

# Concurrent occurrence of multiple developmental anomalies: A rare case report and review of literature

*B Thayumanavan, Jeyanthikumari T<sup>1</sup>, Meghalapriya P<sup>2</sup>*

Department of Oral and Maxillofacial Pathology, Sathyabama University, Dental College and Hospital, <sup>1</sup>Department of Prosthodontics, Tamil Nadu Government Dental College and Hospital, <sup>2</sup>Department of Oral and Maxillofacial Pathology, D Care Multispecialty Dental Clinic, Chennai, Tamil Nadu, India

## ABSTRACT

Talon cusp and fusion are uncommon odontogenic anomalies comprising of both primary and permanent dentition, which occur on the palatal surface of permanent maxillary incisors, while fused teeth are more common in the primary anterior dentition. This article reports an unusual case of talon cusp presenting on the lingual surface of fused permanent right mandibular central and lateral incisor in the permanent dentition in association with impacted left mandibular third molar. Recognition of this condition and early diagnosis are important to provide prophylactic measures, thereby preventing complications.

**Key words:** Accessory cusp, central and lateral incisors, fusion, impacted left mandibular third molar, talon cusp

## CASE REPORT

A 45-year-old man reported to the Department of Oral and Maxillofacial Pathology with complaint of unsightly lower anterior teeth, irritation to tongue, incising problems, and food impaction. The patient appeared healthy and revealed normal physical development for his age. There was no reported history of orofacial trauma.

Intraoral examination revealed that right permanent mandibular central incisor and lateral incisor were fused [Figure 1a] and exhibited a large prominent cusp on the lingual surface extending from cemento-enamel junction

to the incisal edge. The talon cusp was pyramidal in shape and was located on the center of the fused right mandibular central and lateral incisors [Figure 1b].

The fused mandibular right central and lateral incisors had a large crown. The mesiodistal crown diameter was less than that of the adjacent normal left central and lateral incisors.

Noncarious developmental grooves were present at the junction of the talon cusp and lingual surface of the fused teeth. The affected teeth clinically showed attrition, tongue interferences, spacing, food impaction, and gingival recession.

The talon cusp on fused teeth responded normally to electrical and thermal pulp tests.

### Address for correspondence:

Prof. B Thayumanavan, Department of Oral and Maxillofacial Pathology, Sathyabama University, Dental College and Hospital, Chennai, Tamil Nadu, India.  
E-mail: thayumds@gmail.com

Access this article online	
Quick Response Code:	Website: www.jiadsr.org
	DOI: 10.4103/2229-3019.177933

This is an open access article distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as the author is credited and the new creations are licensed under the identical terms.

**For reprints contact:** reprints@medknow.com

**How to cite this article:** Thayumanavan B, Jeyanthikumari T, Meghalapriya P. Concurrent occurrence of multiple developmental anomalies: A rare case report and review of literature. J Indian Acad Dent Spec Res 2015;2:76-8.

### Radiographic view

Intraoral periapical (IOPA) radiograph showed enamel and dentin layers within the accessory cusps on bifid crown with a single root canal [Figure 2a].

Orthopantomography (OPG) showed accessory cusp on bifid crown of fused permanent right mandibular central and lateral incisor with a single root canal associated with impacted left mandibular third molar [Figure 2b].

### Model analysis

Labial aspect showed fused mandibular right central and lateral incisors associated with spacing, attrition, and mild root exposure [Figure 3a].

Lingual aspect showed accessory cusp on fused mandibular right central and lateral incisors [Figure 3b]. This accessory cusp measured in mm as follows:

- 6 mm in length (cervicoincisally).
- 4 mm in width (mesiodistally).
- 3 mm in thickness (labiolingually).

Based upon clinical examination, model analysis, and radiographic findings, a diagnosis of talon cusp on fused mandibular right central and lateral incisor teeth was made.

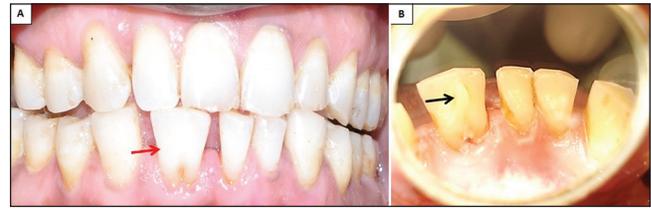
### DISCUSSION

Odontogenesis is a very complex process, in which reciprocal and sequential interactions between epithelial and mesenchymal cells regulate numerous cell activities that lead to formation of a functional tooth organ. Any aberration among these will result in various craniofacial malformations.<sup>[1]</sup>

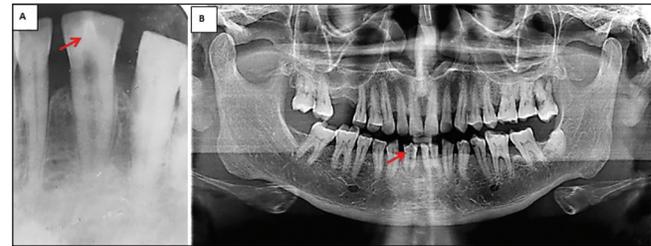
Talon cusp is a developmental anomaly of tooth shape that first was recognized by Mitchell in 1892. It is an accessory cusp like structure on crown of the maxillary and mandibular anterior teeth in both primary and permanent dentition. This anomalous structure consists of normal enamel and dentin and may have extensions of pulp tissue into it (or) may be devoid of a pulp horn. Typically, it resembles an eagle's talon, but it can also present as pyramidal, conical, or teat-like shape.<sup>[2,3]</sup>

The incidence of talon cusp ranges from 0.06% to 8%.<sup>[1]</sup> Talon cusp can also occur in association with other dental manifestations such as peg-shaped lateral incisors, agenesis or impacted canines, mesiodens, complex odontoma, megadont, dens evaginatus of posterior teeth, shovel-shaped incisors, dens invaginatus, and exaggerated Carabelli cusp.<sup>[2]</sup> In the present case, it was associated with fusion and impacted left mandibular third molar.

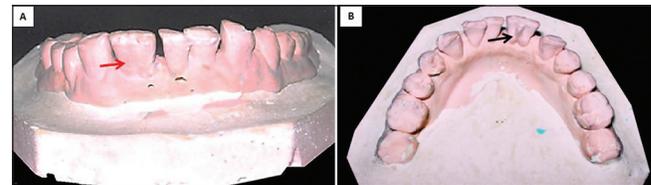
Talon cusp occurs more frequently in permanent dentition than in primary dentition. Males are affected more



**Figure 1: (a) Labial aspect of fused permanent right mandibular central and lateral incisor (b) A pyramidal-shaped talon cusp on the lingual surface of the fused permanent right mandibular central and lateral incisor**



**Figure 2: (a) IOPA showing enamel and dentin within talon cusp on bifid crown with single root canal (b) OPG showing talon cusp on fused permanent right mandibular central and lateral incisor and impacted left mandibular third molar**



**Figure 3: (a) Labial aspect of model showing fused permanent mandibular right central and lateral incisors associated with spacing, attrition, and mild root exposure (b) Lingual aspect of model showing accessory cusp on the fused mandibular right central and lateral incisors. This accessory cusp measured 6 mm cervicoincisally, 4 mm mesiodistally, and 3 mm labiolingually**

commonly than females. Almost 92% of the affected teeth in the permanent dentition have been encountered in the maxilla with the lateral incisors being the most frequently involved teeth (55%) followed by the central incisors (36%) and the canine (9%).<sup>[4]</sup> But in our case, the talon cusp was found in the mandible that is an uncommon finding.

Large talon cusps are clinically significant as they cause occlusal interferences, irritation of the tongue during speech and mastication, displacement of the affected tooth, carious lesion in developmental grooves that delineate the cusp, attrition of the opposing tooth, pulpal necrosis, periapical pathosis, and periodontal problems due to excessive occlusal forces.<sup>[4,5]</sup>

Fusion is recognized as the union of two normally separated tooth buds with the resultant formation of a joined tooth with confluence of dentin.<sup>[6]</sup> Fusion may be partial or total; it depends on the stage of tooth development at the time of fusion. Usually, a fused tooth has two separate root canals and a single, wide

**Table 1: Review of literature (based on PubMed search) of talon cusp on fused teeth presenting in permanent dentition**

Author	Year	Clinical finding
Prabhakar et al. <sup>[7]</sup>	2009	Bilateral fusion of permanent mandibular central and lateral incisors in association with presence of Talon's cusp on the left fused teeth
Rao et al. <sup>[11]</sup>	2010	Pyramidal shaped talon cusp on fused permanent mandibular incisors
Thirumalaisamy et al. <sup>[8]</sup>	2012	Fusion between permanent left mandibular central and lateral incisors with a talon cusp projecting lingually on the fused teeth
Miri et al. <sup>[9]</sup>	2014	Fused permanent right maxillary central and lateral incisor associated with a talon cusp on the palatal surface
Cordeiro et al. <sup>[10]</sup>	2015	Combination of double tooth and talon cusp on a permanent maxillary incisor

crown. A small groove may be present between the mesial and distal sections of the melded crowns of fused teeth.<sup>[1]</sup>

The prevalence of connated or double teeth (0.2%) in permanent dentition and it ranges from 0.4% to 0.9% in primary dentition. The prevalence of unilateral double teeth is 0.5% and 0.1% in the primary and permanent dentition, respectively. A normal count of teeth reveals a missing tooth when the fused tooth is counted as one.<sup>[7]</sup>

The mandibular talon cusp on fused teeth described in the present case report fulfilled Hattab criterion and belonged to type I.<sup>[2]</sup>

In our patient, an uncommon finding of talon cusp on fused mandibular right central and lateral incisors was present in which involved teeth had one crown, one talon cusp, one root canal causing clinical problems such as tooth malalignment, spacing problems, arch symmetry, unacceptable appearance, food impaction, and periodontal involvement.

The present case is unique as talon cusp occurring in association with fused teeth in permanent dentition is a very rare finding. A PubMed search of talon cusp on fused teeth presenting in permanent dentition revealed only very few previous reports [Table 1].

## CONCLUSION

It is important for dental professionals to be familiar with common dental development anomalies. The patients should be properly informed of the potential risk factors and problems associated with the anomalies. Early diagnosis is important to avoid complications and examinations of siblings and relatives could facilitate early diagnosis and can minimize possible complications.

## Financial support and sponsorship

Nil.

## Conflicts of interest

There are no conflicts of interest.

## REFERENCES

- Dinesh Rao B, Hegde S. A talon cusp on fused teeth associated with hypodontia: Report of a unique case. *Eur J Dent* 2010;4:75-80.
- Ravi Kumar S Kulkarni, DN Chandan: Talon cusp on permanent canine: A rare case report, *JOMFP* 2012;3:278-81.
- Mellor JK, Ripa LW. Talon cusp: A clinically significant anomaly. *Oral Surg Oral Med Oral Pathol* 1970;29:225-8.
- Hattab FN, Hazza'a AM. An unusual case of talon cusp on geminated tooth. *J Can Dent Assoc* 2001;67:263-6.
- Davis PJ, Brook AH. The presentation of talon cusp: Diagnosis, clinical features, associations and possible aetiology. *Br Dent J* 1986;160:84-8.
- Neville BW, Damm DD, Allen CM, Bouquot JE. Abnormalities of teeth. In: Neville BW, Damm DD, Allen CM, Bouquot JE, editors. *Oral and Maxillofacial Pathology*. 3<sup>rd</sup> ed. St. Louis: Saunders An Imprint of Elsevier; 2009. p. 55-113.
- Prabhakar AR, Kaur T, Nadig B. Bilateral fusion of permanent mandibular incisors with Talon's cusp: A rare case report. *J Oral Maxillofac Pathol* 2009;13:93-6.
- Thirumalaisamy E, Baskaran P, Jeyanthi K, Kumar S. Talon cusp in fused teeth: A rare concomitant occurrence. *J Oral Maxillofac Pathol* 2012;16:411-3.
- Miri SS, Ghorbani H, Rashed Mohassel A. Endodontic treatment of fused teeth with talon cusp. *Case Rep Dent* 2014;2014:738185.
- Cordeiro WJ, do Couto CF, Barros RN, Zarranz L, Jorge MZ, de Gouvêa CV. Esthetic management of double tooth associated with talon cusp using a laminate veneer. *J Dent Child (Chic)* 2014;81:161-70.