CASE REPORT

RJME
Romanian Journal of Morphology & Embryology
http://www.rjme.ro/

Talon cusp affecting primary dentition in two siblings: a case report

S. K. MALLINENI[1)], N. M. MANAN[2)], C. K. LEE[1)], N. M. KING[3)]

[1)]*Pediatric Dentistry and Orthodontics, Faculty of Dentistry, University of Hong Kong, Hong Kong SAR, China*

[2)]*Pediatric Dentistry and Orthodontics, Faculty of Dentistry, University of Malaya, Kuala Lumpur, Malaysia*

[3)]*Winthrop Professor of Dentistry, School of Dentistry, University of Western Australia, Perth, Australia*

Abstract

The term talon cusp refers to a rare developmental dental anomaly characterized by a cusp-like structure projecting from the cingulum area or cement–enamel junction. This condition can occur in the maxillary and mandibular arches of the primary and permanent dentitions. The purpose of this paper is to report on the presence of talon cusps in the primary dentition of two southern Chinese siblings. The 4 years and 2 months old girl had a talon cusp on her maxillary right primary central incisor, while her 2 years and 9 months old brother had bilateral talon cusps on the maxillary primary central incisors. The presence of this rare dental anomaly in two siblings has scarcely been reported in the literature and this may provide further evidence of a hereditary etiology.

***Keywords*:** talon cusp, primary dentition, siblings, dental anomaly, southern Chinese.

Introduction

More than 120 years ago, a curved horn-like process [1] and supernumerary cusps [2] on the palatal surfaces of permanent maxillary central incisors were first reported in the literature. Subsequently, various names have been given by different authors for the same phenomenon; accessory cusp, cusped cingulum, dens evaginatus, evaginated odontome, hyperplastic cingulum and supernumerary lingual tubercle [3]. Mellor JK and Ripa LW [4] named this rare dental anomaly a talon cusp because of its resemblance to the shape of an eagle's talon.

There are a number of classifications to define a talon cusp. However, Hattab FN *et al.* [5] classified the talon cusp into three types based on the degree of cusp formation and extension. Type 1 talon cusp (talon) is an additional cusp which projects from the palatal surface of an anterior tooth and extends at least one half of the distance from the cemento–enamel junction to the incisal edge; type 2 talon cusp (semi-talon) is an additional cusp one millimeter or more in length that extends less than one half the distance from the cemento–enamel junction to the incisal edge, while type 3 talon cusp (trace talon) presents as an enlarged and prominent cingulum and its variations.

While talon cusp may affect both the primary and permanent dentitions it has been reported to be three times more common in the permanent than the primary dentition [6]. Therefore, it is not surprising that there have been very few reports mentioning the prevalence of a talon cusp in the primary dentition. The prevalence of a talon cusp in the primary dentition of southern Chinese was reportedly 0.4% [7], while it was 0.6% in Japanese [8] and 2.1 % in Saudi Arabian subjects [9]. After the first report of a talon cusp on a primary incisor of a 4-year-old Filipino girl 35 years ago [10], the majority of cases reported thereafter were in Asian children [3].

In the permanent dentition, the maxillary lateral incisor is the tooth most commonly affected by a talon cusp [5]; however, it is the maxillary central incisor in the primary dentition this is more commonly affected [3]. From the literature, talon cusp was found to be more frequent in boys than girls with a ratio of 2:1 [11]. Moreover, unilateral occurrence of a talon cusp is more common while bilateral occurrence is rarer in the primary dentition. The purpose of this article was to report the occurrence of talon cusps in two southern Chinese siblings; the girl had a talon cusp on a maxillary central incisor while her younger brother had bilateral talon cusps on his maxillary central incisors.

Patients, Methods and Results

Case No. 1

A 4 years and 2 months old Chinese girl attended for a routine dental check-up. Her medical and dental histories were unremarkable and she was the first child of a healthy Chinese couple. The intraoral examination revealed that she was in the primary dentition with adequate oral hygiene. There was evident of a talon cusp on the mesio-palatal surface of the primary

maxillary right central incisor, extending from the cemento–enamel junction up to one third of the crown height (Figure 1). A small bridge of enamel connected this semi-talon to the palatal surface of the tooth. The cusp neither interfered the occlusion (Figure 2), nor irritated the tongue during speech and mastication. Fissure sealant was placed on the palatal surface of the tooth and the child has been kept under regular review.

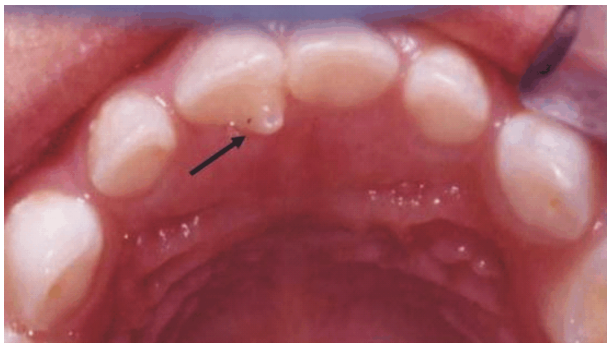

Figure 1 – ***Palatal surface of the maxillary arch showing talon cusp (arrow) on tooth 51 of the 4 years and 2 months old girl.***

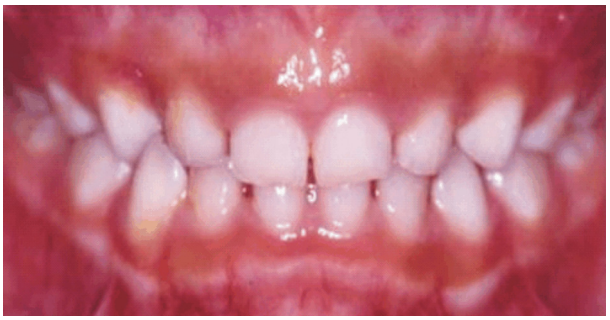

Figure 2 – ***Frontal views showing that the talon cusp does not interfere with the occlusion.***

Case No. 2

A 2 years and 9 months old boy, who was the younger brother of the girl, was found to exhibit bilateral talon cusps on the palatal surfaces of both primary maxillary central incisors (Figure 3). The talon cusp on the right central incisor was attrited due to occlusal interference of the talon cusp (Figure 4). The talon cusp on the left central incisor was "Y"-shaped and extended from the cemento–enamel junction to a height of one third of the palatal surface of the crown. There were no signs and symptoms so no treatment was delivered and the child was kept under regular review.

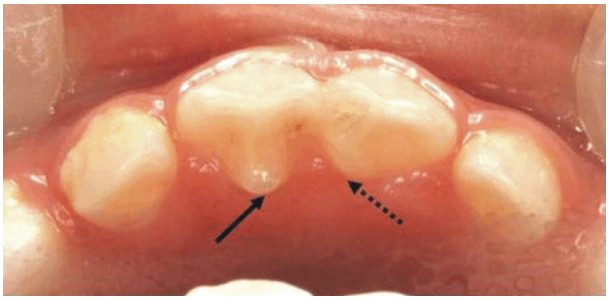

Figure 3 – ***Palatal surface of the maxillary arch showing bilateral talon cusps on teeth 51 (arrow) and 61 (dashed arrow) of the 2 years and 9 months old boy.***

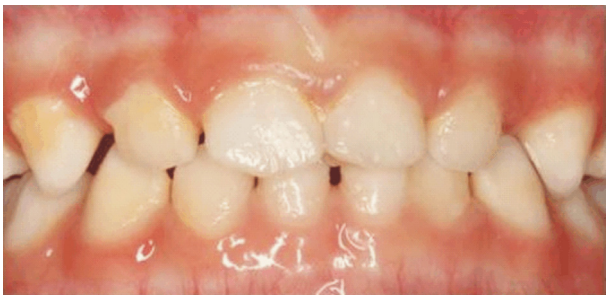

Figure 4 – ***Frontal views of the occlusion with an open-bite on the right side due to occlusal interference of the talon cusp.***

Discussion

Talon cusp is a rare dental anomaly, which originates during the morphodifferentiation stage of tooth development. Although several hypotheses have been proposed, the etiology of this condition remains unclear. It has been speculated that talon cusp may occur because of an outward folding of the inner enamel epithelial cells and a transient focal hyperplasia of the mesenchymal dental papilla [5]. Talon cusp has also been regarded as one end of a range of hyperactivities of the dental lamina while a supernumerary tooth is at the other end [12]. Some authors even suggested that a talon cusp was due to the fusion of a normal and a supernumerary tooth [13].

In the literature, most cases of a talon cusp in the primary dentition have been in Asians and boys were affected twice as often as girls were. In the present report, talon cusp affected the unilateral maxillary central incisor of the elder sister in a non-consanguineous family and the bilateral central incisors of the younger brother. Similar cases have not been reported previously except that of a talon cusp in two pairs of female twins [14].

Talon cusp is more common in the permanent dentition and it is therefore not surprising that such an anomaly has been reported in two siblings [15–19], three siblings [20], and two siblings and their mother [21]. Moreover, talon cusp was reported in a patient who had consanguineous parents [5]. The ethnic and gender predilection, together with family involvement and bilateral occurrences, suggests that genetics is a major causative factor of talon cusp.

The crown morphology can be affected by trauma or other localized forces on the tooth germ and several authors have proposed that talon cusp is determined by a multifactorial etiology involving both genetic and environmental factors [6, 15]. Moreover, it has been postulated by Lee CK *et al.* [3] that the hyperactivity of the cells of a tooth germ, which may develop into a talon cusp, is genetically determined but that the degree is influenced by environment factors.

The morphology of talon cusps can be very different. Some cusps are sharp and spiked, whereas others are teat-like and have rounded and smooth tips [17]. Talon cusps may also be distinctly enlarged or be an embellished cingula on the maxillary incisors [6, 22]. It has also been stated that talon cusp may represent the extreme of a continuous variation, progressing from

a normal cingulum to an enlarged cingulum, then to a small accessory cusp, and then to a cusp with a talon shape [15]. Early diagnosis and management of talon cusp is important in order to prevent occlusal interference, caries of the developmental grooves, compromised aesthetics, periodontal problems due to excessive occlusal forces, and irritation of the tongue during speech and mastication. Moreover, it has been reported that a talon cusp on a primary incisor may be associated with a higher chance of a dental anomaly affecting the permanent successor; therefore, the presence of such an anomaly on a primary incisor warrants early screening [11]. In the present report, the talon cusp affected two members of the same family; therefore, it may be beneficial to have an early oral examination of the younger family members, to facilitate early diagnosis and the prevention of potential carious and occlusal problems.

Conclusions

Talon cusp on the permanent incisors of siblings had been reported not infrequently in the literature. Possibly due to its rarity, talon cusp on the primary incisors has only been reported in twins. The present article reported a talon cusp on the primary maxillary central incisors of two siblings. This may provide further evidence that the genetic inheritance may be a causative factor for this developmental anomaly.

References

[1] Mitchell WH, *Letter to the editor*, Dent Cosmos, 1892, 34:1036.

[2] Windle BCA, Humphreys J, *Extra cusps on the human teeth*, Anatomischer Anzeiger, 1887, 2:13–16.

[3] Lee CK, King NM, Lo EC, Cho SY, *Talon cusp in the primary dentition: literature review and report of three rare cases*, J Clin Pediatr Dent, 2006, 30(4):299–305.

[4] Mellor JK, Ripa LW, *Talon cusp: a clinically significant anomaly*, Oral Surg Oral Med Oral Pathol, 1970, 29(2):225–228.

[5] Hattab FN, Yassin OM, al-Nimri KS, *Talon cusp in permanent dentition associated with other dental anomalies: review of literature and reports of seven cases*, ASDC J Dent Child, 1996, 63(5):368–376.

[6] al-Omari MA, Hattab FN, Darwazeh AM, Dummer PM, *Clinical problems associated with unusual cases of talon cusp*, Int Endod J, 1999, 32(3):183–190.

[7] King NM, Tongkoom S, Itthagarun A, Wong HM, Lee CK, *A catalogue of anomalies and traits of the primary dentition of southern Chinese*, J Clin Pediatr Dent, 2008, 32(2):139–146.

[8] Ooshima T, Ishida R, Mishima K, Sobue S, *The prevalence of developmental anomalies of teeth and their association with tooth size in the primary and permanent dentitions of 1650 Japanese children*, Int J Paediatr Dent, 1996, 6(2):87–94.

[9] Osuji OO, Hardie J, *Dental anomalies in a population of Saudi Arabian children in Tabuk*, Saudi Dent J, 2002, 14(1):11–14.

[10] Henderson HZ, *Talon cusp: a primary or a permanent incisor anomaly*, J Indiana Dent Assoc, 1977, 56(6):45–46.

[11] Lee CK, King NM, Lo EC, Cho SY, *The relationship between a primary maxillary incisor with a talon cusp and the permanent successor: a study of 57 cases*, Int J Paediatr Dent, 2007, 17(3):178–185.

[12] Rantanen AV, *Talon cusp*, Oral Surg Oral Med Oral Pathol, 1971, 32(3):398–400.

[13] Hennekam RC, Van Doorne JM, *Oral aspects of Rubinstein–Taybi syndrome*, Am J Med Genet Suppl, 1990, 6:42–47.

[14] Liu JF, Chen LR, *Talon cusp affecting the primary maxillary central incisors in two sets of female twins: report of two cases*, Pediatr Dent, 1995, 17(5):362–364.

[15] Davis PJ, Brook AH, *The presentation of talon cusp: diagnosis, clinical features, associations and possible aetiology*, Br Dent J, 1986, 160(3):84–88.

[16] Hattab FN, Yassin OM, Sasa IS, *Oral manifestations of Ellis-van Creveld syndrome: report of two siblings with unusual dental anomalies*, J Clin Pediatr Dent, 1998, 22(2):159–165.

[17] Meon R, *Talon cusp in primary dentition – case report*, Singapore Dent J, 1990, 15(1):32–34.

[18] Sarkar S, Misra J, Das G, *"Talon cusp-heredity origin" – a case report*, J Indian Soc Pedod Prev Dent, 1999, 17(4): 126–128.

[19] Segura JJ, Jiménez-Rubio A, *Talon cusp affecting permanent maxillary lateral incisors in 2 family members*, Oral Surg Oral Med Oral Pathol Oral Radiol Endod, 1999, 88(1):90–92.

[20] Sarraf-Shirazi A, Rezaiefar M, Forghani M, *A rare case of multiple talon cusps in three siblings*, Braz Dent J, 2010, 21(5):463–466.

[21] Balcioğlu HA, Keklikoğlu N, Kökten G, *Talon cusp: a morphological dental anomaly*, Rom J Morphol Embryol, 2011, 52(1):179–181.

[22] Chen RJ, Chen HS, *Talon cusp in primary dentition*, Oral Surg Oral Med Oral Pathol, 1986, 62(1):67–72.

Corresponding author

Nigel M. King, Winthrop Professor, Pediatric Dentistry, School of Dentistry, Oral Health Centre of Western Australia, University of Western Australia, 17 Monash Avenue, Nedlands, Perth, Western Australia, WA6009, Australia; Phone +61893467649, e-mail: profnigelking@mac.com

Received: September 12th, 2012

Accepted: January 10th, 2013