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Permanent Mandibular Intrabony Canine Transmigration (Type I) - A Rare case report

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Dear editor-in-Chief,

A 10-year-old male patient reported to a private dental practice complaining missing tooth in the lower front region of the oral cavity. Patient was normally built with no any signs of syndromic or systemic disorders. Medical history was uneventful. On intra oral examination, patient exhibited mixed dentition in both maxillary and mandibular arch. In the mandibular arch, permanent left canine appeared to be missing. In order to rule out agenesis or impaction of mandibular canine, radiograph was made. On radiograph mandibular left canine was impacted and placed slightly in horizontal direction, with the crown crossing the dental midline (Figure 1). On the contralateral side, right canine was erupted in normal position. Patient did not exhibit any signs or symptoms related to this tooth. Based on literature search the condition was diagnosed as transmigration and classified as type I as the crown of the canine crossed the midline (Figure 1). Considering patient's age and clinical features possible treatment options were explained to the patient. But patient parents did not show positive response for taking any treatment for this condition. Therefore, patient was kept under observation.

Figure 1: Occlusal Radiograph Showing Impacted Type I Mandibular Left Canine Transmigration Part of the Crown Crossing the Dental Midline (Yellow Line) Can Be Seen.

Discussion

Intraosseous migration or crossing of an unerupted dental tooth structure across the dental midline is termed as transmigration. Transmigration is exclusively a rare dental phenomenon specifically involving mandibular canines and rarely encountered during clinical practice [1]. However, there are some cases showing in the maxillary canines too. This dental phenomenon was first given by Ando et al in 1964. The prevalence of this infrequent dental finding in the general population varies from 0.1% to 0.41%, more frequent in females compared to males [2]. These teeth remain asymptomatic most of the time and routinely diagnosed on radiographs. The exact etiology for this occurrence is not known however, various etiological factors like environmental, genetic and local factors have been suggested in the literature. Displacement of the dental lamina to an abnormal position during embryogenesis can lead to an abnormal eruptive path leading to transmigration. Another possible etiologic factor suggested is that during developmental stage of the tooth apex due to rich blood circulation and active alveolar bone formation, there is possibility of distant migration.

Other possible local etiologic factors reported in the literature are presence of cysts, abnormal eruption patterns like ectopic eruption, crowding or spacing, premature loss of primary teeth, over-retention of primary canines, presence of odontomas and anomalies of the lateral incisors [3].

Along with transmigration of canines, other dental anomalies also exist such as impacted teeth, tooth agenesis and supernumerary tooth. Canine transmigration usually diagnosed clearly on radiographs especially panoramic radiographs. In intraoral periapical radiographs they usually not seen as the impacted and transmigrated canine may be placed far from their normal position within the dental arch. Various classifications have been given by different author based on their position within the dental arch. The most frequently used classification for recording transmigration is the classification given by Mupparapu in 2002. Mupparapu studied 127 cases transmigrated canines

and developed a classification system for transmigration. This classification constitutes 5 types of transmigration [4]. Type I – canine placed mesio-angular position, with the crown crossing the mandibular midline, seen either labial or lingual to the incisors. Type II – a horizontally impacted canine, seen near inferior margin, below the apexes of mandibular incisors. Type III – an erupting canine seen mesial or distal to the opposite canine. Type IV – horizontal impaction of canine seen near the mandibular inferior margin, placed below the apexes of the opposite premolars or molars. Type V is the vertically placed canine in the midline but with its long axis crossing the midline. Among these 5 types, type I is the most frequently encountered type and type V is the least reported type in the published reports [4]. In the present case, the impacted canine exhibited characteristics of type I transmigration. Hence the case was diagnosed as type I transmigration.

Association of transmigrated permanent canines along with other dental anomalies or malformation have been reported in the literature. The author of this paper has published presence of multiple anomalies like teeth agenesis, supernumerary tooth, pyramidal shaped roots in molars and type I canine transmigration in a non-syndromic Indian female patient. There is also a report of congenital agenesis of bilateral mandibular permanent incisors along with type I canine transmigration in Indian male patient [5]. This emphasizes the presence of transmigration anomaly in Indian ethnic group and also strongly recommends for the future prevalence studies required in the Indian population [6].

Clinically this condition can be diagnosed by observing missing canine found during intra oral examination. Suspecting the transmigration of canine patient should be subjected to radiographic examination. Instead of going for IOPA radiographs an orthopantomograph should be taken to rule out presence of transmigration. Recently advanced imaging techniques like CT scans, Cone-beam computed tomography images are used to diagnose the exact position of the transmigrated canine. These advanced techniques provide a 3-dimensional picture of the impacted and transmigrated canine with in arch along with its relation with the adjacent alveolar structure. In the case discussed here although panoramic radiograph could not be taken, but on occlusal radiograph the canine transmigration was clearly evident [7].

Regarding treatment of transmigration, different treatment options are suggested and have been tried for different types of transmigration. They include surgical removal of the canine, auto-transplantation of the canine, surgical exposure along with orthodontic traction of canine to its normal position. The complications seen following with this treatment are damage to the neighbouring tooth structures, chances of cyst formation and tooth going for non-vital [1,8].

Apart from third molar, canines are the second most teeth going for impaction and physiological migration within the oral cavity. Various case reports have been published in the literature pertaining to Indian ethnicity. Therefore, awareness about its prevalence, clinical symptoms, diagnosis and possible treatment objectives is essential among all clinicians to render proper treatment to the patient [5-9].

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