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THE PRESENTATION OF TUBERCULATED INCISORS [TALON CUSP]- A REPORT OF THREE CASES

¹ Umamaheswari.N

²Baby john

³Balaprasana kumar

¹ Senior Lecturer ² Professor ³ Professor

^{1,2,3} Department of Pedodontic and Preventive Dentistry, J.K.K.Nataraja Dental College and Hospital, Komarapalyam, Namakkal Dist – 638183

ABSTRACT

The talon cusp or dens evaginatus of anterior teeth is a relatively rare dental developmental anomaly characterized by the presence of an accessory cusp like structure projecting from the cingulum area or cementoenamel junction. It commonly occurs in either maxilla or mandibular anterior teeth in both the primary and permanent dentition .This article reports three cases of talon cusp and its management.

KEY WORDS : Talon, Dens evaginatus, Occlusal interference.

INTRODUCTION

Variation of teeth has been an enduring interest to the Pediatric dentist. No two teeth are alike. The day to day variation of teeth we see is normal. It is the odd peculiar and strange group of teeth to which we focus our attention here, are called anomalies. Some describe them as developmental disturbances recognizing that they are best understood from a developmental view point. They are the extreme variations from the norm .Some variation, especially the developmental during morphogenic stage disturbances are curiosities in clinical practice. One such variation is dens evaginatus or talon cusp, so named because it shape resembles an eagle's talon is an uncommon dental anomaly that occurs as an accessory cusp like structure projecting from the cingulum area or cementoenamel junction of maxillary or mandibular anterior teeth in either the primary or permanent dentition¹. This evagination is often described as a nodule or tubercle, shaped as a cylindrical cone with the sharp point or a raindrop. Synonyms of talon cusp are dens evaginatus, interstitial cusp, tuberculated incisor, odontoma of axial core type, evaginated odontoma, occlusal anomolous tubercle and supernumerary cusp. It occurs with the frequency of 0.04 -105%, but etiology remain unknown.

The majority of the reports about talon cusp show that the permanent dentition has been involved three times more often than the primary dentition predominently 65% occur in males².

Maxillary teeth [94%] are the most commonly involved which includes the maxillary lateral incisors [55%], followed by maxillary central incisors [33%]. Most of the cases are unilateral, but one fifth of the cases are bilateral¹.

The talon cusp is composed of normal enamel, dentin and varying extension of pulp tissue. Based on the degree of their formation and extension , the anomaly can be classified as –talon, semi talon and trace talon³⁻⁵. Later it was modified as type1:major talon, type2:minor talon and type3: trace talon⁶. Majority of the cases reported in the literature indicate talon cusp as an isolated anomaly however it may be associated with other somatic and odontogenic abnormalities⁷. This article reports three unusual cases of talon cusp and its management.

Case report 1

A five year old girl presented to the clinic complaining of decay in the upper front teeth. On clinical and radiographic examination, caries in relation to maxillary central incisors (Fig.1) and a talon tubercle [type1: major talon] existing on maxillary left deciduous central incisor (Fig.2 and Fig.3) had been determined. There was no positive findings for systemic condition and other members of



her family did not have such a dental abnormality. The caries was excavated and restored with composite resin **(Fig.4)**. The talon cusp did not cause any occlusal interference and there was not any pathological change.

Case report 2

A five year four months old girl presented to the clinic with the complaint of malalignment of lower front teeth. On clinical and radiographic examination there was retained deciduous central incisors and lingually erupting mandibular permanent central incisors (Fig.5). Maxillary arch revealed a tuberculated projection [type 1-major talon]on the palatal surface of maxillary right deciduous central incisors (Fig.6 and Fig.7). In occlusion, the talon cusp was interfering with the alignment of mandibular right permanent central incisors. In order to correct the occlusal interference, retained deciduous mandibular central incisors had been extracted. After one week she came for the checkup, a raised circumscribed vesicle was noted in the lower lip After the extraction of deciduous incisors the long tuberculated projection caused the traumatic severance of lower lip resulting in mucocele(Fig.8). The treatment included removal of evagination followed by pulpotomy (Fig.9 and Fig.10) and excision of mucocele (Fig.11 and Fig.12)

Case report 3

An eight and half year old girl presented to the clinic with the complaint of malalignment in the upper front region. No relevant family/medical history was reported .General physical examination revealed that the patient was normal. On clinical and radiographic examination ,maxillary arch revealed cariously retained maxillary primary central incisors, pronounced cusp like structure [type1:major talon] projecting from the cingulum area of maxillary left permanent central incisors (Fig.13) and the maxillary right permanent central incisors exhibited double accessory tubercle [type3:trace talon] projecting directly from the cingulum area (Fig.14). Mandibular arch revealed lingually erupting left permanent lateral incisors (Fig.15). The treatment included extraction of retained maxillary primary central incisorsIn view of interference in occlusion, a selective cuspal grinding of the talon cusp was done followed by fluoride application and extraction of left deciduous lower canine was done to facilitate the alignment of lower permanent lateral incisors. The patient was advised a periodic evaluation to monitor the eruption of permanent teeth. (Fig.16).





Fig.16. Post operative view

Discussion

Talon cusp or dens evaginatus is a rare anomaly with multifactorial etiology including both traumatic and environmental factors. Various theory has been proposed, however most accepted one

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suggests that talon cusp might occur as a result of an outward folding of inner enamel epithelial cells and a transient hyperplasia of mesenchymal dental papilla^{8,9}. The high incidence of occurrence in the lateral incisors is due to compression of the tooth germ during morphodifferentiation stage between the central incisor and canine¹⁰. The sequelae of compression can either result in an outfolding of the dental lamina or an infolding as in dens invaginatus. Following affected teeth with a decreasing frequency are lateral incisors, central incisors ,canines and molars .In this report ,all the three cases exhibited talon cusp in relation to central incisors.

Hattab et al classified talon cusp as type 1 talon, type 2 semi talon and type 3 trace talon^{4,5}. After the reports of similar cusps being reported on the facial surfaces this classification was later modified by Stephen-Ying^{6,10,11} et al as :

Type 1,Major talon–a morphologically well delineated additional cusp that prominently projects from the facial or palatal \lingual surface of an anterior tooth and extend atleast half the distance from the cementoenamel junction to the incisal edge.

Type 2,Minor talon -a morphologically well defined additional cusp that projects from the facial or palatal\lingual surface of an anterior tooth and extends more than one forth ,but less than half the distance from the cemento enamel junction to the incisal edge.

Type 3, Trace talon -enlarged or prominent cingula and their variation, which occupy less than one forth the distance from the cementoenamel junction to the incisal $edge^{6}$.

The talon cusp described in case 1 and case 2 classified as Type 1[Major talon], case 3:Right central incisor [type 3 double trace talon], left central incisor Type1[Major talon].

Talon cusp may present as an asymptomatic and incidental dental finding during routine dental examination. The clinical problems associated with talon cusp include compromised esthetic s,irritation of the tongue during speech and mastication, accidental cusp fracture, pulpal exposure due to cuspal attrition, pulpal necrosis, peri apical pathology ,periodontal pocket, pain in periodontal ligament secondary to traumatic occlusion displacement of teeth, occlusal interference and possibility of temporomandibular joint pain,¹²⁻¹⁶ plaque retention in associated grooves may cause early caries.

Small talon cusp are asymptomatic and need no treatment, but large and prominent cusp may cause occlusal, pulpal, periodontal and esthetic problems and may require treatment^{13,14,15}. In case 1, none of the option were used for the talon cusp except the removal of decay in the proximal region and restored with composite resin because there were neither premature contacts nor occlusal interference.

In case of talon cusp in the primary dentition it is important to monitor regularly the occlusion during the eruption of a tooth with talon cusp as well as their opposing teeth in order to prevent potential cross bite or malposed teeth^{6,18}. In case 2, the talon tubercle on the maxillary right primary central incisor had resulted in occlusal interference with the lower erupting permanent central incisor, after the extraction of lower deciduous central incisor, the long projected tubercle combined with the accidental self inflicted lip biting resulted in mucocele. Taken these factors into consideration together with their parental concern to restore the natural baby teeth smile till the natural exfoliation time, pulpotomy had been preferred rather than extraction. The grinding of the tubercle had not been attempted, because radiograph clearly illustrate very thin enamel, dentin, highly placed pulp horn and the main aim is to remove the occlusal inference for the erupting left central incisors and avoid further traumatic severance of lower lip. Hence pulpotomy had been done in this case.

Following three procedures can be considered for the treatment of talon cusp if they are causing trauma and esthetic problems^{16,18}.

1. Periodic reduction of accessory cusp over a 6-8 week interval with application of fluoride as a desensitizing agent, so that it will avoid possibility of pulpal exposure and helps in reparative dentin formation. Fissure sealants or glass - ionomer cement to seal associated grooves as prophylactic measure .

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- 2. Complete reduction of cusp followed by calcium hydroxide pulpotomy for an immature tooth, if there is pulpal exposure.
- 3. Complete cuspal reduction followed by root canal treatment.

In case 3, First procedure that is sequential grinding had been opted for the talon cusp (type1) on the left central incisor and timely extraction of primary canine to achieve the mandibular anterior teeth alignment. Only prominent cusp may cause complication and hence requires early diagnosis and treatment to prevent clinical problems. Talon cusp are usually asymptomatic and needs no treatment¹⁸. In case 3 ,double trace talon (type3) on the maxillary right central incisors does not require any treatment.

CONCLUSION

It is essential to have a precise criteria for categorization and standardized terminology of an accessory cusp for future prevalence surveys and evaluation of its clinical significance. Despite occasional report of cases, to date, there has been no controlled clinical trial conducted to evaluate the effectiveness of particular type of treatment for this anomaly. The treatment varies with the circumstances of individual case ranging from selective grinding and prophylactically restoring the grooves to endodontic therapy. Some patient require no treatment at all, if esthetic appearance is satisfactory, function is within the normal limits, no caries or advanced attrition are present and if the anomalous cusp is not sharp to irritate the tongue or affect speech. Early recognition and continued monitoring, however is the key to proper treatment.

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Corresponding Author

Dr.UmaMaheswari.N Department of Pedodontic and Preventive Dentistry, J.K.K.Nataraja Dental College and Hospital P.B.No:151, Natarajapuram, NH-47(Salem to Coimbatore) Komarapalyam, Namakkal Dist – 638183, Tamilnadu. Ph.No: 91-984-076-4839 E-mail:umsipedo@rediffmail.com

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