e - ISSN - 2349 - 8005

INTERNATIONAL JOURNAL OF ADVANCES IN CASE REPORTS

Journal homepage: www.mcmed.us/journal/ijacr

BILATERAL TALON CUSP: AN UNUSUAL PAEDIATRIC ANOMALY

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Article Info

Received 15/10/2015
Revised 27/10/2015
Accepted 02/11/2015

Key words: Talon cusp, dental anomaly, anterior teeth, bilateral.

ABSTRACT

Talon cusp is a morphological developmental dental anomaly. It presented with a well delineated additional cups present on the cingulum of the maxillary as well as mandibular anterior teeth. It is seen both in primary and permanaent dentition. The talon cusp consists of normal enamel, dentin and pulpal tissue and has been classified into different type based upon the extension and shape of the cusp. The condition is usually asymptomatic but sometimes has functional, esthetic and clinical problems. The management can be conservative or radical. This article presents a case management of bilateral occurrence of talon cusp in maxillary anterior teeth.

INTRODUCTION

The odontogenesis is a complex process and defined as the process of development and formation of the tooth and its supporting structures. It consists of a pathway that involves the molecular signaling. Aberrations during the different stages of odontogenesis can result in various types of developmental anomaly. Talon cusp is one of such developmental dental anomaly [1]. Mitchell in 1892 was the first who gave description of this anomaly due to its resemblance to an eagle's talon. Later, Mellor and Ripa termed this anomaly as talon cusp. It is most commonly found in the permanent dentition with prevalence of 0.06-7.7%. Maxillary teeth (94%) are the mostly affected and among them maxillary lateral incisors (55%) are commonly involved [2].

The exact etiology of this anomaly is not known. The most accepted hypothesis is due to the abnormal activity of the dental lamina. The genetic and environmental influences are still unclear. It may occur as a part of or in association with any syndrome, anomalies or disorder or as an isolated finding [3].

Talon cusp is a relatively rare dental developmental anomaly characterized by the presence of an accessory cusp like structure projecting from the cingulum area or cementoenamel junction. It originates during the morphodifferentiation stage of tooth development. It occurs in either maxillary or mandibular anterior teeth in both the primary and permanent dentition. Talon cusp consists of normal tooth structure such as enamel, dentin and extensions of pulp. The various terminologies used are dens evginatus, interstitial cusp, and tuberculated premolar, odontoma of axial core type, evaginated odontoma, occlusal anomalous tubercle, and supernumerary cusp [4].

The treatment of talon cusp may be conservative or radical, depending on the accessory cusp like shape, location, size and tooth affected. Periodic and gradual reduction of the cusp with application of a desensitizing agent, sealant application on the grooves and esthetic restorations are options of treatment. The present article reports a case of bilateral occurrence of talon's cusp in permanent maxillary lateral incisors and has been conservatively managed [5].

CASE REPORT

A 12 year old boy reported to the Department of Pedodontics and Preventive Dentistry, Rohtak with the chief complaint of misaligned teeth in upper and lower dental arches. Medical and family histories were taken and found to be uneventful. A thorough general examination was carried out and no other anomalies were noticed.

Extraoral findings were non-significant. Intraoral examination revealed child in a mixed dentition and fairly maintained oral health. The permanent maxillary right and left lateral incisors were rotated mesio-buccally with the presence of talon cusps on the palatal side bilaterally. Both the Talon cusps were conical to pyramidal in shape (Figures 1a and 1b). The developmental grooves were also present at the junction of talons cusp and palatal surfaces of the teeth, both mesially and distally. These developmental grooves were not carious, however generalized staining of the palatal surfaces were seen. These measured around 3 mm in width (mesio-distally), 3.6 mm in Length (inciso-cervically) and 2.5 mm in thickness. The teeth were asymptomatic and showed normal response to electric and thermal pulp tests. Radiographic examination consisted of intraoral periapical radiography with different angulations that revealed an inverted V-shaped radiopaque structure consisting of enamel, dentin and extension of pulp to the middle of the cusp in both the teeth (Figures 2a and 2b).

The treatment planning includes the corrective orthodontic treatment with coronoplasty of teeth with talon cusps. As the patient was in mixed dentition without any active complaint, the orthodontic treatment was deferred till eruption of all the permanent teeth. The coronoplasty of both the crown were being performed to maintain occlusal and esthetic harmony along with use of desensitizing tooth paste at monthly interval (Figures 3a and 3b). Furthermore, the patient was motivated to maintain a good oral hygiene. The patient is now under regular review and the majority of treatment objectives relating to talons cups have been achieved after 7 months of follow ups (Figures 4a and 4b).

Figure 1a & 1b. Pre-Operative View showing Talon's cusp i.r.t 12 and 22.


Figure 2a & 2b. Pre-Operative View showing radiographic imaging of Talon's cusp.

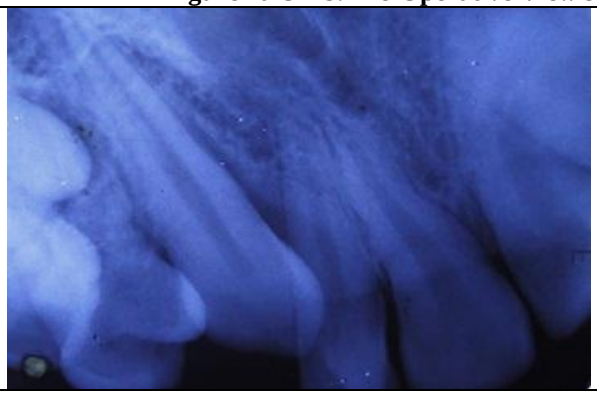
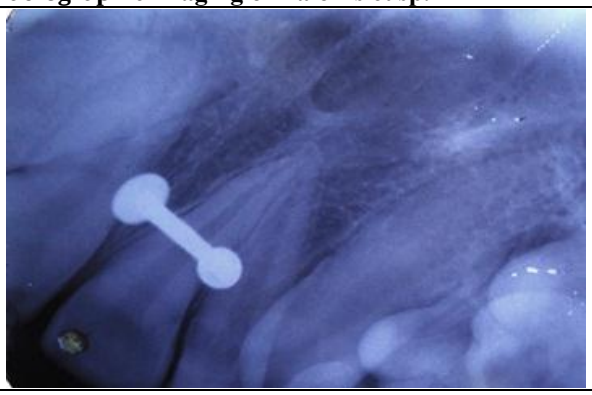

Figure 3a & 3b. Intra-Operative View showing coronoplasty i.r.t 12 & 22.


Figure 4a & 4b. Post-Operative View.

DISCUSSION

The talon cusp is defined as the hyperplasia of the cingulum of maxillary or mandibular permanaent incisors resulting in the formation of a supernumerary cusp. It is an uncommon dental anomaly manifesting as an accessory cusp like structure projecting from the lingual or facial structures of anterior teeth of either dentition. Authors have reported the talon's cusp as an integral part of any specific disease or syndrome. It appears to be more prevalent in patients with Sturge-Weber syndrome, Oro-facial-digital syndrome Type II, Rubinstein-Taybi syndrome. The patient in the present case was evaluated thoroughly and was found to be non-syndromic [6,7].

The etiology of the anomaly has been the reason of discussion by authors. It has been thought to be polygenetic with environmental influences. The diagnostic criteria for talon cusp are non-specific owing to wide range of variation in shape and size of this anomaly complicating the condition. The most accepted classification of Talon's cups was given by Hattab et al. Type 1 (Talon): An additional cusp that prominently projects from the palatal (or facial) surface of the anterior tooth and extend at least half the distance from the CEJ to the incisal edge. Type 2 (Semi talon): An additional cusp of a 1 mm or more in length extending less than half the distance from the CEJ to the incisal edge. It may blend with the palatal surface or stand away from the crown. Type 3 (Trace talon): An enlarged or prominent cingula and their variations, i.e., bifid, conical or tubercle-like. The talon cusps described in the current case report was found to be as Type 1 (talon) [8]. There is a difference in clinical presentation of talon cusp in anterior and posterior teeth. The anterior teeth undergo shearing forces resulting in displacement of the occluding teeth and significantly less fracture. Lin et al reported pulp exposure and pulp necrosis in 14.1% to 40.2% of examined cases due to attrition or trauma. The developmental grooves and fissures at the tooth surfaces are more susceptible to caries, depending on the shape, size and location of these structural defects [9]. Gungor et al histologically detected presence of pulp horn in accessory cusp which increases the chances of pulpal insult and death. Teeth with talon cusp may undergo pulpal necrosis if early diagnosis is not done and management is neglected or inappropriate to the case [10]. Ferraz et al advocated that occlusal interferences of talons cusp can be adjusted by grinding palatal projections [11] as done in the present case. A good quality radiograph consisting of intraoral periapical view (IOPA) is necessary. On IOPA findings, the talon cusp is seen as radiopaque structure with the enamel, dentin and sometimes the pulpal space. In general, it represents a V-shaped structure superimposed over the normal image of the crown. The present case revealed an inverted V-shaped radiopaque structure with the extension of pulp up to the junction of middle and incisal third of the crown. The clinical manifestation of talon cups is varied including occlusal interference, irritation of tongue and neighboring dental tissues, pulpal necrosis, caries, dental attrition, periodontal problems, displacement of the involved tooth, breastfeeding difficulties, aesthetic problems, accidental cusp fracture, radio-diagnostic issues and even temporomandibular disorders [5,12]. The dental management of talon cusp in pediatric patients may differ depending on clinical presentation, patient preferences and compliances. Treatment procedure may include fissure sealants, sequential grinding, restorative treatment, full crown coverage, pulp therapy and extraction of the affected tooth. Therefore, the early diagnosis followed by a definite treatment is most crucial to prevent the complications. The patient here reported had been early diagnosed with talon cups and had undergone corrective coronoplasty of talon cusp to maintain good occlusal and aesthetic harmony along with tooth brushing with a desensitizing paste [13]. Furthermore, the patient was advised for regular follow up.

CONCLUSION

Talon cusp is a dental anomaly that may provide a substantial challenge during diagnosis and treatment planning to clinician. Early diagnosis and prompt treatment may prevent the complications associated such as caries, periodontal disease and malocclusion. Identifying a talon cusp.

ACKNOWLEDGEMENT: None

CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

STATEMENT OF HUMAN AND ANIMAL RIGHTS:

All procedures performed in human participants were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. This article does not contain any studies with animals performed by any of the authors.

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