



Jadbinder Seehra

Fran Coutts

The Talon Cusp – An Uncommon Anomaly

Abstract: Talon cusps are an uncommon dental anomaly of odontogenic origin. Talon cusps can also present with other dental anomalies, however these have been infrequently reported in the literature. The following is a report of two cases in which talon cusps were detected in combination with two distinct dental anomalies: an ectopic canine and transposition.

Clinical Relevance: It is important to recognize that the management of talon cusps may require a multidisciplinary approach and should be considered during treatment planning.

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A talon cusp is a rare dental anomaly of odontogenic origin first reported by Mitchell in 1892.¹ The prevalence has been reported at 0.012%,² 0.17%³ and 7.7%.⁴ Davies and Brook² defined a talon cusp as:

...an additional cusp that prominently projects from the lingual surface of primary or permanent anterior teeth, is morphologically well-delineated, and extends at least half the distance from the cement-enamel junction to the incisal edge.

The resemblance to an eagle's talon is a reflection of the shape of this anomaly.⁵

Both genetic and environmental factors have been

suggested as aetiological factors. The reported incidence is higher in males than females. Typically, talon cusps can present on the palatal or lingual aspect of the incisors, and occur more frequently in the maxillary dentition, with the maxillary lateral incisor the most commonly affected tooth.^{2,5,6} Labial talon cusps have, however, also been reported.^{7,8} Talon cusps can also be found in both permanent and primary teeth^{9,10} and associated with syndromes such as Sturge-Weber,¹⁰ Rubinstein-Taybi¹¹ and Mohr syndromes.¹²

Talon cusps can also present with other dental anomalies. Davies and Brook,² in a review of 20 cases of talon cusps, reported individual cases of both transposition of LR2 and LR3 and a supernumerary. Other anomalies include: peg-shaped lateral incisor,⁵ hypodontia,^{9,13} impacted canine,¹⁴ and double teeth.^{15,16} Interestingly, hyperactivity of the dental lamina has been postulated as an aetiological factor of talon cusps,¹⁷ which is also implicated in the aetiology of double teeth and supernumerary teeth. Overall, the prevalence of talon cusps with other dental anomalies is rare.



Figure 1. Case 1: Upper occlusal view demonstrating the talon cusp associated with the UL2.

The following is a report of two cases in which talon cusps were detected in combination with two distinct dental anomalies.

Case 1

A medically fit and well 13-year-old male was referred to the orthodontic department by his general dental practitioner for advice regarding the unerupted UR3. The patient presented with a Class I incisor relationship on a skeletal I pattern with an average lower facial height and maxillary-mandibular planes angle. On

J Seehra, BDS(Hons), MFDS RCS, MSc, MOrth RCS(Eng), Senior Registrar in Orthodontics, Department of Orthodontics and Paediatrics, Guy's and St Thomas's NHS Foundation Trust, Floor 22, Guy's Tower London SE1 9RT and **F Coutts**, BDS, MSc, FDS RCS(Eng), MOrth RCS(Eng), Consultant Orthodontist, Maxillofacial Unit, East Kent Hospitals University NHS Foundation Trust, William Harvey Hospital, Kennington Road, Willesborough, Ashford, Kent TN24 0LZ, UK.

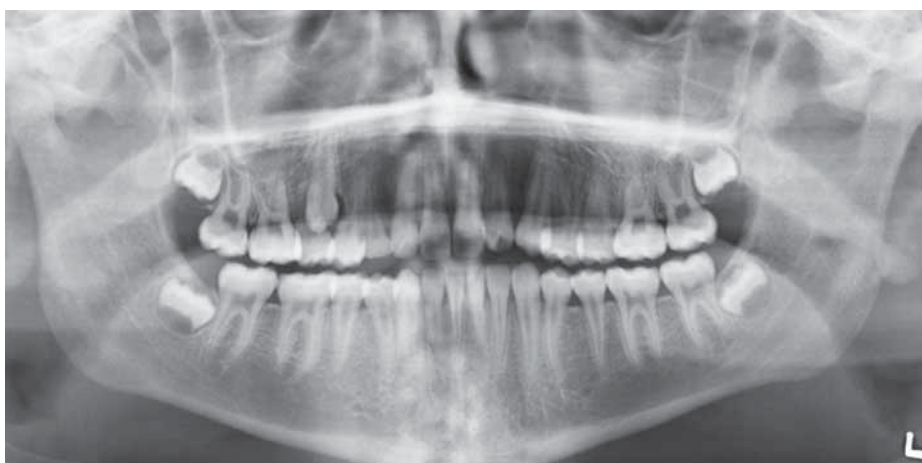


Figure 2. Case 1: OPG radiograph confirming the transposition of the UR3 and UR4. The outline of the UL2 talon cusp is also visible.



Figure 3. Case 2: Upper occlusal view demonstrating the talon cusp associated with the UL2.



Figure 4. Case 2: Upper standard occlusal radiograph clearly demonstrating the talon cusp associated with the UL2.

examination both the upper and lower labial segments were of average inclination with mild crowding of the upper labial

segment. An overjet of 3 mm was measured and the overbite was reduced and incomplete. The UR3 was palpated buccally between the UR4 and UR5 (Figure 1). Radiographic investigations confirmed the diagnosis of transposition of the UR3 (Figure 2). A notable finding was the presence of a talon cusp associated with the UL2. Oral hygiene was of optimal standard. No caries or pathology was evident in the UL2, despite a stained fissure associated with the talon cusp.

Case 2

A 14-year-old male was referred to the orthodontic department by his general dental practitioner for advice regarding the palatally ectopic UL3. The patient presented with a Class I incisor relationship on a mild skeletal III pattern with an increased lower facial height and maxillary mandibular planes angle. On examination, both the upper and lower labial segments were of average inclination. The overbite was average and complete and an overjet of 2 mm was measured. Clinically, the UL3 was palpated palatally (Figure 3). Radiographic investigations confirmed the diagnosis of a palatally ectopic UL3 (Figure 4). An interesting finding was the presence of a talon cusp associated with the UL2. Oral hygiene was of moderate standard and no pathology was evident in the UL2.

Discussion

The reported variation in prevalence rates of talon cusps within the literature can be explained by the use of differing classifications and diagnostic criteria employed by authors. In both reported cases, the definition as proposed by Davies and Brook² was used. As indicated, the diagnosis of a talon cusp is primarily made from the clinical examination. Usually a projection from the lingual or palatal aspect of the affected tooth is evident. Radiographically, a radio-opaque structure is visible as demonstrated by Figure 4. Histologically, talon cusps contain dentine, enamel and varying extensions of pulpal tissue.^{5,6} The maxillary lateral incisor has been reported to be the commonest tooth involved⁶ and the talon cusps in both of these cases were associated with the UL2. In addition, talon cusps appear to predominate on the left-side of the arch.² Interestingly, anomalous upper maxillary lateral incisors have been associated with palatally ectopic canines,¹⁸ suggesting this could have been a factor in Case 2. A genetic component has been reported as an aetiological factor in both palatally ectopic canines¹⁹ and transpositions.²⁰ Factors such as gender difference, predominance of a particular side of an arch and individual tooth affected and association with other dental anomalies and syndromes are frequently reported as indicators of a genetic aetiology.

Although the majority of talon cusps are asymptomatic in nature, the presence of a deep developmental groove renders these teeth susceptible to caries and is of clinical significance.²⁵ In addition, talon cusps can act as an occlusal interference,²¹ cause irritation to soft tissues²² and compromise aesthetics.⁸ They can also potentially complicate diagnosis, especially when the affected tooth is unerupted or partially erupted. In this situation, the talon cusp can mimic a supernumerary tooth.²

The management of talon cusps varies according to the clinical presentation. A conservative approach is indicated if the aesthetic appearance is satisfactory with no associated pathology.²² If a deep developmental groove is present, prophylactic restorations

are recommended to prevent caries progression.⁵ If the talon cusp is of aesthetic concern or causing an occlusal interference, selective grinding and recontouring can be performed. Gradual removal of small increments of tooth tissue is recommended to reduce the incidence of pulpal exposure. In the event of exposure, root canal therapy is indicated.⁵

Root resorption as a result of orthodontic forces is an inevitable consequence of orthodontic treatment. Anomalous incisors have been reported to be at increased risk of root resorption compared to teeth with normal morphological features. Kjaer²³ reported teeth with invaginations and taurodontism to be at greater risk of root resorption. The converse is reported by Lee *et al*²⁴ who demonstrated no increased risk of root resorption. In view of equivocal results, the effect of orthodontic forces on anomalous incisors and their root length cannot be reliably predicated, however, it may be prudent to warn consenting patients of the possible risk and to monitor these teeth radiographically during appliance therapy.

Talon cusps are a rare dental anomaly containing odontogenic tissue with a multifactorial aetiology. The detection of such cusps should alert the clinician to the possibility of other associated anomalies, including ectopic canines and transpositions. The treatment of teeth with talon cusps should involve optimizing oral hygiene and may include a multidisciplinary approach.

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CPD ANSWERS

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| 1. A, C | 6. C |
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| 3. B, D | 8. A, D |
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