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Case Report

Maxillary second molar with additional mesiobuccal root

Abdulaziz Alwakeel[1]*, Mohammed Al Shahir[2], Hattan Baismail[2], Hatem Abualhasan[2], Anwar Lami[3]

[1]Department of Oral Medicine, Specialist Dental Centre, Tabuk Health Cluster, Tabuk, SA
[2]Department of Endodontics, Specialist Dental Centre, Tabuk Health Cluster, Tabuk, SA
[3]Department of Administration, Specialist Dental Centre, Tabuk Health Cluster, Tabuk, SA

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***Correspondence:**
Dr. Abdulaziz Alwakeel,
E-mail: alwakeelaziz@gmail.com

ABSTRACT

Maxillary molar (MM) teeth often have three separate roots. These teeth may present a single-root or two-root morphology depending on the fusion between the roots, while additional roots are very rare. The reporting of this case aims to present a case of maxillary second molar with additional mesiobuccal roots in A 42-year-old female patient presented to the dental clinic complaining of pain and bad halitosis in her mouth. The patient's medical history was obtained and revealed no significant abnormalities. Vital signs were recorded as follows: blood pressure 125/65 mmHg, heart rate 65 beats/min, body temperature 36.2 °C, and respiratory rate 18 breaths/min. Clinical examination showed that tooth #26 had an occluso-mesial restoration. A periapical X-ray of tooth #26 revealed a previously endodontically treated tooth with substandard root canal treatment. Cone beam computed tomography (CBCT) was taken for further evaluation for tooth #26, and incidentally it was found that tooth #27 had four roots. The extra root was located in the mesiobuccal area and was named an additional mesial root (MB2 root). It was separated in the middle to apical third of the mesial root. The previous case report shows a rare case of extra root in maxillary second molar, this report done to increase the awareness of such cases and to avoid complications during dental treatment.

Keywords: Maxillary second molar, MB2 root, Middle to apical third of the mesial root

INTRODUCTION

Maxillary molar (MM) teeth often have three separate roots.[1] These teeth may present a single-root or two-root morphology depending on the fusion between the roots, while additional roots are very rare.[2] Because a four-rooted morphology is the least common root anomaly, there are very few studies in the endodontic literature that examine the root and canal morphology of four-rooted MM teeth.[3,4] The reporting of this case aims to present a case of maxillary second molar with additional mesiobuccal roots.

CASE REPORT

A 42-year-old female patient presented to the dental clinic complaining of pain and bad halitosis in her mouth. The patient's medical history was obtained and revealed no significant abnormalities. Vital signs were recorded as follows: blood pressure 125/65 mmHg, heart rate 65 beats/min, body temperature 36.2 °C, and respiratory rate 18 breaths/min.

Clinical examination showed that tooth #26 had an occluso-mesial restoration. A periapical X-ray of tooth #26 revealed a previously endodontically treated tooth with substandard root canal treatment.

Cone beam computed tomography (CBCT) was taken for further evaluation for tooth #26, and incidentally it was found that tooth #27 had four roots. The extra root was located in the mesiobuccal area and was named an

additional mesial root (MB2 root). The CBCT images clearly showed the MB2 root in the axial and coronal view.

It was separated in the middle to apical third of the mesial root, as shown in Figures 1 and 2.

This research had ethical approval no. TU-077/026/390.

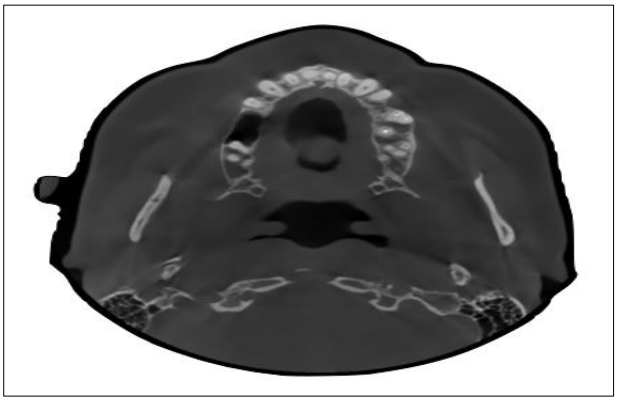

Figure 1: Axial view shows the maxillary second molar in left side has 4 roots separated in middle to apical third of roots.

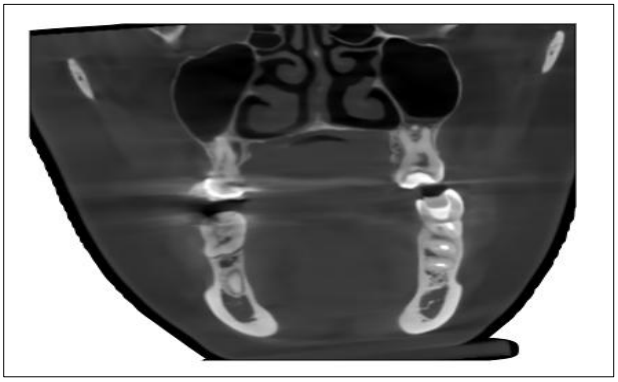

Figure 2: Coronal view shows the maxillary second molar in left side has additional root separated in meddle to apical third.

DISCUSSION

An additional root in the maxillary second molar (MSM) has occasionally been reported in the distal region and may be associated with a C-shaped mesiobuccal root, two distal roots, and a prominent palatal root.[5]

Among four-rooted maxillary molars, the most frequently reported variation is the presence of a second palatal root.[4] Nevertheless, other morphological variations have also been described, including the presence of an extra root in the buccal, mesial, or distal regions.[6]

In cases involving an additional mesiobuccal root, the mesiobuccal root divides through a bifurcation, resulting in two independent roots that terminate separately.[1]

In present case the mesial root separated in the middle to apical part and formed separated mesiobuccal root.

A previous investigation evaluating maxillary molars reported that four-rooted maxillary second molars were identified in 30 teeth (1.41%) out of a total of 2,123 examined molars. The MB2 root configuration was detected in only 8 cases (0.38%). Among these cases, seven occurred in male patients and one in a female patient. Additionally, five teeth were located on the left side and three on the right. The study also indicated that this uncommon anatomical variation appeared more frequently in male patients.[7] The present case the additional root presented in female patient, in left side of maxillary second molar.

Since its introduction into dental practice, CBCT imaging has become an important diagnostic tool, particularly when three-dimensional assessment is required. Some authors consider it a standard imaging modality for complex dental cases.[8]

Although CBCT technology is derived from conventional medical computed tomography (CT), it differs in several technical aspects that make it more suitable for dental and maxillofacial imaging.[9]

Although micro-computed tomography (micro-CT) is considered a highly accurate method for evaluating root canal morphology, it has several limitations. The technique does not provide information related to patient demographics such as age, gender, or ethnicity.

Moreover, micro-CT does not allow comparisons with adjacent or contralateral teeth within the same patient. Another clinical concern is that teeth with complex or divergent root configurations may be more susceptible to fracture during extraction procedures.[10]

Martins et al suggested that CBCT is a reliable tool for investigating the prevalence and variations of root canal morphology because it allows assessment of the dentition across different individuals within a defined population.[11]

In the presented case, the CBCT images shows more detailed about the location of separation of MB2 which is considered one of methodology to evaluate the roots of teeth.

CONCLUSION

The present case report describes a rare anatomical variation involving an additional root in a maxillary second molar. This report aims to increase clinicians' awareness of such variations and to help prevent potential complications during dental treatment.

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