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True talon cusp in primary maxillary lateral incisor associated with cleft lip and palate: A case report

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Abstract
Background: Talon cusp is an evolving anomaly comprising a projected cusp or a vertical ridge present either labially or palatally from an anterior tooth. It is more frequently seen in permanent dentition than in primary teeth. Reported prevalence in the literature ranges from 0.06% to 40.8%.
Methods: An 11-year-old boy visited the department due to irregular tooth placement. He was born with a unilateral cleft lip and palate and had undergone cleft lip repair surgery at a young age. Pretreatment evaluation revealed a talon cusp on tooth #62 and a mesially rotated #11, which contributed to malocclusion and potential functional issues such as occlusal interference and difficulty in maintaining oral hygiene. Extraction was performed for the talon cusp and was planned to keep the patient under observation until all the permanent teeth erupted into the oral cavity. The extent of orthodontic treatment required would be decided.
Results: After 1 week, the patient was recalled and an uneventful healing was present without any complications. He was referred to Department of Orthodontics to address the malocclusion.
Conclusion: Talon cusp in primary dentition is rare and may be associated with cleft lip and palate. Early diagnosis and timely management can help prevent future complications.

Keywords: Talon cusp, primary teeth, cleft lip and palate, dental anomaly

Introduction

The term "talon cusp" was coined by Mellor and Ripa in 1970. It is defined as an extra, accessory cusp shaped like a talon that protrudes from the lingual or facial surface of a tooth's crown, ranging at least halfway from the cementoenamel junction to the incisal edge [1]. In 1892, Mitchell was the first person to record a talon cusp and defined this additional cusp on the lingual surface of a maxillary central incisor as "a process of a horn-like shape curving from the base downward to the cutting edge." Different authors have used various terms to describe the identical phenomenon, including accessory cusp, cusped cingulum, dens evaginatus, evaginated odontome, hyperplastic cingulum, and supernumerary lingual tubercle [2].

Talon cusp is a rare dental condition that can arise in both primary and permanent teeth. Talon cusp is more frequently observed in the maxillary arch than in the mandibular arch. It is most commonly found on the palatal surfaces of permanent maxillary lateral incisors, as opposed to the central incisors, and is rarely seen on primary maxillary lateral incisors compared to the central incisors. Genetic and environmental factors may equally contribute to the development of talon cusp. The precise cause is unclear. A small talon cusp is usually asymptomatic, but a large one can irritate the tongue. The incidence of talon cusp in permanent teeth is 7%, while it is 0.04% in primary teeth [2, 3].

The presence of a talon cusp on the palatal surface of the primary maxillary lateral incisor may indicate a potential dental anomaly in its permanent successor [3]. Talon cusp can be linked to cleft lip and palate. In India, clefts of the lip and palate occur in approximately 1 in 600 live births, with 80% being unilateral clefts [4]. These clefts are initiated by the failure of fusion between the medial nasal process and the maxillary process or between the palatal processes. The development of clefts is influenced by genetic, environmental factors, or a combination of both [5]. Common dental issues linked with clefts include anterior and posterior crossbites, hypodontia, malformations, and irregular eruption patterns [6]. In patients with clefts, congenitally absent maxillary incisors are common. This may be caused by insufficient blood supply near the cleft, either present at birth or resulting from surgery, or by a lack of mesenchymal support for the maxillary incisors near the cleft [7]. The timing and order of orthodontic treatment for cleft patients can be categorized into distinct dental developmental stages, each with specific goals that should be achieved during those particular time frames [8]. This article describes a unique case of a lingual talon cusp on the primary lateral incisor of a patient with a repaired cleft lip and palate.

Case report

An eleven-year-old male patient who visited the Department of Pediatric and Preventive Dentistry with the chief complaint of irregular placement of the front tooth region. He was born with a unilateral cleft lip and palate and underwent cleft lip repair surgery at six months of age. Extraoral examination revealed a symmetrical, straight

facial profile with a scar on the right upper lip. Nose and upper lip were deviated toward the right side, and the lips were incompetent. Intraoral examination revealed a mixed dentition, fair oral hygiene, and the presence of dental caries in 51, 52, 55, 16, 65, 75, 84, 85, and 46.

In the upper arch, 11 and 21 were placed slightly forward with mesially rotated 11. 22 was erupting palatally behind 21. A tooth with pyramidal-shaped cusp-like projections on the palatal surface of 62 was observed, suggesting the presence of a talon cusp (Fig.1). The tooth exhibited slight mobility. The cusp was fused to the tooth surface, creating a T-shaped crown outline. No other family members were reported to exhibit the same trait. In the mandibular arch, anterior crowding was present with over-retained 72, which was mobile (Fig. 2). Pretreatment intraoral radiographs, OPG, and CBCT were taken. The radiographs revealed a talon cusp appearing as a V-shaped structure, along with a palatally erupting 22. (Fig. 3).

Fig 1

Fig 2

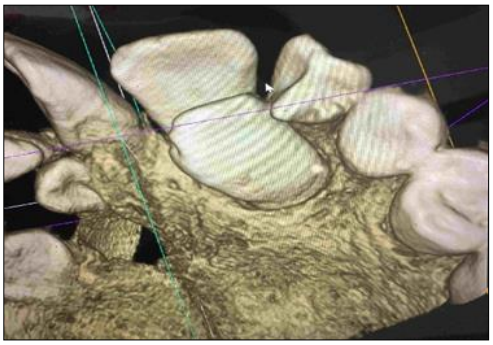

Fig 3

Fig 4

The treatment plan included oral prophylaxis, extraction of teeth 62 and 72, restoration of multiple teeth (51, 52, 16, 65, 75, 84, 85, and 46), and finally, fixed orthodontic treatment. Oral hygiene prophylaxis was performed to improve the patient's oral cleanliness. With parental consent, restorations were performed on teeth that were needed, and the extraction of 62 (Fig. 4) and 72 was done using local anesthesia (2% lignocaine with 1:200,000 adrenaline) without any complications. It was planned to keep the patient under observation until all the permanent teeth erupted into the oral cavity. The extent of orthodontic treatment required would be decided.

The patient was recalled after 1 week, and uneventful healing was present (Fig. 5A, B). The patient was referred to undergo orthodontic treatment to address the malocclusion. Furthermore, the patient was planned for regular dental check-ups.

Fig 5A

Fig5B

Discussion

Talon cusp is a rare dental malformation distinguished by a cusp-like projection, which can develop in both primary and permanent dentitions [9]. It was documented in the literature nearly 120 years ago. It impacts the anterior teeth in both deciduous and permanent dentitions, though it is less

frequent in primary dentition compared to permanent dentition. The precise cause of the talon cusp is still unclear. Several theories have been suggested to explain its etiology [10]. According to Hattab *et al*., [11] the development of a talon cusp is thought to occur during the morphodifferentiation stage of tooth formation, potentially resulting from the enamel organ's outfolding or heightened activity of the dental lamina. It may form through the outfolding of inner enamel epithelial cells (which become ameloblasts) and temporary localized hyperplasia of the mesenchymal dental papilla (which gives rise to odontoblasts). He categorized talon cusp into three categories based on the extent of formation and projection:

- **Type 1 (True talon):** A distinct extra cusp that primarily extends from the palatal or lingual surface of an anterior tooth, reaching about halfway between the cementoenamel junction and the incisal edge.

- **Type 2 (Semi talon):** A supplementary cusp measuring at least a millimeter in size but extending less than halfway from the cementoenamel junction to the incisal edge. It may merge with the palatal surface or project outward from the crown.

- **Type 3 (Trace talon):** An enlarged cingulum may appear in a conical, bifid, or tubercle form.

Chin-Ying [12] outlined the different variations of talon cusps as follows:

- **Major talons:** Clearly defined cusps that extend from the facial or palatal/lingual surface of an anterior tooth, reaching at least halfway between the cementoenamel junction and the incisal edge.

- **Minor talons:** These appear on the same surfaces but extend beyond one-fourth and less than half the distance from the cementoenamel junction to the incisal edge.

- **Trace talons:** Pronounced enlarged cingula and their variations, extending less than one-fourth of the distance from the cementoenamel junction to the incisal edge.

Talon cusp has also been considered as one extreme of a spectrum of dental lamina hyperactivity, with a supernumerary tooth being at the opposite extreme [13]. Some authors have even proposed that a talon cusp results from the fusion of a normal tooth and a supernumerary tooth [14]. The talon cusp can occur independently or alongside other dental anomalies, such as mesiodens and odontoma. It has also been linked to certain systemic conditions, including Mohr syndrome and Sturge-Weber syndrome [15]. Crown morphology may be affected by trauma or localized forces on the tooth germ, and various researchers have proposed that the formation of a talon cusp results from a multifactorial etiology involving both genetic and environmental influences [16, 17]. Additionally, Lee *et al*. [2] proposed that the excessive activity of cells within a tooth germ, which may contribute to the formation of a talon cusp, is genetically determined, though its intensity is influenced by environmental factors. Radiographically, it resembles a normal tooth, showing radio-opaque enamel and dentin, with or without extension of pulpal tissue [18].

The morphology of a talon cusp can vary significantly. Some may have sharp, pointed tips, while others are more rounded and smoother, resembling a teat [19]. Talon cusps can also appear as significantly enlarged structures or as an enhanced cingulum on the maxillary incisors [20]. Some researchers propose that the talon cusp represents the most pronounced form of a continuous variation in tooth morphology, beginning with a normal cingulum, developing into an enlarged cingulum, then a minor accessory cusp, and finally evolving into a distinct talon-shaped cusp [21]. Generally, when primary central incisors exhibit a talon cusp, the permanent successors are typically unaffected. However, when a talon cusp appears on primary maxillary lateral incisors, there is a significant chance (78%) that the corresponding permanent teeth will develop a dental anomaly [22]. Talon cusps can lead to various clinical complications, including aesthetic concerns, accelerated tooth wear, temporomandibular joint discomfort, tongue and lip injuries during speech and eating, tooth displacement, challenges with breastfeeding, accidental cusp fractures, and occlusal disturbances, often requiring intervention [23]. Managing a talon cusp necessitates careful clinical assessment, with treatment tailored to its size and form. Possible approaches include gradual, phased reduction of the cusp, use of fluoride or desensitizing agents, restoration of the tooth's natural contour, or complete extraction if required [24]. In our case, the patient experienced no discomfort or complications; however, due to the erupting permanent canine and the potential for malocclusion, extraction was necessary.

The severity of dental anomalies appears to be closely linked to the extent of the cleft, implying that the genetic factors controlling the development of the lip, palate, and teeth may be shared. However, there remains a lack of understanding regarding why the type of cleft correlates with the severity of dental abnormalities. Many studies categorize the phenotype of oral clefts as either "affected" or "unaffected," but growing evidence suggests that other clinical indicators, such as dental anomalies, should be considered to define broader phenotypes that could help reveal the genetic underpinnings of the condition [25].

Conclusion

Talon cusps are more commonly seen in permanent dentition and are rare in primary teeth. Early identification of talon cusps in primary teeth is essential to avoid complications in permanent teeth, enable timely intervention, and reduce the need for extensive orthodontic treatments. Prompt intervention can prevent future issues, minimizing the necessity for complex treatments. There are few documented cases in the literature of talon cusps occurring in primary teeth of individuals with cleft lip and palate. This article presents a case of a talon cusp on the primary maxillary lateral incisor of a patient with cleft lip and palate, potentially providing additional evidence that any form of cleft may contribute to this developmental anomaly.

References

1. Thakur S, Gupta R, Thakur NS, Gupta M. Facial talon cusp on permanent maxillary canine: A rare dental anomaly. European Journal of General Dentistry,2013:2:324-7.

2. Lee CK, King NM, Lo EC, Cho SY. Talon cusp in the primary dentition: Literature review and report of three rare cases. Journal of Clinical Pediatric Dentistry,2006:30(4):299-305.
3. Mallineni SK, Panampally GK, Chen Y, Tian T. Mandibular talon cusps: A Systematic review and data analysis. Journal of Clinical and Experimental Dentistry,2014:6(4):e408–e413.
4. Vyas T, Gupta P, Kumar S, Gupta R, Gupta T, Singh HP. Cleft of lip and palate: A review. Journal of Family Medicine and Primary Care,2020:9(6):2621-2625.
5. Shilpa G, Gokhale N, Mallineni SK, Nuvvula S. Prevalence of dental anomalies in deciduous dentition and its association with succedaneous dentition: A cross-sectional study of 4180 South Indian children. Journal of Indian Society of Pedodontics and Preventive Dentistry,2017:35(1):56-62.
6. Haque S, Alam MK. Common dental anomalies in cleft lip and palate patients. Malaysian Journal of Medical Sciences,2015:22(2):55-60.
7. Vichi M, Franchi L. Abnormalities of the maxillary incisors in children with cleft lip and palate. ASDC Journal of Dentistry for Children,1995:62(6):412-417.
8. Adusumilli SP, Sudhakar P, Mummidi B, Reddy KVB, Rao CHH, Raju BHVRK. Interdisciplinary Treatment of an Adolescent with Unilateral Cleft Lip and Palate. Journal of Contemporary Dental Practice,2013:14(2):332-338.
9. Bahadure RN, Thosar N, Jain ES. Management of Talons Cusp associated with Primary Central Incisor: A Rare Case Report. International Journal of Clinical Pediatric Dentistry,2012:5(2):142-144.
10. Mohan RPS, Verma S, Singh U, Agarwal N, Ghanta S, Tyagi K. Talon cusp in primary dentition: A case report. International Journal of Case Reports and Images,2013:4(12):709-713.
11. 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 Journal of Dentistry for Children,1996:63(5):368-376.
12. Hsu Chin-Ying S, Girija V, Fei YJ. Bilateral talon cusps in primary teeth: clinical significance and treatment. ASDC Journal of Dentistry for Children,2001:68(4):239-228.
13. Rantanen AV. Talon cusp. Oral Surgery Oral Medicine Oral Pathology,1971:32(3):398–400.
14. Hennekam RC, Van Doorne JM. Oral aspects of Rubinstein–Taybi syndrome. American Journal of Medical Genetics Supplement,1990:6:42–47.
15. Maia RA, de Souza-Zaroni WC, Mei RS, Lamers F. Talon Cusp Type I: Restorative Management. Case Reports in Dentistry,2015:2015:425979.
16. al-Omari MA, Hattab FN, Darwazeh AM, Dummer PM. Clinical problems associated with unusual cases of talon cusp. International Endodontic Journal,1999:32(3):183–190.
17. Mukhopadhyay S, Mitra S. Anomalies in primary dentition: Their distribution and correlation with permanent dentition. Journal of Natural Science Biology and Medicine,2014:5(1):139-143.
18. Inderchand B, Dave B, Kariya P, Shah L. True talon cusp associated with cleft lip and palate: A rare case report. Archives of Medicine and Health Sciences,2022:10:95-8.
19. Meon R. Talon cusp in primary dentition – case report. Singapore Dental Journal,1990:15(1):32–34.
20. Chen RJ, Chen HS. Talon cusp in primary dentition. Oral Surgery Oral Medicine Oral Pathology,1986:62(1):67–72.
21. Davis PJ, Brook AH. The presentation of talon cusp: diagnosis, clinical features, associations and possible aetiology. British Dental Journal,1986:160(3):84–88.
22. 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. International Journal of Paediatric Dentistry,2007:17(3):178-185.
23. Jeevarathan J, Deepti A, Muthu MS, Sivakumar N, Soujanya K. Labial and lingual talon cusps of a primary lateral incisor: a case report. Pediatric Dentistry,2005:27(4):303-306.
24. Sharma G, Mutneja AR, Nagpal A, Mutneja P. Non-syndromic multiple talon cusps in siblings. Indian Journal of Dental Research,2014:25(2):272-274.