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CASE REPORT/CASO CLINICO

Four rooted maxillary second molar confirmed with cone beam computer tomography – A case report

Secondo molare mascellare con quattro radici, visionato attraverso tomografia computerizzata Cone Beam – Caso Clinico

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KEYWORDS

Root canal therapy;
Molar;
Anatomy;
Cone beam computer
tomography.

Summary

Objectives: The purpose of this paper is to present the uncommon anatomic configuration of a maxillary second molar with two palatal roots.

Materials and methods: Just using the radiographic analysis, it was not possible to have a clear understanding of the anatomy of the maxillary second molar. This anatomy was confirmed with the help of a cone beam computer tomography analysis and a dental operating microscope. Once the correct identification of the morphology of the tooth was understood a predictable instrumentation and disinfection was performed.

Result and conclusions: It was possible to have a predictable result with an uncommon anatomic configuration. The article emphasizes the importance of utilizing the full armamentarium at the clinician's disposal, such as the dental operating microscope, electronic apex locators and cone beam computer tomography when dealing with uncommon anatomies that may not be fully understood on the radiographic examination due to superimposed structures.

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PAROLE CHIAVE

Trattamento endodontico;
Molare;
Anatomia;
Tomografia computerizzata cone beam.

Riassunto

Obiettivi: L'obiettivo di questo lavoro è presentare una configurazione anatomica inusuale di un secondo molare mascellare con due radici palatine.

Materiali e metodi: Con l'analisi radiografica, non è stato possibile avere una chiara comprensione dell'anatomia del secondo molare mascellare. Questa anatomia è stata confermata con l'aiuto di analisi effettuata con tomografia computerizzata cone beam e un microscopio operatorio. Una volta che la corretta identificazione della morfologia del dente è capito, una strumentazione e disinfezione prevedibile è stata eseguita.

Risultati e Conclusioni: È stato possibile avere un risultato prevedibile con una configurazione anatomica non comune. Questo lavoro rialza l'importanza di utilizzare tutto quello che sta a disposizione del personale clinico, come il microscopio operatorio, localizzatori elettronici d'apice e tomografia computerizzata cone beam quando sono abordate anatomie inusuali che possono non essere completamente visualizzate in analisi radiografiche a causa della sovrapposizione di strutture anatomiche.

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Introduction

The main purpose of endodontic therapy is pulp removal and root canal system disinfection.¹ Uncommon root canal configurations present a challenge when trying to achieve that purpose. Several studies have documented multiple morphological configurations of the maxillary second molar.²⁻⁵ The most common presented configuration is the presence of three roots with three or four root canals, one root canal on each root and occasionally a second canal in the mesio-buccal root.²⁻⁵ Several other uncommon anatomies of the maxillary second molar have been described.⁶⁻¹² The presence of four independent roots, two buccal and two palatal, is one type of uncommon configuration with an incidence of 1.4%.¹³ Some studies with large samples were not able to identify any case of this type.^{2,4,5} The limited numbers of reported cases were traditionally documented exclusively with radiographs. However radiographs provide limited information when dealing with superimposed root canal anatomies.¹¹ Recently has been growing sense that the cone beam computer tomography (CBCT) is able to add precious information when dealing with uncommon anatomic configurations.^{10,14}

The clinical relevance and the main purpose of this work is to report a four rooted maxillary second molar, with two independent palatal roots where the use of the axial slices and three dimension reconstructions obtained by cone beam computer topography exam proved to be very helpful.

Case report

A 36-year-old Caucasian male was referred to the endodontic department of a private clinic in Lisbon to perform the root canal treatment of tooth 17 (maxillary second right molar). At this appointment no symptoms were noted but the recent past dental history revealed a period of intermittent strong pain to cold. At that time the patient was seen on an emergency visit, where an extensive carious lesion and an irreversible pulpitis was diagnosed on tooth 17 (Fig. 1) by the referring doctor. A pulpotomy was performed at the emergency visit. The medical history was non-contributory. Clinical examination revealed a large temporary filling on the mesial and occlusal aspects of the tooth, no periodontal

pockets were present and the tooth mobility was within physiological limits. Tooth 17 was not tender to percussion or palpation. The response to the ice sensitive test (Endo cold spray, Henry Schein, Germany) was negative. The preoperative radiograph confirmed a large temporary filling and pulpotomy approach. The periodontal ligament space was uniform surrounding the three usual roots, no extra root was detected at this point. The endodontic diagnosis was previously initiated therapy with normal apical tissues on the maxillary right second molar. The clinical condition was explained to the patient. Endodontic therapy was proposed and accepted. Buccal and palatal infiltration anaesthesia was



Figure 1 Initial radiograph of the maxillary second right molar.

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