular premolar.

Key words: Intraoral periapical radiographs, angulation, Radix Entomolaris, mandibular second premolar

INTRODUCTION

Radix entomolaris (RE) is an anatomic variation of mandibular molar in which there is presence of additional root in lingual side usually distolingual^{1,2}. Radix entomolaris was first documented by

Öz

Periapikal radyografilerde periapikal bölgede görülen radyokasitenin bazen yorumlanması ve teşhis edilmesi zor olabilir. Mandibular ilk molar ve mandibular ikinci premolarda radiks entomolaris oluşumu nadirdir. Hekim, uygun teknikler kullanarak periapikal radyografiler almaz ise bu nadir durum muhtemelen yanlış teşhis edilebilir.

28 yaşında bir erkek hasta, ağzın sağ alt arka bölgesinde çürük diş şikayetiyle başvurdu. Ağzı muayenede, 46'sının çürümüş olduğu ve dikey perküsyonda çürüdüğü gözlenmiştir. Aynı zamanda ağzı periapikal radyografi (IOPA) önerilmişti. İyi tanımlanmış radyofasiteler 46 ve 45 kökler arasında gözlenmiştir. İdiyopatik osteosklerozun kesin olmayan tanısı yapıldı. Bununla birlikte, radyopak yapı bir diş köküne benzediğinden, farklı bir yatay angulasyonda başka bir IOPA çekilmiştir. Şaşırtıcı şekilde, 46 ek bir süpernumerari kök sergiledi. Ayrıca, 45 ile ilişkili olarak ek bir dil kökünün varlığı kaydedilmiştir. Bu olgu sunumu, nadir görülen radyus entomolarisi ve ikinci mandibular premolarda eşzamanlı olarak ek kök oluşumu sergileyen olgu örneği ile periapikal radyografiyi alırken, bir angulasyon farkının yorumlama/tanı üzerine etkisini göstermektedir.

Anahtar kelimeler: İnaoral periapikal radyografiler, angulasyon, radix entomolaris, mandibular ikinci premolar

Carabelli³. This additional root is smaller than the mesial and distobuccal root¹. The occurrence of RE is less than 5% in Eurasian and Indian populations^{1,2}. In African populations, it is rare, accounting to less than 3%⁴. However, occurrence of RE is about 5%-30% in mongoloids (Chinese,

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Eskimo and American Indians)⁴. It is likely to be misdiagnosed if the practitioner bases his diagnosis on the findings in single periapical radiographs. Conventional radiographs such as periapical radiographs present three dimensional objects as two dimensional images, and hence have inherent disadvantages. In these cases, it is extremely helpful to take two different radiographs with different horizontal angulations based on Clark's rule.



Figure 1. (A) Intraoral periapical radiograph showing well defined radiopacity between the roots of 46 and 45, (B) Another periapical radiograph taken at different horizontal angulation demonstrating Radix Entomolaris with 46; also observable is the supernumerary root between 44 and 45. The radiopaque structure was homogenously radiopaque with well defined corticated borders. Considering the normally occurring conditions in this area, a tentative diagnosis of idiopathic osteosclerosis was arrived. However, though the radiopaque structure appeared to be separate from the roots of 46, the structure resembled that of a tooth root. However, the patient did not give any history of extraction of teeth in that area, and also the radiopacity did not resemble with that of roots of any deciduous teeth. Another IOPA was taken at a different horizontal angulation. To our surprise, 46 exhibited an additional supernumerary root on mesial side (Figure 1B). According to Clark's parallax method, the additional root with 46 was predicted to be on lingual side of mesial root. Incidentally, the second radiograph also showed the presence of an additional lingual root on mesial side in relation to 45 (Fig 1B).

According to Clark's rule or SLOB (Same Lingual Opposite Buccal) technique, an object is located in lingual side if it moves in the same direction as the cone. If the object moves in opposite direction as the cone, then it is determined that the object is situated buccally⁴. If it is difficult to diagnose using conventional radiographs, one can take help from Cone beam computed tomography which shows the morphology of roots in three dimensions. The most common reasons for failure of endodontic therapy is because of the failure to identify root canals and inability to eliminate all the microorganisms from

the root canal⁴. If the additional root is present in the mesiobuccal side, it is called as radix paramolaris⁴.

CASE

A male patient aged 28 years visited our department with chief complaint of decayed teeth in right lower back region of mouth. On intraoral examination, 46 was observed to be decayed and non tender on vertical percussion. An intraoral periapical radiograph (IOPA) was advised for the same. IOPA showed proximal caries on the distal aspect of the crown involving enamel and dentin. Periapical area appeared normal. Incidentally, we observed well defined radiopacity between the mesial root of 46 and root of 45 (Figure 1A).

DISCUSSION

Idiopathic osteosclerosis is also called as dense bone island, focal periapical osteopetrosis, bone scar and enostosis^{5,6}. It more commonly occurs in mandible when compared to maxilla and is not associated with inflammatory etiology. In mandibular region, it frequently occurs in posterior region when compared to anterior region⁵. It is observed incidentally in radiographs as a well defined radiopacity ranging in size from 2mm to more than 2 cm, and is elliptical, round or irregular in shape⁶. They can be observed at apex of tooth roots or between the teeth roots. These radiopacities may be observed to be clearly separated from teeth and lamina dura⁶. Usually, treatment is not indicated, however endodontic treatment and extraction may be necessary if root resorption occurs in relation to the lesion⁶.

Supernumerary root in relation to mandibular first molar is rare anatomical variation and is called as Radix entomolaris (RE). Prevalance of additional root in the mandibular first molars is 0.2% in India and is a rare occurrence⁷. Clinically, presence of extra cusp or prominent occlusal, distal, or distolingual lobe with increased cervical convexity or prominence may dictate the presence of extra root⁴. Carlsen and Alexandersen classified Radix entomolaris into four types depending upon the location of its cervical part. Type A and Type B represents distally located parts of RE, Type C has distally located cervical part, whereas Type D has

central location between mesial and distal roots². RE has endodontic, periodontic and surgical implications^{2,7}.

Incidence of occurrence of two roots in mandibular second premolar is reported to be 0.3% and has endodontic implications⁸. The success of endodontic management of radix entomolaris depends upon the accuracy of diagnosis, morphological analysis of tooth root and root canal anatomy, properly accessing the root canals and proper treatment plan³. In radiographs, RE is usually overlapped by the distobuccal root in the buccolingual plane. Superimposition of the roots is a common leading to inaccurate diagnosis. Hence a second radiograph has to be taken at an different distal angle (30°) for accurate diagnosis and interpretation of this rare entity³. The only disadvantage of this technique is the images obtained have less sharpness and less distinct⁴. Endodontic management includes proper identification of lingual orifice, straight line access, manual canal preflaring with SS files, proper determination of canal curvature and working length, and conservative canal preparation with nickel-titanium rotary files³.

The present case highlights the importance of taking periapical radiographs with different angulations to facilitate accurate diagnosis in cases similar to this present case. Clinician must take two different periapical radiographs from different horizontal angulations to accurately diagnose periapical radiopacities, especially when they occur in between the roots, for example to differentiate between idiopathic osteosclerosis and radix entomolaris. In our case, acquiring periapical radiographs at two

different horizontal angulations led to detection of supernumerary root in both mandibular second premolar and mandibular first molar. Otherwise, this observation of occurrence of supernumerary root in mandibular second premolar and mandibular first molar could have been missed.

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