

MAXILLARY SECOND PREMOLAR WITH THREE CANALS

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هذه المقالة تصف حالة مرضية لضاحك علوي ثان يحتوي على ثلاث قنوات جذرية. فقد كان هذا السن يحتوي على ثلاثة جذور أنسي خلفي، ووحشي خلفي، وحنكي وكل منهم يحتوي على قناة جذرية. وقد تمت المعالجة اللبية لهذا السن تحت شروط معقمة.

A case report of a maxillary second premolar with three canals is presented. The tooth had three roots, mesiobuccal, distobuccal and palatal, each containing a canal. Root canal therapy was performed under aseptic conditions.

Introduction

The morphology of the maxillary second premolar had been reviewed extensively in the literature. The prevalence of one, two or three canals has been reported in vitro and in vivo.¹⁻⁴ The incidence of two root canals in the maxillary second premolar has been reported to vary between 28 percent and 58.6 percent, whereas the incidence of three root canals has been reported to be much lower at 1.1 percent [Table 1].

Table 1. Percentage of three canal led maxillary second premolar

Author	No. of teeth	%
Pineda & Kuttler ¹	282	0
Green ¹	50	0
Vertucci, Seelig & Cillis ³	200	1
Bellizzi & Hartwell ⁴	630	1.1

Radiographically, it is easier to detect teeth with extra roots than teeth with the usual number of roots and extra canals.⁵ The possibility of a third canal in the upper premolars may be suspected during access opening when the pulp chamber deviates from its classic alignment in the buccal-palatal relationship. Bellizzi and Hartwell⁶ recognized the presence of the three-rooted premolar after endodontic therapy, when persistent post-operative pain had to be evaluated.

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The purpose of this article is to report a case of a maxillary second premolar with three root canals.

Case Report

A 25-year-old male was referred to the Endodontic Division at King Saud University College of Dentistry's undergraduate clinic for evaluation and completion of root canal therapy of the maxillary left second premolar. Medical history was noncontributory. The clinical examination of the tooth gave a positive response to percussion and palpation. The tooth was restored with amalgam. Radiographic examination showed only the palatal canal obturated [Fig. 1]. The patient's record was reviewed. Three canals had previously been located and partially instrumented. After rubber dam isolation, the tooth and operating field were disinfected with 30 percent hydrogen peroxide followed by 5 percent tincture of iodine. The tooth and operating field were redisinfecting after establishing the access opening. The mesiobuccal (MB) and distobuccal (DB) canals were located [Fig. 2] and the working length of both canals were checked radiographically [Fig. 3]. The canals were instrumented, irrigated with 1 percent sodium hypochlorite and dried with sterile paper points. A 2 percent solution of potassium iodide was placed into the pulp space between the visits. At the obturation visit, the tooth was asymptomatic, the operating field was isolated and disinfected. The canals were irrigated with sodium hypochlorite and dried with sterile paper points. Obturation of the MB and DB canals were completed using lat-

eral condensation of gutta percha and AH26 sealer cement. Access opening was sealed with para-post and amalgam restoration, the rubber dam was removed, and a postoperative radiograph was taken [Fig. 4].

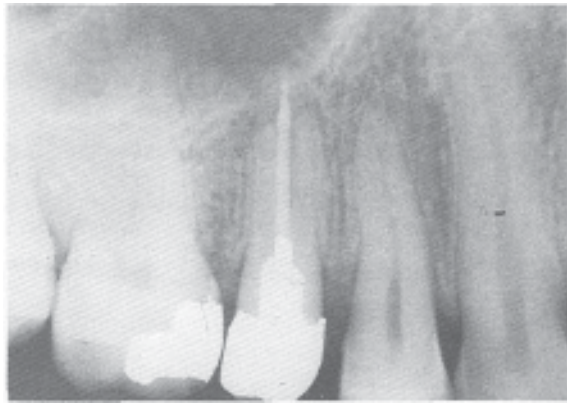


Figure 1. Preoperative radiograph of the left second premolar at the time of referral. Only the palatal canal was obturated.

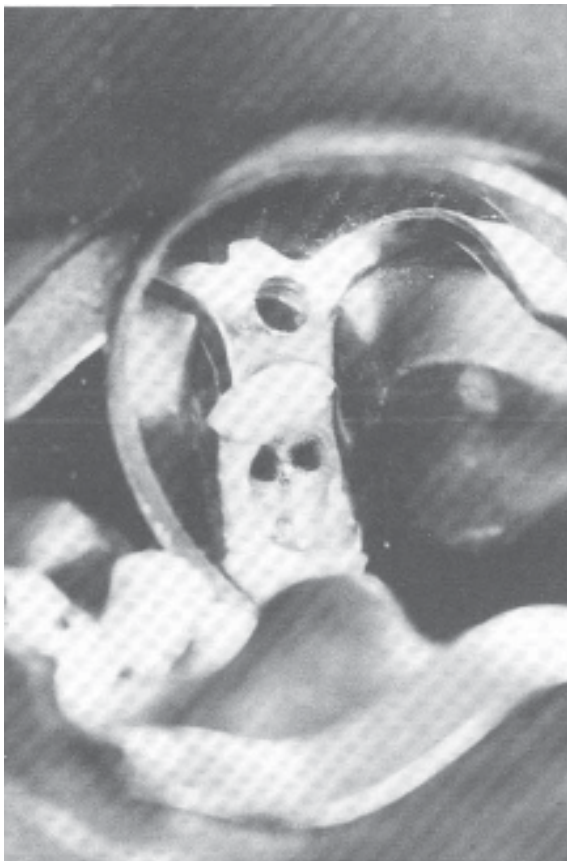


Figure 2. The mesiobuccal (MB) and distobuccal (DB) canal orifices.

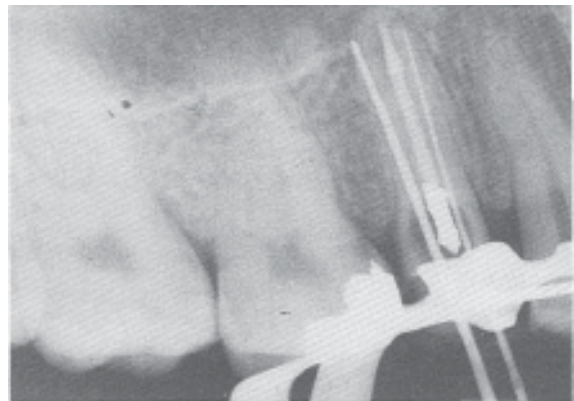


Figure 3. The Trial length radiograph of the MB and DB canals.

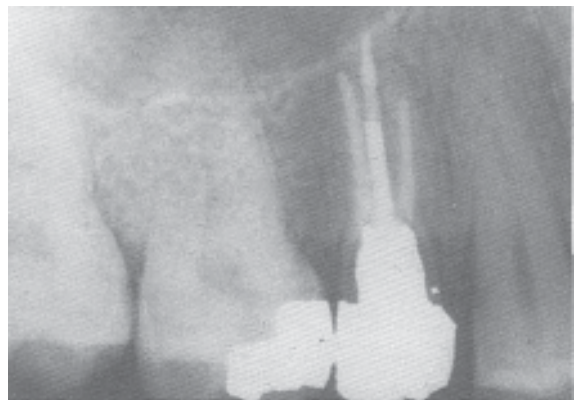


Figure 4. Post-operative radiograph displaying three obturated root canals.

Discussion

Incomplete obturation of the canal space was found to be the highest cause among those for root canal therapy failures.⁷ If the canal is originally cleaned but incompletely filled, tissue fluid breakdown products from the area can cause chronic inflammatory response in the periapical tissue. With this in mind, a thorough knowledge of pulp space morphology is essential when practicing endodontics. This will help to reduce endodontic failure caused by incomplete obturation.

Sieraski et al⁸ gave a general guideline for the identification of three rooted maxillary premolars using radiographs. He stated that, most likely, the tooth has three roots if the mesio-distal width of the mid-root image appears equal to or greater than the mesio-distal width of the crown image. A similar finding was observed in this case report.

Finally, when performing root canal therapy, the operator must always be aware and prepared for unexpected root canal morphology. Careful radiographic examination may lead to the identification of additional *roots or* canals. In addition, careful examination of the pulp chamber will help in locating the orifice of additional canals not visible radiographically.

References

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