Dental Anomaly: Dens evaginatus (Talon Cusp)

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Dens evaginatus is a developmental anomaly characterized by the occurrence of an extra cusp shaped as a tubercle projecting from the palatal or buccal surfaces (talon cusp). In the anterior dentition, dens evaginatus is more commonly found in the maxilla and on the palatal surface of the tooth. The authors present a case of dens evaginatus in a maxillary central incisor, in which the evagination was removed and routine endodontic treatment was performed.

Key Words: dens evaginatus, evaginated odontoma, talon cusps, endodontic therapy.

INTRODUCTION

Dens evaginatus or evaginated odontoma is a developmental anomaly that occurs more frequently in mandibular premolars (1); however, it can also affect other teeth, including supernumerary teeth (2). It occurs in both primary and permanent dentitions (3,4). In canines and incisors, dens evaginatus originates in the palatal cingulus, often being bilateral. The nodule, also known as “talon cusp”, can result from the abnormal proliferation of enamel epithelium from the interior of the stellate reticulum of the enamel organ (5). Its etiology is unknown.

Segura and Jimenez-Rubio (6) reported the presence of talon cusp in two members of the same family, suggesting that genetic inheritance may be a causative factor. The incidence is calculated between 1 to 2% in many Asian communities (7) and between 3 to 4% in Eskimos and North American Indians (8). There are few reports of this anomaly in Caucasians (9). Dankner et al. (10), in a radiographic study of 15,000 anterior teeth, found that dens evaginatus was present in 1% of the cases, being more frequently found in the maxilla, particularly in the lateral incisor. Hedge and Kumar (11) reported two rare cases of talon cusps in mandibular incisors. One of them was seen on a mandibular primary lateral incisor and the other one was observed on the mandibular left permanent central incisor. De Sousa et al. (12) described an unusual case of bilateral talon cusp associated with dens invaginatus. Abbott (13) reported labial and palatal talon cusps on the same tooth.

This evagination is often described as a nodule or tubercle, shaped as a cylindrical cone with a sharp point or a raindrop. Merril (14) divides the various kinds of evagination into two groups: 1) the nodule originates from the lingual crest of the buccal cusp, and 2) the nodule originates from the middle of the occlusal surface and commonly obliterates the central sulcus.

Composed of normal enamel and dentin, a talon cusp may or may not contain pulp tissue (3,4). Shay (7) reported that pulp tissue can extend to the center of the tubercle and, once fractured, the pulp is exposed. Güngör et al. (15), in a histologic evaluation, reported the existence of pulp tissue in the bilateral talon cusps of primary maxillary central incisors.

According to Al-Omari et al. (2), a talon cusp is not an innocuous defect, because of substantial diag-
nastic, treatment planning and procedural difficulties. Early diagnosis and management are important to avoid complications.

The objective of this article is to report a case of dens evaginatus (talon cusp) in a permanent maxillary central incisor that required endodontic treatment.

CASE REPORT

A 13 year old, Caucasian, female patient was referred to the clinic with pain in element number 11. The patient was undergoing orthodontic treatment at this time. On clinical examination, dens evaginatus was detected in element number 11, with the presence of wearing of the cusp (Figures 1 and 2). The orthodontist reported an occlusal adjustment by grinding the palatal projection, with subsequent application of fluoride. After the adjustment the patient complained of moderate pain, which was monitored with vitality tests for 7 months, not responding after this period.

X-rays showed the presence of enamel, dentin and pulp horn in the palatal cusp of the dens evaginatus (talon cusp) (Figure 3). The diagnosis was pulp necrosis. Disinfection with 1% sodium hypochlorite was performed at the first session, and a calcium hydroxide dressing was placed in the root canal. After 10 days, the root canal was sealed using a hybrid thermomechanical technique (Figure 4), and the patient was able to continue with orthodontic therapy.

DISCUSSION

Dens evaginatus is an anomaly of great clinical significance, sometimes causing occlusal interference. The cleaning of the area between the nodule and the tooth is difficult, and caries are often found.

According to Pécora et al. (16) and Shay (7), when the evagination is worn or fractured, pulp exposure can occur, leading to pulp necrosis. In the present case, there was a wearing of the enamel surface of the

Figure 1. The wearing made of the dens evaginatus in order to eliminate the occlusal interference.

Figure 2. Occlusal view of the wearing done in the palatal cusp of the element 11.

Figure 3. Diagnostic x-ray showing the presence of enamel, dentin and pulp horn in the palatal cusp of the dens evaginatus.

Figure 4. X-ray after nodule removal and endodontic treatment.
nodule, probably causing exposure of the dentin-pulp complex and, consequently, pulp necrosis.

The incidence of dens evaginatus is predominant in Asians, but this condition can also be found in Caucasians, as observed in this case. Today, with greater migratory movements, communities are mixing, thus the professional must be aware of this clinical condition in order to provide information to the patient regarding correct hygiene, the need for occlusal adjustment or even removal and the necessity of endodontic treatment.

McCulloch et al. (17,18) report that the orthodontist must carefully evaluate patients with dens evaginatus, because movement can change the patient’s bite, making an occlusal adjustment necessary that can lead to dentin-pulp complex exposure.

In the present case there was occlusal wearing that led to pulp necrosis. Pulp capping or partial pulpotomy has been postulated to be one of the most reliable forms of vital tooth treatment when pulp exposure is encountered following the sterile removal of the tubercle. When pulp exposure is not encountered, preventive resin composite sealing of the dentin or class I amalgam cavity preparation would be the treatment of choice.

It is important that the dentist be well prepared to carefully plan treatment of dens evaginatus, to avoid future problems.

REFERENCES


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RESUMO


Dens evaginatus é uma anomalia de desenvolvimento caracterizada pela ocorrência de uma cúspide extra, como uma projeção de um tubérculo nas superfícies palatina e vestibular. Na dentição anterior, o dens evaginatus é mais comumente encontrado na maxila e na superfície palatina do dente. Os autores apresentam um relato de um caso de tratamento endodôntico de um dens evaginatus em um incisivo central superior. Depois de um correto diagnóstico e planejamento, a evaginação foi removida e o tratamento endodôntico de rotina foi realizado.