Mandibular talon cusp: A rare presentation with the literature review

Abstract

A talon cusp is a supernumerary structure projecting from the dento-enamel junction to a variable distance towards the incisal edge of an anterior tooth. It consists of enamel, dentine and a variable amount of pulp tissue. Hyperactivity of the enamel organ during morpho-differentiation has been attributed to its formation. It has esthetic and functional concerns. Reports of a mandibular talon cusp are rare in the literature. To the best of our knowledge, only 14 cases have been reported, of which only 2 cases in mandibular left central incisors. We report the second instance of a talon cusp in the lingual aspect of the mandibular left central incisor and the first such report in a patient of Libyan origin. A talon cusp is an odontogenic anomaly, which can cause occlusal interferences, displacement of the affected tooth and speech difficulties. Early diagnosis of a talon cusp helps in selecting the appropriate treatment procedure and to avoid future complications.

Key words: Libyan origin, mandibular left central incisor, talon cusp

INTRODUCTION

This unusual dental anomaly showing an accessory cusp like structure projecting from the cingulum to the cutting edge was first described by Mitchell in 1892. It was thereafter named a talon cusp by Mellor and Ripa[1] due to its resemblance to an eagle’s talon. The exact etiology is not known, but it is suggested to be a combination of genetic and environmental factors. It is thought to arise during the morpho-differentiation stage of tooth development, as a result of outfolder of the enamel organ or hyper-productivity of the dental lamina.[2,3] It is composed of enamel, dentine, and a varying amount of pulp tissue.[4]

Reports of a mandibular talon cusp are rare in the literature. To the best of our knowledge, only 14 cases have been reported [Table 1], of which only 2 cases are in mandibular left central incisors. We report the second instance of a talon cusp in the lingual aspect of the mandibular left central incisor and the first such report in a patient of Libyan origin.

CASE REPORT

An apparently healthy 11-year-old boy reported to the outpatient department in the faculty of Dentistry, Aljabal-Algharbi-Zawia University, Zawia city, Libya, for a routine dental checkup. His medical, surgical, and personal history was non-contributory. Clinical examination revealed an accessory cusp on the lingual aspect of the mandibular left central incisor [Figure 1]. It was projecting from the cemento-enamel junction and extended towards the incisal edge. There was evidence of attrition on the lingual aspect of the maxillary left central incisor. An intra-oral periapical radiograph revealed an inverted v shaped radiopaque structure on the mandibular left central incisor [Figure 2]. The extent of pulp tissue into the cusp could not be determined from the radiograph. A diagnosis of type I talon was made. Treatment planning included periodic and gradual reduction of the accessory cusp to relieve the occlusal interference followed by application of topical fluoride.
DISCUSSION

It has been defined as a supernumerary accessory talon-shaped cusp projecting from the lingual or facial surface of the crown of a tooth and extending for at least half the distance from the cemento-enamel junction to the incisal edge. There is a wide variation in the size and shape of this anomaly. Due to the variation, and in order to have diagnostic criteria, it has been classified into three types by Hattab et al.

Radiographically, it may appear typically as a V-shaped radiopaque structure, as in true talon or semi-talon, or be tubercle-like, as in trace talon, originating from the cervical third of the root. The radiopaque v-shaped structure is superimposed over the normal image of the crown of the tooth. The point of the “V” is inverted in mandibular cases. This appearance varies with the shape and size of the cusp, and the angle at which the radiograph is taken. It is composed of enamel, dentine, and a varying amount of pulp tissue. The extent of pulp extension into the cusp is however difficult to determine because of its superimposition over the main pulp chamber. The presence of pulp tissue within the accessory cusp has been controversial with contrasting reports of the presence and no evidence of pulp extension into the cusp. Our case presentation is a type 1 talon. Cases with large cusps presenting away from the tooth had been shown to contain an extension of the pulp, superimposition of the image of the cusp over the main tooth made it difficult to determine the extent of pulp tissue in the anomalous cusp.

The exact etiology is not known, but it is suggested to be a combination of genetic and environmental factors. There was no associated systemic or local condition in this patient as is the case in most previous reports. Mays reported a statistically significant bias in favor of males and our patient is an 11-year-old boy which is concurrent with the literature.

It is more common in the permanent dentition (75%) than in the primary dentition, while 92% affect the maxillary 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. Reports of the mandibular talon cusps are rare in the literature. To the best of our knowledge, only 14 cases have been reported of which only 2 cases are of mandibular left central incisors. We report the second instance of the talon cusp in the lingual aspect of the mandibular left central incisor and the first such report in a patient of Libyan origin.

There are several reports in the literature that suggest the hereditary character of a talon cusp. Family history was non-contributory in our patient.

The presence of a talon cusp is not always an indication for dental treatment unless it is associated with clinical problems. The complications of the talon cusp are diagnostic, functional, aesthetic, and pathological. It includes compromised aesthetics, periodontal problems, or irritation of the soft tissues during speech or mastication. Functional complications include occlusal interference, trauma to the lip and tongue, speech problems, and displacement of teeth. The deep grooves which join the cusp to the tooth may also act as stagnation areas for plaque and debris, become carious, and cause subsequent periapical pathology. Occlusal interference can damage the periodontium, cause infra-occlusion of the opposing tooth and also temporo-mandibular joint pain. Severe attrition or fracture of the enamel surface can cause exposure of the dentine-pulp complex and consequently, pulp necrosis. In our patient, the prominent lingual accessory cusp had occlusal interference with attrition facet on the opposing maxillary central incisor. The patient was however less concerned due to the painless presentation.
Management will depend on individual presentation and complications. Small talon cusps are asymptomatic and need no treatment. Where there are deep developmental grooves, simple prophylactic measures such as fissure sealing and composite resin restoration can be carried out. An essential step, especially in the case of occlusal interference, is to reduce the bulk of the cusp gradually and periodically and application of topical fluoride such as Duraphat® or acidulated phosphate fluoride (APF) gel to reduce sensitivity and stimulate reparative dentine formation for pulp protection or outright total reduction of the cusp and calcium hydroxide pulpotomy. It may also become necessary sometimes, to fully reduce the cusp, extirpate the pulp, and carry out root canal therapy. Orthodontic correction may become necessary when there is tooth displacement or malalignment of affected or opposing teeth. Our patient was treated with periodic and gradual reduction of the accessory cusp to relieve the occlusal interference followed by application of topical fluoride.

**SUMMARY**

We report the second instance of the talon cusp in the lingual aspect of the mandibular left central incisor and the first such report in a patient of Libyan origin. Although such instances are rare, early identification and prompt treatment of accessory cusps can prevent the complications of occlusal interference and malocclusion.

**ACKNOWLEDGEMENTS**

We would like to thank Dr. Mohammed Hwas, Dean, Faculty of Dentistry, Aljabal-Algharby-Zawia University, Zawia, Libya for permitting us to publish this rare case.

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**Table 1: Reported cases of mandibular talon’s cusp**

| Author | Tooth | Surface |
|--------|-------|---------|
| Goel et al. | Mandibular right central incisor | Lingual |
| Mader | Mandibular right central incisor | Lingual |
| Falomo | Mandibular right lateral incisor | Lingual |
| McNamara et al. | Mandibular right central incisor | Facial |
| Hegde and Kumar | Mandibular left central incisor | Lingual |
| Nadkarni et al. | Mandibular right central incisor | Lingual |
| Dash et al. | Mandibular right central incisor | Lingual |
| Llena-Puy, Navarro | Mandibular left lateral incisor | Facial |
| Oredugba | Mandibular left central incisor | Facial |
| Karjodkar, Gupta | Mandibular central incisor | - |
| Siraci E, Gungor HC, Cehreli ZC | Mandibular central incisor along with dens invaginatus | - |
| Ekambaram, Yiu, King | Fused mandibular incisors with a talon cusp | Facial and lingual |
| Prabhakar, Kaur, Nadig | Fused mandibular incisors with talons cusp | - |
| Karthikeyan, Prathima, 2011 (Current case) | Mandibular left central incisor | Lingual |
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How to cite this article: Ramalingam K, Gajula P. Mandibular talon cusp: A rare presentation with the literature review. J Nat Sc Biol Med 2011;2:225-8.

Source of Support: Nil. Conflict of Interest: None declared.