

## Case Report

### **A Case Report of Developmental Dental Anomaly: Dens Evaginatus(Talon Cusp)**

Fatemeh Sadat Sajadi

Assistant Professor of Pediatric Dentistry, Faculty of Dentistry, Kerman University of Medical Sciences, Kerman, Iran.

#### **\*Corresponding author**

Fatemeh Sadat Sajadi

Email: [fsajadi1234@gmail.com](mailto:fsajadi1234@gmail.com)

---

**Abstract:** Dens evaginatus is a developmental anomaly that is observed as additional tuberculate cusp on the palatal surface of incisor teeth (talon cusp) or the occlusal surface of molar teeth. This additional cusp consists of enamel, dentin, and usually pulp. A 9-year-old boy presented with a talon cusp on the palatal surface of maxillary left lateral incisor. The clinical and radiographic appearance and treatment procedure are provided in this study. Early diagnosis of talon cusp and seal of its developmental fissure can help preventing caries and pulp involvement. Hence, dentist's awareness of clinical and radiographic appearance and appropriate treatment of this anomaly is of utmost importance.

**Keywords:** Talon Cusp; Dens Evaginatus; Caries, occlusal.

---

#### **INTRODUCTION**

Dens evaginatus is a dental evolutionary abnormality that occurs during the orphodifferentiation stage of tooth budding. It is developed due to the abnormal proliferation of epithelial enamel into the stellatereticulum of enamel organ [1], with a denticentre surrounding a thin pulp tissue [2].

This abnormality usually occurs in the mandible premolars [3] but may be seen in other teeth, as well, in both primary and permanent dentition [4, 5]. In canine and incisor teeth, dens evaginatus originates from the cingulum area of the palatal aspect of the teeth and is often bilateral [1]. This abnormality is also known as cusp-shaped button, additional button, occlusal premolar button, Leong's premolar, evaginatusodontoma, and occlusal pearls [6].

Talon cusp is an abnormality of dens evaginatus that appears as an extra separate cusp on the labial or lingual surface of the anterior teeth at the cervical area and may continue to the incisal margin [7]. Talon cusp is composed of natural enamel, dentin, and pulp tissue; however, the last one is missing in some cases [4, 5]. Although the incidence of talon cusp is more detected in permanent teeth, this abnormality is also observed in deciduous teeth and more often in maxillary lateral incisors. Men are likely to develop this anomaly more than women [5, 8, and 9].

Talon cusp occurs during the primary odontogenesis. Although both natural and environmental factors affect the abnormality, the main

cause is still unknown. Nevertheless, it is reported to be associated with consanguinity [10].

Existence of talon cusp not only causes aesthetic issues, but may also interfere with the occlusion and irritate the soft tissue and tongue, besides the unexpected breakage of cusp which can result in pulpal exposure [5]. Evolutional groove developed in the junction of talon cusp to the crown lingual surface is prone to plaque accumulation which subsequently increases the risk of tooth decay.

Previous studies have proposed conservative and advanced methods for treating talon cusps. The method is highly emphasized to be as conservative as possible, and be designed with respect to the size and shape of talon cusp [11, 12]. As mentioned before, since the talon cusp often include enamel and dentin, and in most cases pulp, the risk of pulp involvement must be seriously taken into consideration when planning the treatment [13, 14].

Clinical importance of the disorder lies in the fact that breakage and abrasion occurs simply in the button, which can lead to exposure of its thin pulp, and consequently end up with pulp infection. Once the tooth encountered occlusion, talon cusp is at risk of fracture or abrasion. Before the complete evolution of the root, tooth infection and loss of pulp vitality may occur, in which circumstances pulp tests are usually uncertain, and on radiographs, the periapical lesions are barely discernible from the evolving dental follicle [15, 16].

Because apparent signs such as decay or brunt is absent in these teeth, diagnosis and treatment may be postponed to the time when the patient refers with severe pain or infection. Moreover, due to dental root evolution, treatment of these teeth in younger patient will be so difficult in case of pulp involvement [17].

### CASE REPORT

The patient was a 9-year-old boy complaining of dental caries admitted to the Pediatrics Department of Kerman Dental School. In clinical intra oral examination, the child had a surface amalgam restoration above the left second primary molar tooth and a mesial molar teeth of the same side was decayed. The patient was in mixed dentition stage with standard oral hygiene. He was perfectly normal in terms of public health and had no medical history of systemic disease.

During the physical examination, an additional cusp was observed in palatal side of left permanent maxillary lateral incisor, spread from the cement enamel junction (CEJ) area to the incisal edge (Figure-1). After taking periapical radiograph, talon cusp diagnosis was confirmed with enamel, dentin, and a thin pulp (Figure-2). The anomaly had not discomforted the child and had no occlusal interference, so his parents were unaware of its presence. Deep evolutionary groove developed in the junction of talon cusp with palatal surface of lateral incisor tooth. This tooth was natural in the pulp vitality tests (cold and electric pulp test) and susceptibility to percussion.

In order to prevent dental caries, the evolutionary groove was blocked with fissure sealant. Besides, mesial caries of the first upper left primary tooth was restored with resin composite (figure 3). The patient was provided with recommendations on maintaining oral hygiene, diet, and using fluoride toothpaste. Six-month follow-up sessions were also considered to control the fissure sealant.



**Fig-1: clinical overview of talon cusp in left maxillary lateral incisor**



**Fig-2: pre apical radiography overview of talon cusp**



**Fig-3: preapical radiography overview of left maxillary primary**

### DISCUSSION

Talon cusp is an infrequent dental disorder in which a mass of hard tissue bulges in form of cusp from the maxillary anterior teeth and mandibular cingulum area [5, 8, and 9]. Incidence of talon cusp is higher among the Asian societies, but may be seen in other societies, as well [17]. It is seen in different types based on shape and size. For precise diagnosis and treatment planning of this abnormality, Hattab et al. classified it into three types.

Type A is an additional talon cusp with obvious morphological shape which often protrudes from the palatal or facial surface of a permanent or primary tooth and spread at minimum halfway the distance between CEJ and incisal edge. Type B, as called Semi Talon II, is an additional cusp of  $1 \leq \text{mm}$  smaller than half distance between the CEJ and incisal edge. This talon cusp may be merged with crown palatal surface or located far from the remaining crown. Type C, called Trace Talon, is a relief cingulum which may be seen as taper, button-shaped or two-branched [18].

According to above-mentioned categorization, talon cusp that reported in this case was type A. A small talon cusp with no symptom does not need to be treated [19]. A great talon cusp may lead to clinical problems such a socclusal interference, involved tooth displacement, tongue abrasion during talking and chewing, developed carious lesion in evolutional track, pulp necrosis, periapical injury, and abrasion of the opposite teeth, as well as periodontal problems due to severe occlusal forces [20]. Fissure sealant and resin composite restorations are performed in cases where a deep developmental track exist [13]. If there is occlusal interference, the cusp can subject to gradual and periodicals hortening followed by application of topical fluoride. Mean while, full shortening of talon cusp and pulpotomy with calcium hydroxide can also been done in some cases [21].

Where talon cusp has caused displace mentor irregularity of the involved oropposite teeth, orthodonticcorrection may be needed [22]. In a study by Gupta et al., a talon cusp was reported on the palatal surfaces of the permanent maxillary central incisor of 9-year-old boy that was interfered with occlusion and caused displacement of the labial teeth. The treatment planned for the patient included gradual abrasion, the occlusal interference was removed off the tooth, and topical fluoride application [19]. In a different study, Zarabian et al. reported a case with talon cusp on the lingual surface of mandible left central incisor which was of semi-talon type, and was treated by fissure sealant [23].

According to the researches, talon cusp often appears in maxillary lateral incisor teeth as one-sided and more in males [23, 24]; that was compatible with the case reporting in the present study. In a study by Ferraz et al., talon cusp was reported in a 13-year-old teenager causing pain and pulp necrosis; so endodontic treatment was performed [17]. Ozcelik et al. reported full removal of a bilateral talon cusp in palatal maxillary incisor in order to prevent occlusal interference and endodontic treatment of the teeth [24].

## CONCLUSION

Early diagnosis of talon cusp and precisely planning the appropriate treatment is highly essential, since it helps preventing the consequences, specifically in children whose teeth root have not been completely developed.

## REFERENCES

1. Tratman EK; An unrecorded form of the simplest type of the dilated composite odontome. *Br Dent J*, 1949; 86:271-275.
2. Gallagher FJ, Cioffi GA, Taybos GM; Dens evaginatus: report of a case. *Quintessence Int*1988; 19:443-46.
3. Oehlers FA, Leek KW, Lee EC. Dens evaginatus (evaginatedodontome): its structure and

- responses to external stimuli. *DentPract Dent Rec*, 1967; 17: 239-244.
4. Hattab FN, Yassin OM; Bilateral talon cusps on primary central incisors: a case report. *Int J Paediatr Dent* 1996; 6:191-195.
5. Hattab FN, Yassin OM, Al-Nimri KS; Talon cusp – clinical significance and management: case reports. *Quintessence Int*, 1995; 26:115-120.
6. Shafer WG, Hine MK, Levy BM, Tomish CE: Dens evaginatus. In *A Textbook of Oral Pathology*, WB Saunders Co, 1983; 42.
7. Zafiri V, Pitsios T; Prevalence of the Talon Cusp at the Lateral Incisors of Two Individuals of Greek Origin - a Case Study. *International Journal of Caring Sciences*, 2010; 3:91-97.
8. Sumer AP, Zengin AZ. An unusual presentation of talon cusp: a case report. *Br Dent J* 2005; 199:429–30.
9. Bolan M, Gerent PetryNunes AC, de Carvalho Rocha MJ, De Luca Canto G; Talon cusp: report of a case. *Quintessence Int*, 2006; 37:509–514.
10. Davis PJ, Brook AH; The presentation of talon cusp: diagnosis, clinical features, associations and possible aetiology. *Br Dent J*, 1986; 160:84–88.
11. Maroto M, Barbería E, Arenas M, Lucavechi T; Displacement and pulpal involvement of a maxillary incisor ssoociated with a talon cusp: report of a case. *Dent Traumatol*, 2006; 22:160–164.
12. al-Omari MA, Hattab FN, Darwazeh AM, Dummer PM; Clinical problems associated with unusual cases of talon cusp.*IntEndod J*, 1999; 32:183–190.
13. Mellor JK, Ripa LW; Talon cusp: a clinically significant anomaly. *Oral Surg Oral Med Oral Pathol*,1970; 29:225–228.
14. Hattab FN, Hazza'a AM; An unusual case of talon cusp on geminated tooth. *J Can Dent Assoc*, 2001; 67:263–266.
15. Nik-Hussein-N-N; Apexification of a non-vital dens evaginatus. *J Pedod*, 1986; 11:91-97.
16. Cohen S, Burns RC; *Pathology of the Pulp*. 5th Ed. New York: CV Mosby Co, 1991.
17. Ferraz J, Carvalho Junior J, Saquy p, Pwcora J, Sousa-Neto M; Dental Anomaly: Dens evaginatus (Talon Cusp). *Braz Dent J*, 2001; 12(2): 132-134.
18. 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 J Dent Child*, 1996; 63:368-376.
19. Gupta R, Thakur N, Thakur S, Gupta B , Gupta M; Talon cusp: A case report with management guidelines for practicing dentists. *Dental Hypotheses*, 2013; 4: 67-69.
20. Shafer WG, Hine MK, Levy BM; Developmental disturbances of oral and paraoral

- structures. In: Sivapathsundaram B, Rajendran R, editors. A Textbook of the Oral Pathology. 5th ed. New Delhi: Elsevier, 2008; 3-112.
21. Pledger DM, Roberts GJ; Talon cusp: Report of a case. Br Dent J, 1989; 167: 171-173.
  22. Pitts DL, Hall SH; Talon-cusp management: Orthodontic and endodontic considerations. ASDC J Dent Child, 1983; 50:364-368.
  23. Zarabian T, Noien S, Valizadeh S, Moshari A; Talon cusp: case report and literature review. J Res Dent Sci, 2012; 9(3): 175-178.
  24. Ozcelik B, Atila B; Bilateral Palatal Talon Cusps on Permanent Maxillary Lateral Incisors: A Case Report. European Journal of Dentistry, 2011; 5: 113-116.