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CBCT GUIDED MANAGEMENT OF FACIAL TALON CUSP: AN UNUSUAL CASE REPORT

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ABSTRACT

Dental anomalies are common congenital disturbances that occur either as isolated findings or as part of a syndrome. They can affect the morphology in both primary & permanent dentition. Any developmental variation in shape, size, number, structure and position can lead to

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disturbances in normal odontogenesis and presents a clinical impact on esthetics, function, speech, malocclusion and in predisposition to dental caries and periodontal diseases. This case report presents unusual appearance of facial talon cusp on maxillary right permanent central incisor. CBCT imaging was done to establish a definitive diagnosis and treatment planning to clarify the doubt for pulpal involvement.

KEYWORDS: Facial talon cusp, CBCT, developmental anomaly, talon cusp.

TRATAMIENTO GUIADO POR CBCT DE LA CÚSPIDE DEL TALÓN FACIAL: UN CASO INUSUAL

RESUMEN

Las anomalías dentales son alteraciones congénitas comunes que se presentan como hallazgos aislados o como parte de un síndrome. Pueden afectar a la morfología tanto en la dentición primaria como en la permanente. Cualquier variación en el desarrollo de la forma, el tamaño, el número, la estructura y la posición puede conducir a alteraciones en la odontogénesis normal y presenta un impacto clínico en la estética, la función, el habla, la maloclusión y en la predisposición a la caries dental y las enfermedades periodontales. Este caso presenta un aspecto inusual de la cúspide del talón facial en el incisivo central permanente del maxilar derecho. Se realizaron imágenes con CBCT para establecer un diagnóstico definitivo y planificar el tratamiento para aclarar la duda de la afectación pulpar.

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PALABRAS CLAVE: Cúspide del talón facial, CBCT, anomalía del desarrollo, cúspide del talón.

INTRODUCTION Dental abnormalities can appear in both primary and permanent dentitions, and they can vary in size, form, shape, structure, number and eruption.

Figure.1 Talon cusp is a shape abnormality found mostly in primary dentition that affects primarily central incisors and is more common in men (1).

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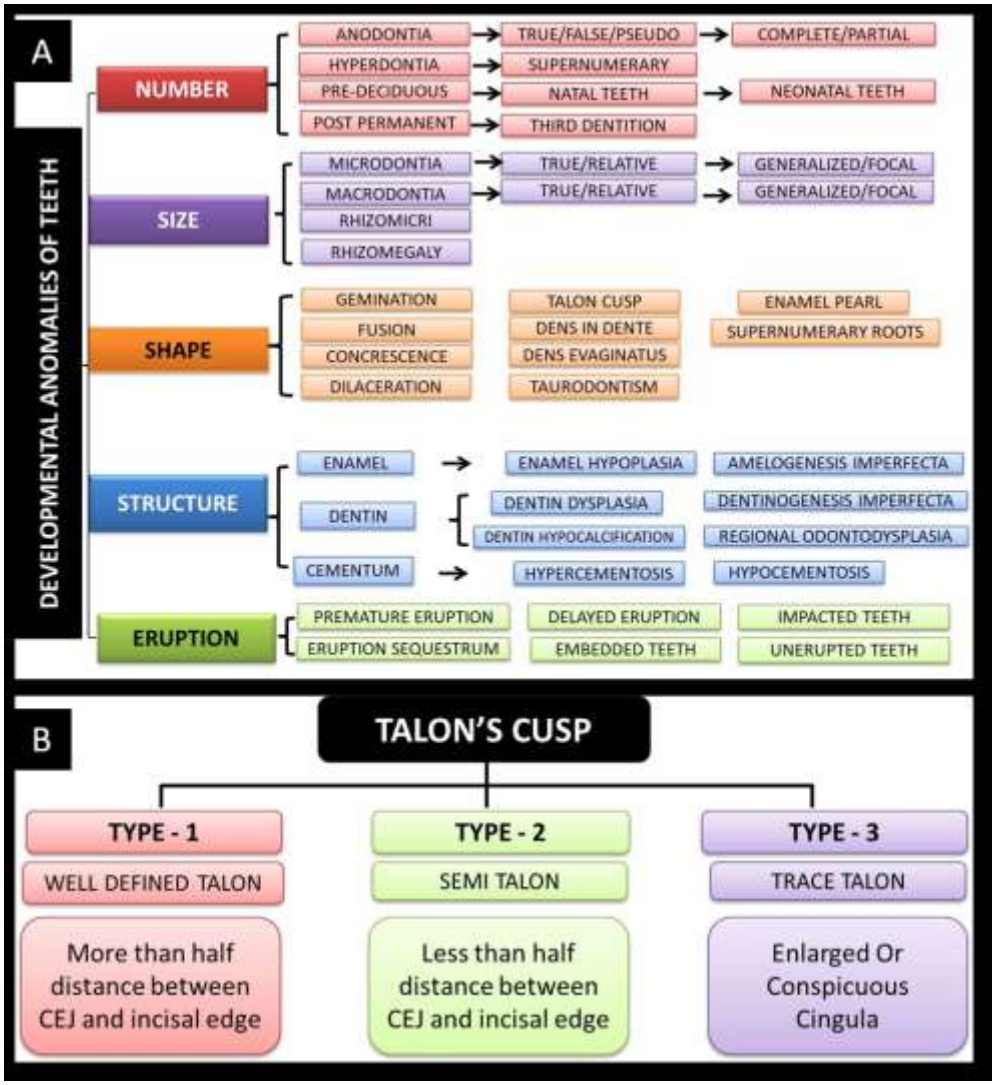

Figure 1: Developmental anomalies of teeth, B: Hattab's classification of Talon Cusp.

Mitchell was the first to explain the talon cusp in a woman's maxillary central incisor as "a process of horn-like morphology descending downwards to the incisal edge."

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The accessory cusp was given the term "talon" by Mellor and Ripa because of its similarity in form to an eagle's talon. (2,3) It is characterised as an accessory cusp when it appears in the palatal or lingual area of incisors, extending to the centre of the cemento-enamel junction and toward the incisal edge. Their lingual location is believed to be pathognomonic. To differentiate a talon cusp from an enlarged cingulum, another definition is that it must extend at least half the distance between the cemento-enamel junction and the incisal edge. (4) Talon cusps have an unclear aetiology, although it is considered to be a combination of genetic and environmental factors. They may develop as a result of the enamel organ outfolding or the dental lamina's hyperproductivity during development. (5,6) Talon cusps can appear alone or in combination with other dental anomalies such as peg-shaped lateral incisors, unerupted canines, mesiodens, or complex odontomes. Talon cusps can be found associated to Mohr syndrome, incontinentia pigmenti Achromians, and Rubinstein-Taybi syndrome. (7)

There are several reports of talon cusps located on the lingual side, but only a few cases have been documented with a facial talon cusp. (8,9,10,11,12,13) Only permanent dentition instances with facial talon cusp have been recorded. The maxillary lateral incisor is the most often affected tooth in the permanent dentition, followed by central incisors and canines. (1)

This article illustrates a permanent maxillary central incisor with facial talon cusps.

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CASE REPORT

A 9-year-old girl patient presented herself to a private dental clinic in Uttar Pradesh, India. Despite the fact that the child was not in pain, her mother voiced concern about the aesthetic appearance of child. Her medical and familial histories were irrelevant. An extra-oral examination revealed no abnormalities.

The intraoral examination revealed an accessory cusp in the permanent maxillary central incisor **Figure.2**, which was suspected of being a talon cusp. A talon cusp on the facial aspect of the tooth was discovered. There was no deep developmental groove at this juncture where the cusp blended seamlessly with the labial surface of the tooth. Because the cusp edges were smooth, there was no soft tissue irritation on the lip. The vitality test revealed no abnormalities. Occlusion was not hampered by the talon cusp. Dental examination revealed good oral hygiene.

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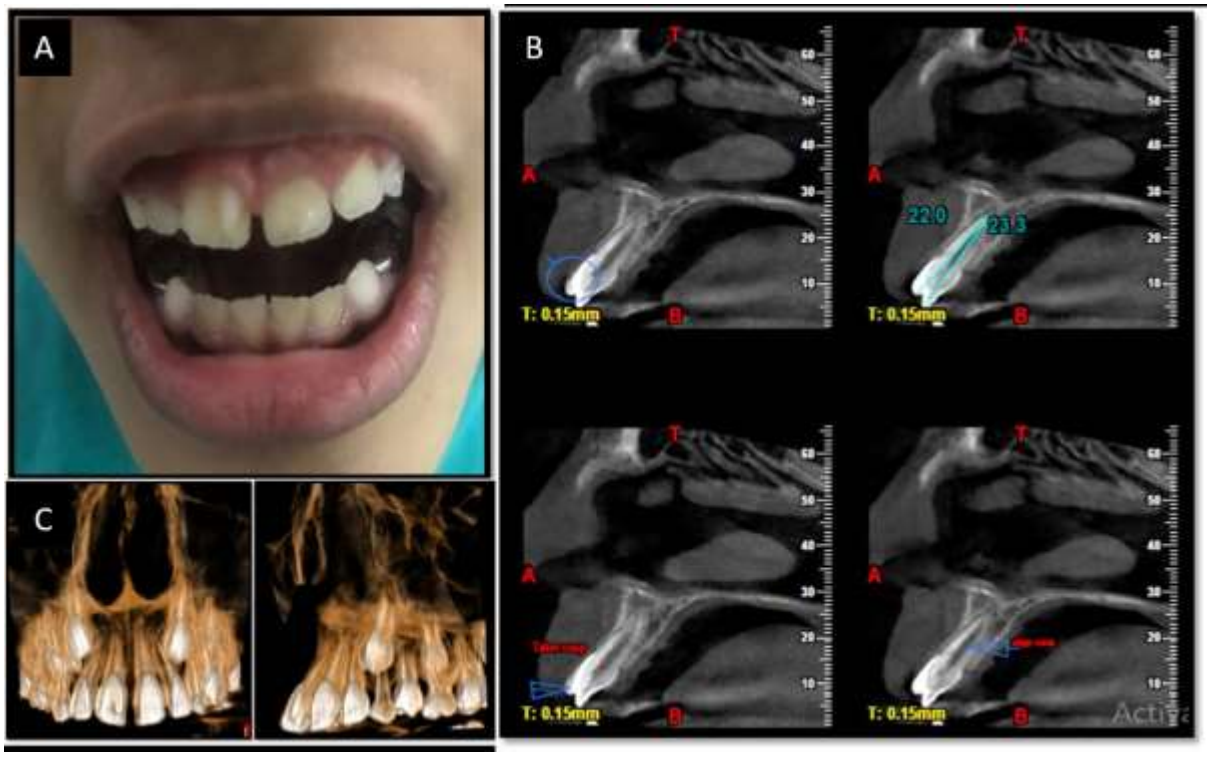

Figure 2: A: Clinical examination of facial talon cusp wrt 11. B: CBCT imaging of facial talon cusp – well defined radiopaque structure, conical in shape present on labial surface wrt 11. (CBCT scan New Tom 3DGO with FOV 6*6). C: CBCT 3D imaging of facial talon cusp – 3D construction image. (CBCT scan New Tom 3DGO with FOV 6*6)

A "V"-shaped radiopaque structure and three radiolucent globe regions were discovered on radiographic examination, but no link to the pulp chamber was found. With a well-organized amelodentinal structure, the talon cusp was well defined, spanning from the cervical third to two-thirds of the tooth crown. The pulpal expansion in the cusp, as well as morphological alterations in the permanent

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maxillary central incisor, were seen on radiographs.

To clarify the doubt for pulpal involvement and to establish the definitive treatment palnning, CBCT was planned. A CBCT scan of the involved teeth was performed (CBCT scanner New Tom 3DGO with selected FOV 6*6) with sections of 1.0 mm thickness. CBCT demonstrated the complex anatomy of tooth #11 and showed that the pulp chamber was distinct from the globes **Figure 2B & C.** A diagnosis of a type 1 talon cusp was made.

According to Hattab's classification [6], Type 1 talon cusp was diagnosed. **Figure.1B** Preserving pulpal vitality, satisfying aesthetic and occlusal needs, establishing caries prevention, and eliminating tongue discomfort are some of the treatment goals. In the present case, gradual reduction of the talon cusp was done followed by application of APF gel as the pulp canals were not associated with talon. However, the patient was recommended for regular follow-up.

DISCUSSION

Talon cusp affects both sexes and can be unilateral or bilateral in primary and permanent incisors. (14) The talon cusp is a clinically significant odontogenic abnormality, despite its rarity. (6,15) Although talon cusp generally occurs as a single occurrence, it has been observed to be more common in teeth associated with cleft palate, syndromes and other abnormalities. There was no documented aberrant systemic developmental condition in the instance reported here.

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A tooth with a broad talon cusp has an unattractive look. If the talon cusp is unerupted, it may seem on radiograph to be a compound odontome or a supernumerary tooth, leading to a misdiagnosis. The permanent dentition and the deciduous teeth have separate treatment methods. Because the primary talon-cusped tooth will exfoliate, there is no need for treatment unless it is for cosmetic reasons. In most cases, little talons do not require treatment. Pulp exposures have been described in the treatment of aesthetic or occlusal problems caused by cusps. (16,17) Because the cusp is placed over the affected tooth crown, tracing the pulpal configuration inside a talon cusp using radiographs is intrinsically challenging. (18) As a consequence, we decided to use computed tomography in distinct ways to examine the tooth. CBCT scans provide essential information about the anatomy of the teeth and can help with treatment planning. (19)

Simple preventive treatments, such as fissure sealing or composite repair, can be used in instances where deep developing grooves are present. In the present case also, gradual reduction of the talon cusp was done followed by application of APF gel. In rare situations, a full reduction of the cusp is required, followed by root canal therapy. (20)

CONCLUSION

Talon cusp is not a harmless dental abnormality, as it might pose a difficulty to clinicians during diagnosis and treatment planning. The size, presenting problems, and patient participation all influence how talon cusp is managed and treated. The goal

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of early talon cusp identification is to prevent local issues including caries, periodontal disease, and malocclusion.

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