

Coexistence of Talon Cusp and Dens Invaginatus in A Single Tooth: A Rare Case Report

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ABSTRACT

Background: Talon cusp (TC) and Dens invaginatus (DI) are relatively rare developmental anomalies which affect the shape of teeth. TC is an additional cusp that projects predominantly from the lingual surface of anterior teeth. DI is a deep surface invagination of the crown or root which is commonly detected on routine radiographic examination. Both of these anomalies are observed more frequently in permanent maxillary lateral incisor. Isolated cases of single TC and DI are not extensively reported in dental literature. We hereby report the case of coexistence of TC and DI in a single tooth of an 11 year old male patient.

Keywords: Talon cusp, dens invaginatus, maxillary central incisor, periapical lesion.

INTRODUCTION

Talon Cusp (TC) is a rare developmental anomaly of teeth which was first recognized in 1892 by Mitchell. Later on, Mellor and Ripa in 1979 gave the name talon because its shape appeared similar to that of an eagle's talon [1]. It is an additional cusp that projects predominately from the lingual or occasionally from the labial surface of anterior teeth. Maxillary teeth (94%) are the most commonly involved, among them maxillary lateral incisors (55%) followed by maxillary central incisor (33%). Predominantly 65% of the talon cusps occurs in males [2]. Prevalence of talon cusp varies considerably among ethnic groups ranging from 0.06% to 7.7% [3]. DI is another rare developmental anomaly of teeth which was first described by a dentist named 'Socrates' in 1856. Salter later described it as "Tooth within Tooth" [4]. It is a deep surface invagination of the crown or root which is lined by enamel. The reported prevalence varies from 0.04% to 10% of the population [5]. It is seen predominantly in the maxilla and the most

commonly affected tooth is the permanent maxillary lateral incisor, followed by the central incisor, premolar, canine and molar [6]. DI is commonly detected on routine radiographic examination as an infolding of enamel and dentine extending into the pulp cavity or the root or sometimes even reaching the root apex.

Isolated cases of single TC and DI have been rarely reported in the dental literature. This article features a report of talons cusp co-existing with dens invaginatus. The diagnosis of such a co-existence is crucial as it affects the treatment plan and the prognosis.

CASE REPORT

Eleven year old male patient visited the Department of Pedodontics with a chief complaint of pain in upper front region of mouth. On clinical examination the upper right permanent central incisor was positive for tender on percussion. Further we noticed a morphological alteration

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Fig 1: Intra-oral photograph showing Talon cusp with respect to tooth 11.



Fig 2: Radiograph showing Dens Invaginatus having radiolucent lesion with an irregular border in the periapical region of tooth 11.



Fig 3: Maxillary cast showing Talon cusp in relation to tooth 11.

appearing as enamel covered tubercle, present on the palatal aspect of crown, but was not interfering with the occlusion (Fig 1). The external appearance of the crown indicated a possible Talon cusp. His medical and family history was noncontributory and general physical examination revealed no other abnormalities.

Hence periapical radiograph was advised along with Radiovisiography (RVG) in different angulations to get the detailed view of the affected tooth. Radiograph revealed radiopaque structure within the crown of right maxillary central incisor, crossing the cement-enamel junction and extending up to the apical third of the root. The difference in radio densities of the structure suggested an enamel lined cavity extending upto the apex without any communication to the pulp. A typical presentation of “tooth within a tooth” confirmed the diagnosis of Dens invaginatus (Type III) (Fig 2). There was a well-defined radiolucent lesion of size 6x6 mm with an irregular border in the periapical region of right maxillary central incisor suggesting a periapical granuloma.

Further alginate impression was taken and a cast model was prepared to explain possible treatment options to the patient (Figure 3). Further the patient was scheduled for root canal treatment and enucleation of cystic lesion. But the patient didn't turn up for the treatment.

DISCUSSION

Simultaneous occurrence of multiple dental abnormalities is relatively common. The exact etiology of TC and DI is still not well understood. Simultaneous occurrence of these two anomalies in a single tooth suggests common etiological factor. TC originates during the morpho-differentiation stage of tooth development and may occur as a result of abnormal proliferation of inner enamel epithelial cells and transient focal hyperplasia of the peripheral cells of mesenchymal dental papilla [5].

Dens Invaginatus (DI) as a dental anomaly shows a broad spectrum of morphologic variations and predisposes the tooth to dental caries and in more severe invaginations to pulpitis and apical periodontitis [7,8]. DI may occur due to various factors like rapid proliferation of a part of the internal enamel epithelium, focal failure of growth of the internal enamel epithelium, deep folding of the foramen coecum during tooth development, genetic factors, infection, trauma etc [6].

In the reviewed cases, combination of TC and DI was observed most frequently in the maxillary lateral incisor followed by the maxillary central incisor and the mandibular central incisor

with equal predilection for both sides [9]. In the present case, TC and DI were present in the maxillary right central incisor of a 11 year old male patient.

Most of the teeth in the literature showed type 1 TC and majority showed Type II DI. Similarly in our case, type 1 TC and Type II DI was present. Hattab et al. classified talon cusps into 3 types: Type 1 (true talon) - is a morphologically well-delineated additional cusp that prominently projects from the palatal surface of a primary or permanent anterior tooth and extends at least half the distance from the CEJ to the incisal edge. Type 2 (semi talon) - is an additional cusp of 1 mm or more that extends less than half the distance from the CEJ to the incisal edge and blends with the palatal surface or stands away from the crown. Type 3 (trace talon) -is an enlarged or prominent cingulum with variations such as conical, bifid, or tubercle-like [10].

The most commonly used classification of DI was proposed by Oehlers in 1957. He classified DI based on the x-ray appearance into 3 types: Type I- a minor form arising within the confines of the crown and does not extend beyond the cemento-enamel junction. Type II- it invades the root but remains confined as a blind sac. It may or may not communicate with the dental pulp. Type III-which penetrates through the root perforating at the apical area showing a 'second foramen' in the apical or in the periodontal area.

There is no immediate communication with the pulp. The invagination may be completely lined by enamel, but frequently cementum will be found lining the invagination [9,11].

Most of the cases reported in literature were asymptomatic while in two cases it caused irritation to the tongue, fistula, and periapical pathology [5]. Clinical management of TC and DI varies from case to case depending on the symptoms and associated clinical problems. Periodic gradual grinding of TC followed by topical fluoride application can be done, if it interferes with occlusion or irritates tongue and no signs of pathosis persists. When pulpal or periapical pathology is present, root canal therapy is required. When pulp necrosis occurs before root-end closure, apexification procedures with calcium hydroxide or mineral trioxide aggregate (MTA) may be necessary. In the present case, as there was

periapical infection, patient was advised for Cone Beam Computed Tomography (CBCT) and further planned for nonsurgical endodontic therapy with orthograde thermoplastic gutta percha obturation along with enucleation of cystic lesion followed by crown for facial esthetics.

CONCLUSION

It is necessary for the clinician to carryout complete clinical & radiological evaluation to diagnose the developmental anomalies. Such a combination increases the risk of periapical infection in associated tooth. Presence & severity of the infection plays a major role in its treatment plan. Preservation of what is normal is one of main goal of any treatment. Multidisciplinary approach can lead to success in these cases.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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