A central tubercle on the lingual surface of the upper lateral incisor: Report of a case

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Abstract: A case of a central tubercle on the lingual surface of the upper lateral incisor in a 61-year-old Japanese male is reported. The morphologic form of the central tubercle was similar to that of dens evaginatus frequently found in premolars. It was completely distinguishable from a talon cusp, which is a protrusion of the lingual cingulum. Radiographically, the present case was also complicated by dens invaginatus. We also review the Japanese literature on central tubercles of the incisal region.

Key words: central tubercle; upper lateral incisor; dens evaginatus; dens invaginatus.

Introduction

The central tubercle is a cone-shaped protrusion of the central portion of the occlusal surface, being frequently found in premolars. Previously, central tubercle has been given various names such as abnormal cusp, supernumerary cusp, and odontoma of the axial core type¹⁵, but recently has generally been called dens evaginatus. A similar tubercle is occasionally found in the central portion of the lingual surface of the lower anterior teeth⁴⁵ and of the occlusal surface of the molars³⁴. A review of the Japanese literature revealed only 11 cases of tubercles on the lingual surface, similar to dens evaginatus of the premolar region in the upper lateral incisor⁶⁹. Herein, we report a case of a tubercle on the lingual surface of the upper lateral incisor.

Case Report

The patient, a 61-year-old Japanese man, was referred to the Dental Hospital of Iwate Medical University because of a wedge-shaped cervical defect of several of his upper teeth.

Intraoral examination revealed, in addition to the wedge-shaped cervical defect, a tall cone-shaped tubercle on the central portion of the lingual surface of the upper right lateral incisor. The central tubercle was slightly abrasive upon mastication (Fig. 1 a, b). The crown width of the right upper lateral incisor was 1.55 mm wider than that on the left. Slight enlargement of the cingulum was also found in the bilateral maxillary incisors and canines. The central tubercle was well circumscribed by a slightly protruding lingual cingulum and well developed marginal ridges (Fig. 1 a, b).

Radiographic examination suggested that the pulp horn had elongated into the tip of the tubercle, and the hard tissue around the base of the tubercle had folded into the pulp chamber as dens invaginatus (Fig. 2). The shape and length of the root in the right lateral incisor were normal. There were no marked changes macroscopically and radiographically in the teeth except for the upper anterior region.
Discussion

A central tubercle on the lingual surface of the anterior region is a rare tooth form. It is completely distinguishable from a talon cusp, because the tubercle exists in the central portion on the lingual surface and is not a protrusion of the lingual cingulum. Previously, tubercles on the lingual surface of the canines and lower incisors were reported to be odontomes of the axial core type, which were recognized to be the same phenomenon as dens evaginatus of the premolar region. Dens evaginatus is particularly prevalent in the lower premolar region, and is occasionally multiple. Ishikawa stated that many authors had reported that the prevalence of dens evaginatus in the premolar region of Japanese was less than 2%, but the presence of dens evaginatus in other kinds of teeth was obscure.

In the Japanese literature, 14 cases of central tubercle of the incisal region have been reported: 11 in the upper lateral incisor, one in the upper central incisor, one in the lower central incisor, and one in the lower lateral incisor. Of these, one case involved a central tubercle of the bilateral upper lateral incisors.

Talon cusp is occasionally combined with other systemic and dental anomalies. In cases of dens evaginatus, the teeth tend to have a larger crown, but associated general and dental anomalies have not been reported. Neither general nor dental anomalies were found in the present case. Clinically, dens evaginatus or central tubercle causes infection due to fracture or attrition of the tubercle. In the present case, slight attrition of the tubercle was seen, but no marked changes were noted in the pulp or periapical tissue on radiographs.

The radiographic findings in the present case indicated that the pulp horn had extended into the tubercle, and the hard tissue surrounding the base of the tubercle had folded into the pulp chamber, a similar to dens evaginatus. Ogiwara suggested that central tubercle of the incisor region is related to dens evaginatus, based on its radiographic appearance. Schulze classified coronal invagination into two types: superficial and deep.

The present case is similar to superficial-type invagination. The upper lateral incisor is the most frequent location of dens evaginatus (dens in dent). The present case was complicated by dens evaginatus and dens invaginatus. Lau noted that in cut sections, lacunae and folds are very often found at the base of the tubercle. The cause of talon cusp and dens evaginatus is suggested to be outfolding of the enamel organ during tooth development. On the other hand, the cause of dens invaginatus is suggested to be infolding of the enamel organ.

We suspected that the central tubercle in the present case was due to both infolding and outfolding on the central lingual lobe during development of the tooth germ. Furthermore, the right upper lateral incisor in the present case had a slightly developed cingulum and marginal ridge, and larger crown. These findings suggest that the present right upper lateral incisor had formed by partial hyperplasia of the tooth germ.

References


