

Maxillary Central Incisor with Two Roots: A Case Report

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Abstract:

A 16 year old female was referred to an oral and maxillofacial radiologist for evaluation of a radiolucent area at mesial radicular aspect of right maxillary central incisor which was detected accidentally during pre-orthodontic treatment check ups. Clinical examination showed no particular signs or symptoms except for slightly tenderness to lateral percussion. Second radiograph with altered horizontal angulations showed a mesial supernumerary root which the radiolucency seemed to be associated with that. In order to treat the tooth, the composite filling was removed and canals were cleaned, shaped, and obturated by lateral condensation technique.

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INTRODUCTION

Many anatomical studies have declared that maxillary incisors are always comprised of a single root, while variations in the number of lateral canals and/or position of apical foramen are reported [1-4].

As indicated in the studies of canal anatomy, multiple canals and roots in maxillary incisors are rare and are most often seen in lateral incisors [5-13].

A brief review in literature revealed that only 3 cases of maxillary central incisors with two root canals [8-13] and 6 cases with two roots have been reported [17-22].

Neville et al used the term supernumerary roots in describing the development of an increased number of roots on a tooth compared with the classical description in dental anatomy. The most frequently affected teeth are the permanent molars (especially third

molar) from either arch and mandibular cuspids and premolars [23].

CASE REPORT

A 16 year old female was referred to our private office for evaluation of a radiolucent area at mesial radicular aspect of right maxillary central incisor (Fig 1A) which was detected accidentally during pre orthodontic treatment check ups. Clinical examination showed normal number, size and color of all teeth and there was no fistular tract. The size and shape of the right maxillary central incisor were identical to the left (Fig 2) and there was no periodontal problem. A slight depression at mesiobuccal cervical area and an old mesial class III composite filling was detected on the tooth. Maxillary right incisor did not demonstrate accurate responses to electrical and thermal vitality tests. Cavity test was then

performed without patient sensitivity to drill. The tooth was slightly tender to lateral percussion. Second radiograph with altered horizontal angulations showed a mesial supernumerary root (Fig 1B) and the radiolucency seemed to be associated with the supernumerary root. The composite filling which showed slight marginal ditching and marginal leakage was removed without local anesthesia and exposed mesial horn of pulp cavity was detected, which seemed to be the source of pulpal damage and partial necrosis of the tooth and the cause of periapical radiolucency associated with supernumerary root of right maxillary incisor. Root canal therapy was preformed using K files (Densply-Maillefer, Ballaigues, Switzerland) and Gates Glidden burs (Densply-Maillefer, Tusla) for coronal flaring under constant irrigation with 2.5% sodium hypo chlorite in order to clean and shape the canal and obturation of the root canal by lateral condensation technique was performed(Fig 1C).

DISCUSSION

When a maxillary incisor presents two roots or two root canals, conditions such as fusion, gemination, dens in dent, platogingival or



Fig. 2: Clinical view of right maxillary central incisor. Arrow shows small depression at mesiobuccal cervical area

distolingual groove and some variation in the normal development of Hertwig's epithelial root sheath must be considered [13,23].

Gemination is an anomaly in which the tooth germ divides during the development of the tooth, resulting in the formation of a double crown with single root, and in the case of fusion, the crown of two separate tooth buds fuse during development resulting in a bifid crown with two root canals in one root. In this case clinical examination as well as the contra lateral side pretreatment radiographs revealed, a crown of normal size and shape when

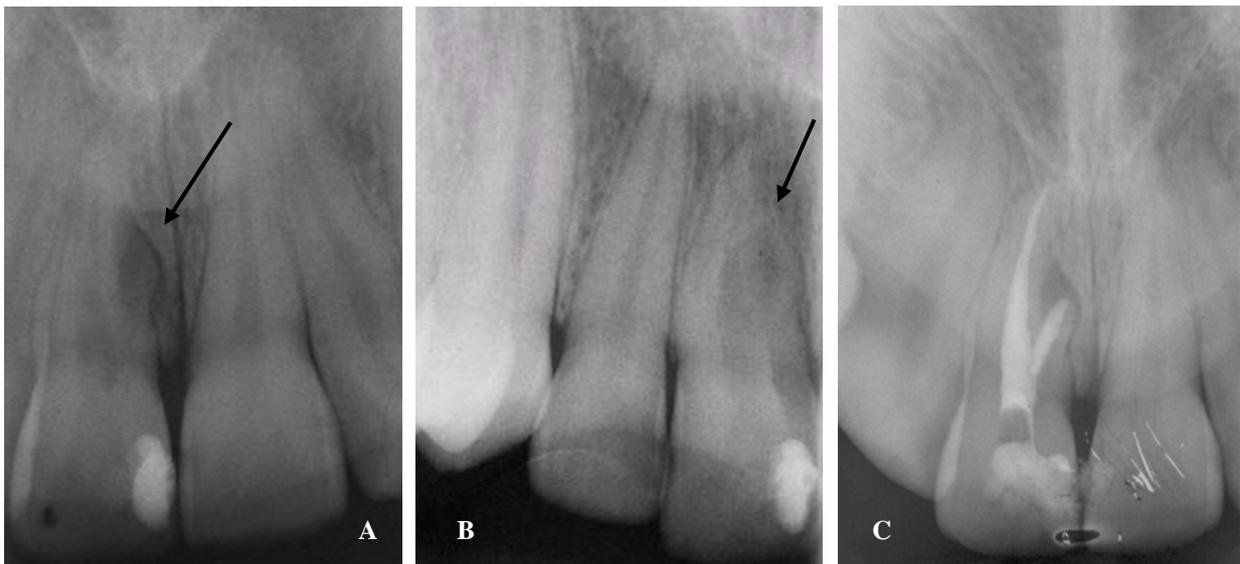


Fig. 1: Periapical radiographs of right maxillary central incisor; A: radiolucent area at middle part of the root (arrow); B: shift technique showed the second root (arrow); and C: after obturation of two roots

compared with the contra lateral side. Therefore there are no chances for fusion or gemination, which result in either a single larger crown or a fused or joined crown [15,23].

There are few reports of maxillary lateral incisor with dens in dente and dens invagination showing two roots [5,6,8-11]. In the present case the pretreatment radiograph showed no evidence of enamel or dentinal invagination, thus making dens in dente or dens invagination are unlikely causative factors.

Another developmental anomaly, which may be appeared radiographically similar to this case, is palatogingival or distolingual groove, but clinical examination ruled it out [13].

According to Bhasker [24] normal root developments occurs when Hertwig's root sheath is horizontally bent at the cemento-enamel junction to narrow the cervical opening of the tooth germ. In this case report the clinical crown has normal shape (identical to left maxillary central incisor), it seems that during the epithelial diaphragm formation some incident caused the development of a horizontal flap of the Hertwig's epithelial root sheath, and then the horizontal flap fused, resulted in the formation of a second root. The slight depression which is present at the mesiobuccal cervical portion of this tooth seems to be the bifurcation area. Undetected mesial horn exposure of pulp could be considered as the causing factor for partial necrosis of the pulpal tissue and induced the formation of periapical pathosis associated with mesial supernumerary root.

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دندان پیشین (سانترال) فک بالا با دو ریشه (گزارش مورد)

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چکیده

یک بیمار مؤنث ۱۶ ساله جهت ارزیابی یک ناحیه رادیولوسنت در نمای مزیال رادیکولر دندان پیشین فک بالا که به طور اتفاقی در حین ارزیابیهای قبل از درمان ارتودنسی کشف شده بود، به متخصص رادیولوژی دهان، فک و صورت ارجاع داده شد. در معاینات کلینیکی هیچگونه علامت یا نشانه‌ای جز اندکی حساسیت به دق لترال دیده نشد. با تغییر زاویه افقی رادیوگرافی دوم تهیه شد و مشخص شد که دندان دارای یک ریشه اضافی است که به نظر می‌رسید رادیولوسنسی همراه آن باشد. جهت درمان دندان، ترمیم کامپوزیت قبلی برداشته شد؛ کانال‌ها تمیز و شکل داده شدند و به وسیله روش تراکم جانبی پر شدند.

واژه‌های کلیدی: دندان پیشین فک بالا با دو ریشه؛ تغییرات آناتومیک

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