# Supernumerary Primary Tooth With Facial and Palatal Talon Cusps: A Case Report

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## ABSTRACT

Talon cusp is a tooth anomaly originating from the tooth's lingual surface in most cases. To date, very rare cases have been reported documenting talon cusps both on the facial and palatal surface of an affected tooth in the dental literature. The purpose of this case report was to describe the facial and palatal talon cusps on an ectopic supernumerary primary maxillary tooth. A micro-CT investigation indicated no pulpal extensions within facial and palatal talon cusps.

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Talon cusp is an uncommon developmental anomaly characterized by an accessory cusp-like structure projecting from the cingulum area or cementoenamel junction of the maxillary or mandibular anterior teeth.[1] This term is usually confined to anterior teeth, while the preferred term for posterior teeth with additional cusp-like projections is dens evaginatus.[2]

Talon cusp has a multifactorial etiology, including both genetic and environmental factors. Suggested factors include hyperactivity of the dental lamina early in odontogenesis, outward folding of the inner enamel epithelial cells, and transient focal hyperplasia of mesenchymal dental papilla or disturbance during the morphodifferentiation stage. The etiology, however, still remains inconclusive.[3-7]

The occurrence of talon cusps in permanent dentition is known to be 3 times higher than in the primary dentition.[8] It is observed more frequently among males than females, and it occurs either unilaterally or bilaterally.[9] There is inadequate data regarding the true prevalence of this dental anomaly, and the frequency may vary with race, age, and criteria used to define this abnormality.[10-13]

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This dental abnormality can be observed individually[14] or in association with other anomalies such as supernumerary teeth, odontomas, impacted teeth, peg-shaped lateral incisors, dens invaginatus, posterior dens evaginatus and very rarely syndromes like incontinentia pigmenti, Mohr syndrome, or Rubinstein-Taybi syndrome.[13,15-17] These unusual cuspal projections are composed of enamel and dentin with a varying degree of pulp tissue.[1,18,19]

The purpose of this report was to present the first reported case of both facial and palatal cusps on a supernumerary tooth in primary dentition with no pulp extensions.

## CASE DESCRIPTION

A 6-year-old boy was referred to the Department of Pediatric Dentistry of Ege University, Bornova, Izmir, Turkey, with an esthetic problem caused by an abnormally shaped tooth. Reportedly, his primary left central incisor had recently been exfoliated. A clinical investigation revealed a palatally positioned supernumerary tooth in the permanent maxillary left central incisor area with facial and palatal talon cusps appearing in X-shaped view (Figures 1 and 2). Enamel projections extending up to the incisal edges were detected on the tooth's facial and palatal aspects. The mesiodistal and labiopalatal diameters were measured as 5.6 and 5.2 mm, respectively. Clinically, the tooth was ectopic and was interfering with the occlusion.

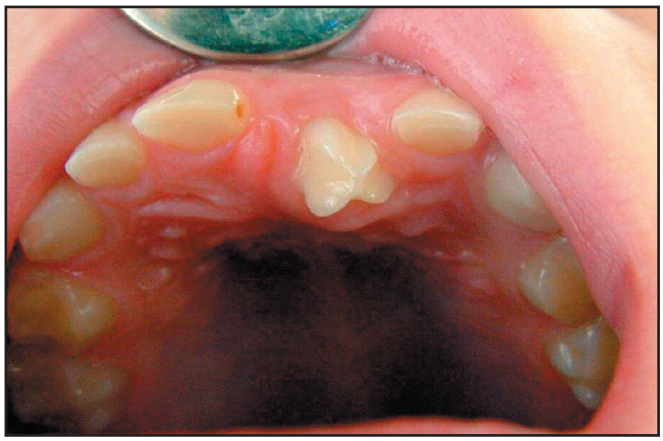

*Figure 1. X shape of the tooth from the occlusal view.*

*Figure 2. A supernumerary tooth with facial and palatal talon cusps interefering with occlusion.*

*Figure 3. Occlusial film.*

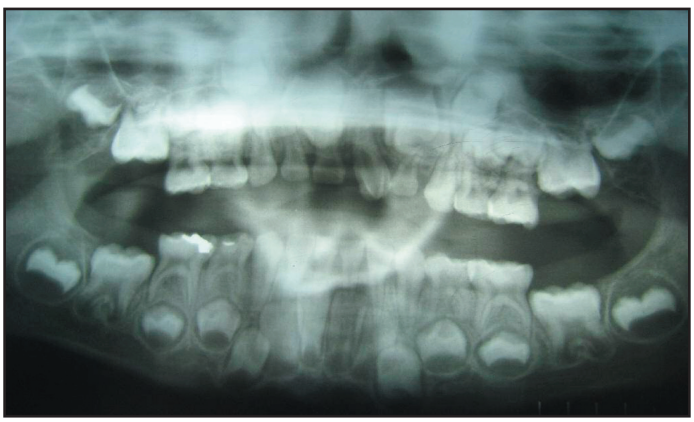

*Figure 4. Ortopantomograph.*

An orthopantomograph, occlusal radiograph, and periapical radiograph were interpreted (Figures 3 and 4). Radiographic examination revealed another supernumerary tooth that was unerupted in his maxillary right anterior region without any other abnormality. Owing to the superimposition of the accessory cusps over the pulp chamber, extensions of the pulp could not be determined on the periapical radiograph.

The tooth with talon cusps was extracted due to its interference with occlusion and its unfavorable esthetics. The patient is being followed-up to observe the permanent maxillary central incisors and impacted supernumerary tooth erupt.

To evaluate the pulp extensions of the extracted tooth, micro-CT system model no. 1072 of Skyscan (Kontich, Belgium) was used. Micro-CT evaluation provided non-destructive evaluation of pulp extensions within the talon cusps. The tooth was scanned operating an X-ray source of 100 kV/98 mA using a 1-mm aluminum filter. The magnification of X15 resulted in a 9.44-µm pixel size. Micro-CT investigation revealed that there were no pulpal extensions within facial and palatal talon cusps (Figures 5 and 6).

## DISCUSSION

Among published studies, 75% of the talon cusps have been observed in permanent incisors[13] and the occurrence of facial cusp is very rare.[17,20,21] To date, there have been a few reported cases of permanent teeth with talon cusps on both labial and palatal aspects.[2,22,23] The first report of both facial and palatal cusps on a single primary tooth was in 2005 by Jeevarathan et al.[24] Recently, Siracı et al reported a supernumerary primary tooth with facial and palatal talons with pulp extensions detected by a micro-CT.[25] Radiographic evaluation might be insufficient in distinguishing the pulp existence due to superimpositions of talon cusps over the main pulp chamber.[26] Today, micro-CT has gained popularity in an accurate and non destructive morphological assessment of small specimens. The availability of this diagnostic tool, however, is not very common and is restricted to a few research centers.[25,27] In our case, the micro-CT was also our choice for revealing no pulp extensions.

Clinical significance of the presence of pulpal tissue in a talon cusp has been emphasized, since it is important for the treatment and preservation of the tooth in the dental arc. In the management of talon cusps, detection of pulp extensions are of vital concern where gradual periodic grinding of enamel as a treatment choice can easily be performed.[22]

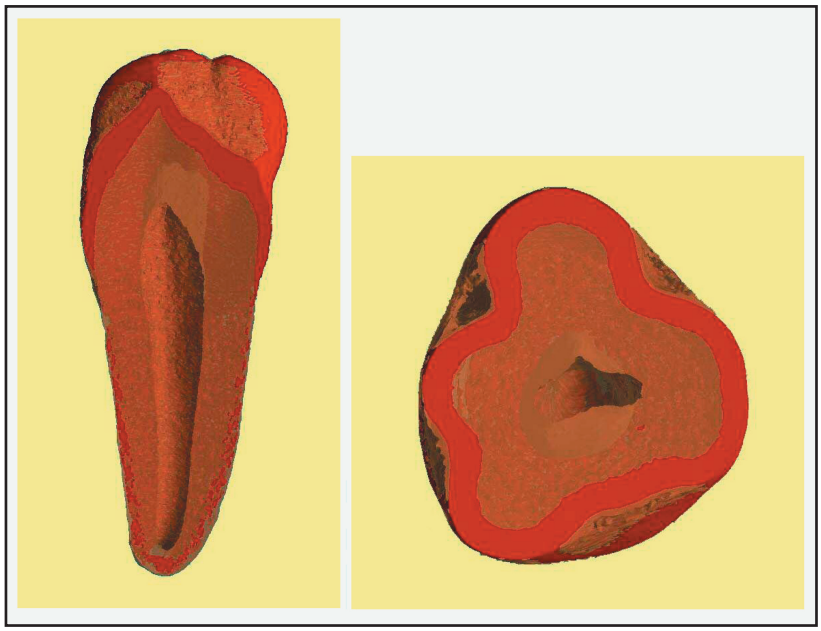

*Figure 5 and 6. Micro CT images revealing no pulpal extensions of the facial and lingual cusps.*

Pulp exposures were reported when attempts were made to reduce or remove those talon cusps that created esthetic and occlusal problems.[22,28]

The treatment objectives for teeth with talon cusp should include preserving pulpal vitality, meeting esthetic and occlusal requirements, establishing caries prevention or eradication in developmental grooves, and eliminating tongue/soft tissue irritation. Treatments may differ depending on each case.[5,28-30]

In this case, extraction was indicated, as the affected tooth was a supernumerary tooth interfering the occlusion and causing esthetic problems. It should be kept in mind, however, that it would have been possible to grind the cusps and reshape the crown if it was necessary to keep the tooth *in vivo*.

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