Case Report

Facial Talon's Cusp: A Reverse Claw and Rare Dental Anomaly

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ABSTRACT

Facial talon cusp (Dens evaginatus) is a very rare developmental anomaly of unclear etiology and significance can also be seen associated with some syndromes. Here the present report describes a 10-year-old female with facial talon cusp on mandibular permanent right central incisors. This rare anomaly requires careful dental and physical examination of the affected patient since its finding can be of clinical and genetic significance.

Key words: Dens evaginatus, Facial Talons Cusp, Developmental Anomaly

INTRODUCTION

Talon's cusp was first described by Mitchell in 1892. It was there after named as Talon cusp by Mellor and Ripa in 1970 due to its resemblance to an eagle's talon.[1,2] It reflects the resemblance of the most-extreme cases to an eagle's talon when viewed from the occlusal edge. Hence, it is also called as eagles talons. Other synonyms are dens evaginatus, supernumerary cusp, horn, hyperplastic cingulum, evaginated odontome, cusped cingulum, accessory cusp and a supernumerary lingual tubercle.[3]

Gorlin and Goodman in 1970 defined talon cusp as a high accessory cusp reaching the incisal edge to produce a T-form or a Y-shaped tooth crown. The conventional definition of talon cusp was considered only an accessory cusp projecting incisally from the cingulum area of an incisor. The current definition of talon cusp includes accessory cusp on the lingual or labial aspect of incisors or canines.[4,5]

Prevalence of talons cusp according to some literature review, it has also been found to be relatively common in the Chinese and Arab population.[6] More commonly seen in the permanent dentition (75%) than in the primary dentition, while maxillary teeth are affected 92% then mandibular teeth. The maxillary lateral incisor is the most frequently affected in the permanent dentition while the maxillary central incisor is the most affected in the primary dentition.[7] Prevalence of talon cusp ranges from less than 1% to 8% of the Indian population.[8] About 7.7% Northern Indian population shows talons cusp and 19.35% in South Indian population.[6] Talons cusp shows a higher frequency in males than females according to Davis and Brook.[2] The talon cusp was more prevalent in males (67.3%) than females (32.7%). The ratio of male to female was 2:1 similar with the results as in the literature.[9,10]

This was a report of an unusual case of talon cusp that was presented on the facial aspect of the mandibular central incisor.

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CASE REPORT

This was a case report of 10-year-old female patient presented at the dental out-patient clinic for the purpose of a dental check-up. This was her first visit to the dentist. She did not present any significant medical history. Oral examination showed a fair oral hygiene, decayed lower right and left first molars, erupting lower bilateral premolars. The mandibular right central incisor was displaced facially with an accessory cusp on the facial aspect. The cusp projected from the cemento enamel junction and curved toward the incisal edge of the incisor [Figures 1 and 2]. Vitality test shows a positive response.

A periapical radiograph revealed an inverted V-shaped radio-opaque structure on the mandibular right central incisor [Figure 3]. The extent of pulp tissue into the cusp could not be determined on the radiograph. Patient was referred for oral prophylaxis and orthodontic treatment. A diagnosis of Stage II talon cusp according to Mayes was made.

Figure 1: Conical talon cusp on facial surface of mandibular central incisor

Figure 2: Occlusal view of talon cusp on facial surface of mandibular central incisor

DISCUSSION

Talon cusp is very different since this anomaly varies widely in shape, size, structure, location, and site of origin. The tip of the cusp may stand away from the crown or may be in close approximation to the lingual surface. Some cusps are quite sharp and spiked, whereas others are test like and have rounded and smooth tips. Some are conical or pyramidal. Talon cusp is usually associated with other dental variations: Bifid cingula, dens invaginatus, exaggerated cusps of Carabelli, and particularly with shovel-shaped maxillary incisors.[11]

The morphological characteristics of talon cusps were classified by Hattab *et al.* 1996 into three types on the basis of the degree of cusp formation and extension.[1]

- Type 1 - Talon: 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 cemento enamel junction to the incisal edge
- Type 2 - Semi talon: An additional cusp of 1 mm or more, but extending less than half the distance from the cemento enamel junction to the incisal edge. It may blend with the palatal surface or project away from the rest of the crown
- Type 3 - Trace talon: An enlarged or prominent cingulum in any of its variant forms (i.e., conical, bifid, or tubercle-like) originating from the cervical third of the root.[12]

Mayes in 2007 categorized facial talon cusps into three stages, starting from the slightest to most-extreme forms as follows:[13]

Stage 1: The slightest form, consisting of slightly raised triangle on the labial surface of an

Figure 3: Radio-opaque V-shaped talon cusp superimposed on the normal crown of mandibular central incisor

incisor extending the length of the crown, but not reaching the cemento enamel junction or the incisal edge

Stage 2: The moderate form, consisting of a raised triangle on the labial surface of an incisor that extends the length of the crown, does not reach the cement enamel junction, but does reach the incisal edge, and can be observed clearly and palpated easily at this stage

Stage 3: The most extreme form, consisting of a free form cusp extending from the cemento enamel junction to the incisal edge on the labial surface of an incisor.[13]

Chin Ying in 2001 classified talons cusp as:

1. Major talons: Well-delineated cusps that project from an anterior tooth's facial or palatal/lingual surface and extends at least half the distance from the cemento enamel junction to the incisal edge;
2. Minor talons: Which occur on the same surfaces, but extend more than one fourth and less than half the distance from the cement enamel junction to the incisal edge;
3. Trace talons: Enlarged prominent cingula and their variations, which occupy less than one-fourth the distance from the cement enamel junction to the incisal edge.[14]

Talon cusp originates during the morphodifferentiation stage of tooth development, may occur as a result of outward folding of inner enamel epithelial cells (precursors of ameloblast) and transient focal hyperplasia of the peripheral cells of mesenchymal dental papilla (precursors of odontoblast). Intrauterine environmental, nutritional, systemic conditions, trauma and other factors, especially in prenatal period clearly influence tooth environmental conditions that are associated with anomalies of teeth.[1]

Lee *et al.* asserted that the hyperactivity of the primordial cells is genetically determined and that if the hyperactivity is limited, or only a small proportion of the cells is affected, a talon cusp may result.[15]

Several articles are reported with talon cusp associated with systemic disorders. The anomaly also appears to be more prevalent in patients with Rubinstein–Tyabi syndrome, Mohr syndrome (oral facial - Digital II syndrome), Sturge–Weber syndrome (encephalotrigeminal angiomatosis), Allagille's syndrome, and Berardinelli–Seip syndrome.[1,12]

Tsutsumi and Oguchi in year 1991 reported a case of labial talon cusp in 6-year-old Japanese female with Incontinentia pigmenti achromians, a rare disease involving the skin, hair, eyes, central nervous system and musculoskeletal system.[16] Jowharji *et al.* in 1992 reported a facial talon cusp in an 8-year-old female not associated with any other condition.[17] The present report presents a facial talon cusp not associated with any medical condition or other dental anomaly.

Complications associated with Talons cusp such as compromised aesthetics, occlusal interference, tooth displacement, caries, periodontal problems or irritation of the soft tissues during speech or mastication.[18] Talon cusp has clinical significance due to its tendency for caries and occlusal interference. Chinni *et al.* in year 2012 reported about the unusual appearance of talon cusp on the facial surface of the maxillary left permanent central incisor and a mild talon cusp on the facial surface of the maxillary right permanent central incisor.[19] A pulpal necrosis might result if early diagnosis is not done and management is neglected or inappropriate to the case.[19]

Management of talons cusp varies from simple preventive measures to an extensive protocol depending on many situations such as: Size of the cusp, presence or absence of pulp horn, the degree of occlusal interferences and the extents of the aesthetic problem if present. Some authors recommended gradual grinding of talon cusps over many weeks to allow deposition of reparative dentin for pulpal protection, and then the application of a desensitizing agent to avoid possible dentinal sensitivity and pulpal exposure.[20] Our patient was treated with the application of pit and fissure sealant.

The etiology of fusion is still unknown. Environmental factors such as hypervitaminosis A, thalidomide embryopathy, and viral infection during pregnancy have been postulated but not proved.[21] The other factors that have been hypothesized are physical forces between the teeth producing necrosis of the epithelial tissue between the two teeth and genetic predisposition. Fusion has also been documented to be associated with Ellis van-Creveld syndrome, achondroplasia, and osteopetrosis.[22]

CONCLUSION

Mandibular facial talons cusp is rare, early identification and management and treatment outcome of talon cusp

depends on the size, presenting complications and patient cooperation.

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