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Clinical case

Vertical root fracture diagnosis of crowned premolars with root canal treatment – Two case reports

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ABSTRACT

Diagnosing a vertical root fracture may be a challenge because of the similarities with other pathologies. In the presented cases, endodontic treatments were performed as part of the overall treatment plan for full arch rehabilitation. The symptoms and signs were recorded and the extracted teeth analyzed. The fractured teeth were from bruxer patients. All teeth had deep located periodontal pockets, gingival swelling, tenderness to percussion and radiographic bone loss. Because the fracture line may not be visible in the crowned teeth with vertical root fracture, special attention has to be given to the clinical symptoms and signs. The clinical features of this pathology may vary from case to case. The purpose of this work is to contribute to a better knowledge of the signs and symptoms of this pathology.

Diagnóstico de fratura radicular vertical em pré-molares com tratamento endodôntico e coroa cerâmica – 2 casos clínicos

Palavras-chave:
Fraturas dentárias
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Tratamento endodôntico
Coroas dentárias

RESUMO

Tendo em conta as semelhanças com outras patologias, o correto diagnóstico das fraturas radiculares verticais pode ser um desafio. Nos casos apresentados, os tratamentos endodônticos foram realizados devido a necessidades prostodônticas. Os sinais e sintomas foram registados e as peças extraídas analisadas. As fraturas registadas pertenciam a pacientes bruxómanos. Todos os dentes fraturados apresentavam bolsas periodontais localizadas, inflamação gengival, dor à percussão e perda óssea visível radiograficamente. Nestes casos clínicos deve ser dada uma especial atenção a todos os sinais e sintomas, uma vez que nem sempre é possível observar clinicamente a linha de fratura. Algumas características clínicas podem variar de caso para caso. O objetivo deste trabalho é contribuir para um melhor conhecimento das características desta patologia.

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Introduction

The symptoms and clinical signs of vertical root fracture (VRF) may be very easily confused with endodontic failure or periodontal disease.[1,2] Just like with VRF, endodontic and periodontal pathology may have symptoms that include tenderness to percussion, palpation and pain upon chewing. Clinical signs can also be present as fistula, swelling, abscess and a deep probing depth.[1,2] Radiographic features as vertical bone loss may be also compatible to several diagnoses.[3] A correct treatment approach is dependent upon a correct diagnosis. The diagnosis of a VRF may be challenging because it is difficult to visualize, especially in teeth with crowns. This creates difficulties when a practitioner wants to formulate a treatment plan and there is some doubt of a VRF. It is of increased importance for one to understand that the most predictable treatment plan for the VRF is tooth extraction.[4,5] The VRF has a prevalence of 13% of the extracted endodontically treated teeth.[6]

The purpose of this paper is to present two clinical cases of crowned premolars with root canal treatment that have vertical root fractures and to contribute to a better understanding of the signs and symptoms that may be present in this pathology so that a better diagnosis may be achieved.

Case Report

Case report 1

A 55-year-old male presented to an endodontic evaluation of tooth 34 (mandible first left premolar) and tooth 44 (mandible first right premolar). Heavy bruxism was diagnosed in the dental medical history. The patient confirms that he rarely uses his night mouthguard. The endodontic therapies were performed two years before as part of an oral rehabilitation plan following the quality guidelines of the European Society of Endodontology[7]. Tooth 34 had a cervical located fistula and gingival swelling. The tooth had tenderness to percussion and palpation and had a buccally located periodontal pocket of 7 mm (Fig. 1) surrounded by normal periodontal depths of 3 mm. A similar defect was present on the lingual

Fig. 1 – Figure showing probing periodontal pocket on the buccal aspect of the tooth 34. Note the presence of swelling and fistula.

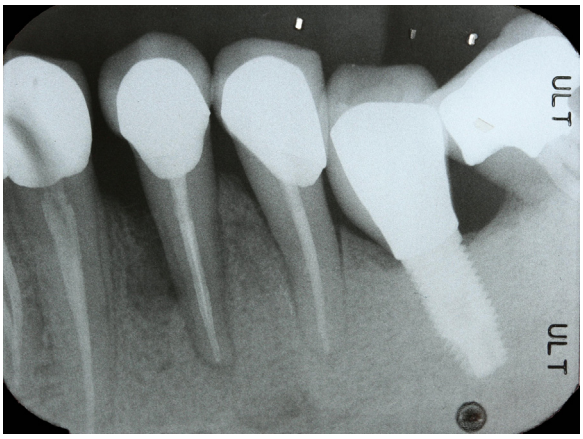

Fig. 2 – Periapical radiograph showing vertical bone loss on the mesial region of the tooth 34.

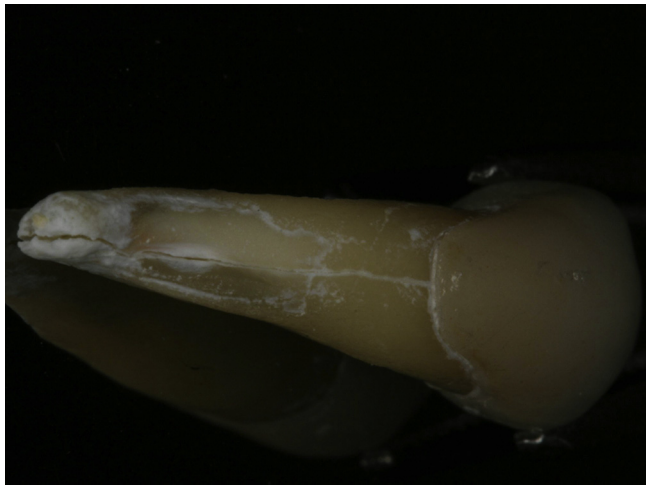

Fig. 3 – Photograph of tooth 34 showing the vertical root fracture line on the buccal surface of the root.

periodontal region of the same tooth. A radiograph analysis was able to show a vertical bone loss of the mesial face to the root (Fig. 2). Based on the symptoms, clinical and radiographic signs a diagnosis of vertical root fracture was concluded. Extraction of tooth 34 was proposed and accepted. After the extraction it was possible to visualize the fracture lines (Fig. 3).

Tooth 44 was having symptoms and clinical signs similar to tooth 34 (Fig. 4), the radiographic analysis was able to show a halo lesion surrounding the root (Fig. 5). Similar diagnosis and treatment were presented to the patient, and it was possible to confirm the diagnosis after the extraction (Fig. 6).

Case report 2

A 45-year-old male presented to an endodontic evaluation of tooth 25 (maxillary second left premolar). Light bruxism was diagnosed in the dental medical history. The endodontic treatment was performed two years earlier. The tooth had tenderness to percussion, gingival swelling on the palatal region (Fig. 7) and a palatally located periodontal pocket of 8 mm surrounded by normal probing depths. The radiographic analysis was able to show a halo lesion surrounding the root (Fig. 8).