Management of a Case with Bilateral Talon Cusp in Primary Dentition

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ABSTRACT

The 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. The alteration can cause clinical problems such as caries or occlusal interference. Management of the talon cusp varies according to the circumstances of the individual case and should be as conservative as possible. The purpose of this report was to present the case of bilateral talon cusp in primary maxillary central incisors that was successfully managed with conservative therapy. (J Dent Child 2006;73:183-185)

KEYWORDS: TALON CUSP, PRIMARY DENTITION, MANAGEMENT

Talon cusp has been described as an additional cusp, projecting from the palatal surface of the primary or permanent anterior teeth, which is morphologically well delineated and extends at least half the distance from the cementoenamel junction to the tooth's incisal edge.[1] It is composed of enamel and dentin, with varying extensions of pulp tissue.[2] It occurs more frequently in the permanent than in the primary dentition and shows a predilection for the maxilla over the mandible.[3] The shape, size, structure, location, and site of origin of the talon cusp varies widely. The anomaly is commonly unilateral, but one fifth of the cases are bilateral in occurrence.[4,5] The prevalence of talon cusp is low, with estimates ranging from less than 1% to approximately 8% of the population.[6]

It is suggested that this condition has a multifactorial etiology combining both genetic and environmental factors.[5,7] Family histories of the cases reported previously revealed that talon cusp sometimes affects patients who had consanguineous parents.[3,5] As with other dental abnormalities, talon cusp occurs during the morphodifferentiation stage of odontogenesis.[8] The aberrant hyperactivity of the dental lamina may also be responsible for its occurrence.[9] It may occur as a result of an outward folding of the inner enamel epithelial cells and a transient focal hyperplasia of the mesenchymal dental papilla.[10,11]

The dental literature has reported the association of talon cusp with other odontogenic anomalies, syndromes, and clinical problems such as:

1. supernumerary teeth;
2. congenitally missing teeth;
3. dens invaginatus;
4. complex odontoma;
5. impaction;
6. Mohr's syndrome;
7. Sturge-Weber syndrome;
8. Rubinstein-Taybi syndrome;
9. attrition;
10. breast-feeding problems;
11. compromised esthetics;
12. occlusal interference;
13. accidental cusp fracture;
14. interference with tongue space;
15. temporomandibular joint pain;
16. displacement of the affected tooth;
17. irritation of tongue during speech and mastication;
18. periodontal problems because of excessive occlusal force;
19. misinterpretation of radiographs of taloned teeth before eruption; and
20. caries susceptibility because of developmental grooves on the talon.[12,13]

When talon cusp interferes with the normal occlusion, the premature contact caused by the anomalous cusp can generate occlusal trauma and reversible acute apical periodontitis of the opposing tooth.[14]

Clinical management of talon cusp may be either conservative or radical, depending on the size and shape of the affected tooth. It may also include gradual periodic reduction of the cusp with a desensitizing agent application.[14]

The purpose of this report was to present the case of a bilateral talon cusp affecting the maxillary primary central incisors that caused occlusal trauma of the opposing teeth.

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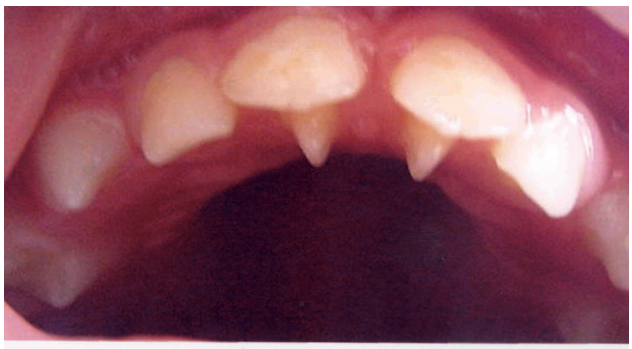


Figure 1a. Intraoral view of maxillary bilateral talon cusp.

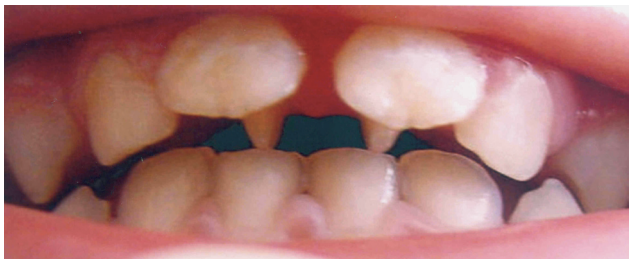


Figure 1b. Premature contact of maxillary bilateral talon cusp.

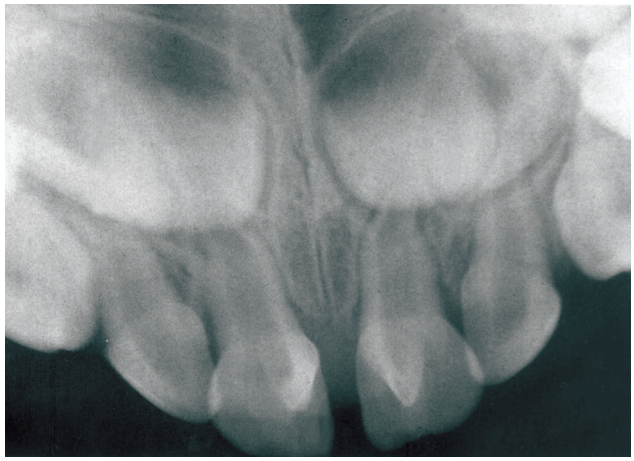


Figure 2. Periapical radiograph of maxillary bilateral talon cusp.

CASE REPORT

A 17-month-old boy was referred to the Pediatric Dentistry clinic of Ege University, Izmir, Turkey, because his mother had noticed the strange shape of his maxillary primary central incisors. Intraoral examination revealed a normally developing primary dentition. Anomalous cusp-like structures were detected on the palatal surfaces of the maxillary primary central incisors (Figures1a and 1b). These structures were: (1) sharp; (2) prominent; (3) separated; and (4) standing away from the affected teeth's palatal surfaces. Noncarious developmental grooves were present at the junction of the talon cusp and the tooth's palatal surface. A periapical radiograph of this area showed a cusplike structure on each central incisors. Pulp extension could be traced radiographically in both talon cusp (Figure 2). A diagnosis of bilateral talon cusp of the primary maxillary central incisors was made.

The patient was the first child of the parents with no consanguinity. The mother had a normal period of gestation. The parents did not report a similar anomaly in dentitions of their family members.

The treatment plan called for:

1. gradual reduction of the talon cusps on a 2-month recall schedule; and
2. application of fluoride at each visit.

To avoid the pulp exposures and allow the formation of reparative dentin, the accessory cusp was ground off gradually. At each visit:

1. A small amount of hard dental tissue was removed.
2. The ground surface was treated with fluoride gel (NaF, Sultan Dental Products, Englewood, NJ) as a desensitizing agent.

The talon cusp was reduced totally at the eighth appointment without exposing the pulp or compromising the vitality of the teeth, and the occlusal interference disappeared. After the final appointment, the ground surface was covered with a layer of flowable composite resin (3M ESPE Filtek Flow, St Paul, Minn; Figures 3a and 3b). Any periapical pathology was not detected radiographically 6 months after the final appointment (Figure 4).

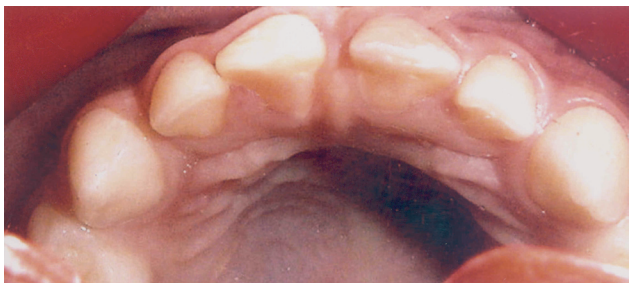
DISCUSSION

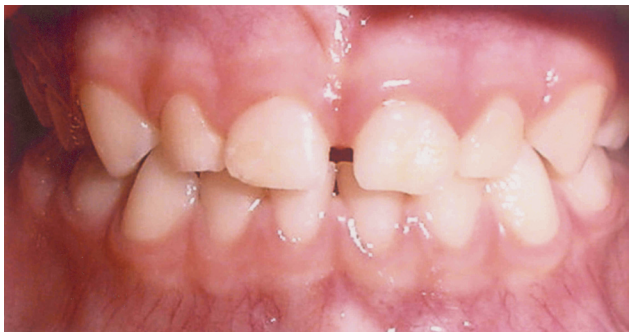
Talon cusp has been reported as a rare and uncommon condition. The name refers to an accessory, cusp-like structure that varies considerably in size, ranging from an enlarged cingulum to a well-delineated anomalous cusp extending to at least half of the crown height. Talon cusp usually occurs on the palatal or lingual surfaces during the morphodifferentiation phase of tooth development.[4]

The exact etiology of the condition is still unresolved, but is believed to be a combination of genetic and environmental factors. The complex process of dental development appears to be multifactorial—primarily polygenetic—and to have some environmental influences.[15]

Early diagnosis and management of talon cusp is important to prevent occlusal interference, compromised esthetics, carious developmental grooves, periodontal problems due to excessive occlusal forces, or irritation of the tongue during speech and mastication. The aid of radiographs is essential to assess whether the accessory cusp contains or is devoid of a pulp horn.[5] A pulpal necrosis might result if early diagnosis is not done and management is neglected or inappropriate to the case. Depending on the shape, size, and location of these structural defects, periodontal involvement might occur. An additional problem is pulp horn presence, increasing the chance of pulpal insult and death. Occlusal forces can cause changes in the alveolar bone and periodontal connective tissue both in the presence and absence of periodontitis.[16]

When talon cusp interferes with a normal occlusion, an occlusal adjustment must be performed by grinding the palatal projection. This can results in exposure of the dentin-pulp com plex and, consequently, pulp necrosis.[4] Treatment options include periodic and gradual reduction of the cusp with or without end





Figures 3a and b. Final postoperative appearance of reduced maxillary bilateral cusp (covered with a layer of flowable composite).

odontic therapy with: (1) application of a desensitizing agent; (2) sealant application on the grooves; and (3) esthetic restoration.[13] In some small cases, however, it is not necessary to perform any treatment. The present case report demonstrates that talon cusp is an anomaly of great clinical significance. In most reported cases and in the present case, the talon cusps have contained a pulpal extension, which may cause problems in treatment.

In this case, the anomaly was treated by repeated grinding of the entire palatinal surface of the talon cusps on a 2-month recall schedule to produce a much larger surface area of stimulated odontoblasts for adequate deposition of reparative dentin. The cusp was completely removed in 8 visits. The exposed dentin was protected with a layer of flowable composite resin at the 16-month recall visit.

CONCLUSION

In conclusion, talon cusp may cause: (1) problems for the patient; and (2) treatment planning difficulties for the clinician. The aim of the early diagnosis is to minimize local problems, such as: (1) caries; (2) periodontal diseases; and (3) malocclusion. The treatment objectives for taloned teeth should include: (1) preserving pulpal vitality; (2) meeting esthetics and occlusal requirements; (3) establishing caries prevention or eradication in developmental grooves; and (4) eliminating tongue irritation.

REFERENCES

1. Davis PJ, Brook AH. The presentation of talon cusp: Diagnosis, clinical features, associations, and possible aetiology. Br Dent J 1986;160:84-88.
2. Dayal PK, Mani NJ, Verma PK. Talon cusp: A review and case report. J Dent 1980;8:85-87.

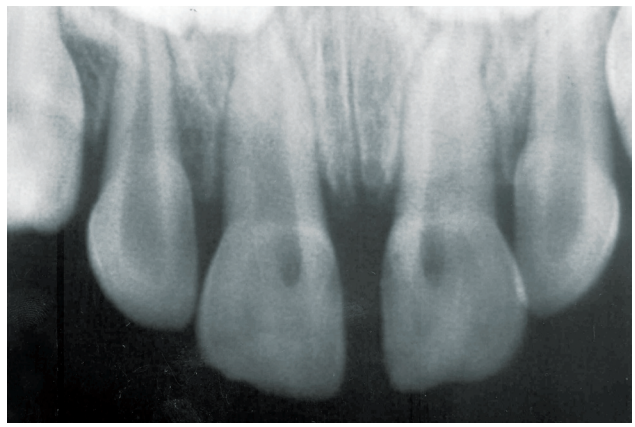


Figure 4. Periapical radiograph 6 months after the final appointment (control radiography).

3. 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. J Dent Child 1996;63:368-376.
4. Mader CL, Kellogg SL. Primary talon cusp. J Dent Child 1985;52:223-226.
5. Segura JJ, Jimenez-Rubio A. Talon cusp affecting permanent maxillary lateral incisors in 2 family members. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 1999;88:90-92.
6. Hedge S, Kumar BR. Mandibular talon cusp: report of two rare cases. Int J Paediatr Dent 1999;9:303-306.
7. Lomcali G, Hazar S, Altinbulak H. Talon cusp: Report of five cases. Quintessence Int 1994;25:431-433.
8. Gardner DC, Girgis SS. Talon cusp: A dental anomaly in Rubinstein-Taybi syndrome. Oral Surg Oral Med Oral Pathol 1979;47:519-521.
9. Rantanen AV. Talon cusp. Oral Surg Oral Med Oral Pathol 1971;32:398-400.
10. Hattab FN, Yassin OM, al-Nimri KS. Talon cusp-clinical significance and management: Case reports. Quintessence Int 1995;26:115-120.
11. Gungor HC, Altay N, Kaymaz FF. Pulpal tissue in bilateral talon cusps of primary central incisors: Report of a case. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2000;89:231-235.
12. Natkin E, Pitts DL, Worthington P. A case of talon cusp associated with other odontogenic abnormalities. J Endod 1983;9:491-495.
13. Al-Omari MA, Hattab FN, Darwazed AM, Dummer PM. Clinical problems associated with unusual cases of talon cusp. Int Endod J 1999;32:183-190.
14. Richardson DS, Knudson KG. Talon cusp: A preventive approach to treatment. J Am Dent Assoc 1985;110:60-62.
15. Dash JK, Sahoo PK, Das SN. Talon cusp associated with other dental anomalies: A case report. Int J Paediatr Dent 2004;14:295-300.
16. Segura-Egea JJ, Jimenez-Rubio A, Velasco-Ortega E, Rios-Santos JV. Talon cusp causing occlusal trauma and acute apical periodontitis: report of a case. Dent Traumatol 2003;19:55-59.