

Talon Cusps: Conservative Management

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Talons cusp is an uncommon developmental dental anomaly characterized by presence of an accessory cusp like structure projecting from tooth neck towards incisal edge. This anomaly commonly affects permanent dentition than primary dentition. This article describes early diagnosis and management of two patients with talons cusp. Conservative treatment by selective grinding, followed by fluoride varnish application was done. The patients were followed up for one year without any complications. This indicates conservative means of management to be the most desirable way of managing such anomalies.

Keywords: talons cusp, permanent teeth, conservative treatment, fluoride varnish

J Clin Pediatr Dent 35(4): 345–348, 2011

INTRODUCTION

Talons cusp is an uncommon, developmental dental abnormality in which an accessory cusp like structure is thought to arise as a result of evagination of inner enamel epithelium during morpho-differentiation stage of tooth development.¹ Its prevalence ranges from 0.06–7.7%.^{2,3} Talons cusp is composed of normal enamel, dentin and may contain pulp tissue.⁴ Shay reported that pulp tissue can extend up to centre of the tubercle, and once fractured pulp tissue is exposed.⁵ Talons cusp is attached to the lingual surface of an anterior tooth and may be connected to the incisal ridge forming a ‘T’ shaped or if at a lower level ‘Y’ shaped crown contour.⁶ Both the primary and permanent dentitions are involved, and both the sexes are affected with the males being more than the females. They are unilateral but one-fifth of them are bilateral.⁷ Previously, the anomaly was considered to be rare, but current use of radiographs has disclosed that talons cusp is not as rare as formerly thought.⁸ Clinical problems noted with talon cusp cases include attrition, breast-feeding problems, compromised esthetics, occlusal interferences, temporomandibular joint pain,

accidental cusp fracture, displacement of affected teeth, interference with tongue space, irritation of tongue during speech and mastication, periodontal problems because of excessive occlusal forces, development of dental caries in developmental groove of the talons cusp.^{7,9}

The present article discusses 2 cases of talons cusp. In both the cases timely conservative management and periodic follow up over a period of one year had led to successful outcome.

Case 1

Nine-year-old girl reported to our department with a chief complaint of malalignment of her upper anterior teeth. She also complained of disturbed speech and interference with mastication. Her intraoral examination revealed that she had class I molar relation with proclined upper anterior teeth and mild crowding. Further palatal surface of maxillary right central incisor revealed presence of accessory cusp projecting from palatal surface and extending more than half way between CEJ and incisal edge indicating type I talons cusp (Fig. 1a). This accessory cusp interfered with occlusion and in turn led to proclined maxillary right central incisor. The tooth was also associated with Ellis class I fracture. The cusp was separated from rest of the crown with non carious developmental groove. Clinically, the tooth was asymptomatic and responded normally to vitality tests. Radiograph revealed ‘v’ shaped radio opaque cusp like structure with pulpal extension into it (Fig. 1b). Root formation of the involved tooth was complete. There was no evidence of periapical pathology (Fig. 1b). Since talons cusp interfered with occlusion, mastication and speech, selective cuspal grinding was planned to preserve the pulp vitality. Patient was called after every 45 days interval and cuspal grinding was done with flame shaped bur (no.148, SHOFU INC, JAPAN) followed by fluoride varnish application (Fluoritop S R, ICPA Health Products Ltd, Ankleshwar, India). By the end of 9 months the cusp was almost completely eliminated without

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Figure 1. a) Intraoral view of talons cusp on palatal surface of maxillary right central incisor; b) Intraoral periapical radiograph of maxillary right central incisor showing talons cusp with typical 'V' shaped structure.

pulpal exposure. The treatment was carried out over a period of 9 months to allow sufficient time for formation of reparative dentin and avoid pulpal exposure. Finally, at the end of nine months composite restoration (3M ESPE, Z100™ St.Paul, U.S.A.) was done. (Fig. 2a) Patient had been followed up over a period of 1 year and intraoral periapical radiograph was taken (Fig. 2b) to evaluate the post effect of treatment. The tooth was completely asymptomatic with vitality being intact. Further patient was referred for orthodontic treatment.

Case 2

Eleven-year-old girl reported to our department with a chief complaint of presence of extra tooth like structure in upper front tooth region.. Her past dental history revealed that she had a problem of food lodgment in the palatal aspect of maxillary right central incisor due to presence of deep developmental groove at the site of cuspal attachment with tooth. She had visited dentist for the treatment and composite restoration was done. Her intraoral examination revealed class I molar relation with mild crowding in maxillary



Figure 2. a) Postoperative maxillary occlusal photograph after placement of final composite restoration at the end of 9 months; b) Intraoral periapical radiograph of maxillary right central incisor after one year follow up.

anterior teeth. Palatal aspect of maxillary left central incisor presented with type I' talons cusp extending almost up to incisal edge along with composite restoration at the junction of cusp and the tooth (Fig. 3a). Further due to presence of large cusp it interfered with normal occlusion and led to labial movement of 11 compared to 21. Radiographically 'v' shaped radioopaque cusp like structure was seen with slight pulpal extension into it (Fig 3b). Selective cuspal grinding was done utilizing flame shaped bur (no.148, Shofu Inc, Japan), followed by fluoride varnish application (Fluoritop SR, ICPA Health Products Ltd, Ankleshwar, India). The patient was recalled after every 45 days interval for cuspal grinding. By the end of 9 months the cusp was almost completely eliminated with a very thin layer of dentin remaining over the pulp, hence pulp protection (Dycal Ivory, Dentsply, Milford, U.S.A.) and composite restoration was done (3M ESPE, Z100™ St. Paul, U.S.A.) (Fig. 4a). Patient had been followed up over a period of 1 year and intraoral periapical radiograph was taken (Fig. 4b). The tooth was completely asymptomatic with intact vitality. The patients was referred for orthodontic treatment.



Figure 3. a) Intraoral view of talons cusp on palatal surface of maxillary left central incisor; b) Intraoral periapical radiograph of maxillary left central incisor showing talons cusp with typical 'V' shaped structure.

DISCUSSION

Morphological dental anomalies of permanent dentition are relatively common.¹⁰ Talon cusp is one such dental anomaly occurring most commonly in permanent dentition (75%) as compared to primary dentition (25%).⁷ Talons Cusp (TC) was first recognized by Mitchell in 1892.¹ It is thought to originate during the morpho-differentiation stage of tooth development but the etiology remains unknown.¹¹ The anomaly appears to be more prevalent in patients with Sturge-Weber syndrome, Rubinstein-Taybi syndrome, Mohr's syndrome or incontinentia pigmenti achromains.¹¹ However, in the majority of cases reported, the talons cusp is isolated rather than an integral part of any disorder.

Maxillary lateral incisors are the most commonly associated teeth with talons cusp, but in this case report, maxillary central incisors were involved in both the cases.

Talons cusp may be of greater clinical significance and early diagnosis may be critical. Marked talon cusp may compromise esthetics and sharp tip can cause tongue irritation during speech and mastication. In case of occlusal interference, possible complications are rotation and/or angulation



Figure 4. a) Postoperative maxillary occlusal photograph after placement of final composite restoration at the end of 9 months; b) Intraoral periapical radiograph of maxillary left central incisor after one year follow up.

of affected tooth or antagonist, fracture of the talon cusp and finally periapical inflammation and periodontal damage. Rapid abrasion or cusp fracture can lead to pulp exposure. Developmental groove are susceptible to plaque accumulation and dental caries. Further this may extend to root and lead to periodontal inflammation. Talon cusps could present an obstacle for mandibular growth, holding the mandible back and causing class II malocclusions. On the radiographs of unerupted teeth, talons cusp may be misdiagnosed as supernumerary teeth and lead to unnecessary surgery.¹²

In case of finding a talons cusp, panoramic X-rays are recommended to exclude other abnormalities like odontomes or supernumerary teeth. In cases of occlusal interferences, it is recommended to eliminate the interference through gradual reduction over a period of several months to avoid pulpal exposure and with application of desensitizing agent. Deep developmental groove should be cleaned of plaque and debris and prophylactically sealed to prevent food lodgment and subsequent caries.¹²

The vitality of the pulp-dentin complex plays an important role in the maintenance of a functional dentition.¹³ The

uniqueness about present article is that both the cases of large type I talons cusp were managed conservatively by selective grinding and fluoride varnish application followed by sealant application. The daily rate of reparative dentin formation after operative procedures varies with time. In monkey's teeth, the dentin has been reported to form at a rate of 2.9 mm to 4.0 mm daily. In humans, the average daily reparative dentin formation has been reported to be 2.8 mm for primary and 1.5 mm for permanent teeth.^{14,15} Studies have revealed that reparative dentin is thicker after 8 weeks than at a 5-week period. Additionally, it is also proportional to the amount of remaining dentin thickness.^{14,15} Hence, in the reports presented here, selective grinding of talons cusp has been carried out at 6 to 8 weeks interval over a period of 9 months. Patients did not report any sensitivity or other pathology. Further, the cases have been followed up over a period of one year and intraoral periapical radiograph was taken for both the patients to determine any adverse effects if any, arising out of conservative management. Clinically, no discoloration or any sign of dental caries was seen. Radiographically, both the teeth appeared normal and no periapical changes were observed (Figs. 2b and 4b).

CONCLUSION

Talons cusp is a developmental anomaly of anterior teeth that can cause number of clinical problems. Early diagnosis and treatment are recommended to avoid complications. In present case, conservative management of both the cases had lead to successful outcome. So whenever possible, conservative treatment should be followed, in turn maintaining healthy pulpal and periodontal status. Gradual cuspal grinding could be one of the important methods in management of talons cusps.

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