Horizontal transmigration of mandibular canine with bilateral enostosis between the premolars - A case report.

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Abstract

Aim & Objective: To report a case of transmigrated mandibular canine associated with enostosis between the premolars bilaterally.

Case description: A 21 year old female patient reported with a chief complaint of missing lower teeth. On examination, the patient had bilaterally missing permanent canines with no history of extraction and showed no evidence of deciduous canines. Radiographs revealed horizontal impaction of bilateral mandibular canines with transmigration of right canine to the apex of left lateral incisor associated with enostosis between the premolars bilaterally.

Conclusion: Intraosseous tooth migration is a very rare dental ectopia that involves lateral incisors, second premolars and canines in the mandible but canine is the only tooth that migrates across the midline which could result in resorption or displacement of other teeth. Many etiologic factors have been put forward to explain the causes of transmigration including cysts and tumors. Identifying this is important to prevent damage to oral structures and to avoid complications during surgical procedures.

KEYWORDS: canine, horizontal impaction, transmigration, enostosis.

Introduction

Intraosseous migration of unerupted teeth is a rare natural condition wherein the tooth usually shows horizontal movement and impaction. It occurs more in mandible and involves primarily the second premolars or the canines. When the second premolar is affected it is always found distal to its normal position, the origin of which is obscure and usually no treatment is recommended (1). Intraosseous migration involving the canine is called as transmigration and the affected canine moves mesially across the mandibular symphysis to the opposite side of the mandible. Enostosis or bone island is a focus of compact bone located in cancellous bone which has a congenital or developmental origin and is usually an accidental finding in radiographs when assessed for other lesions. Here we report one such case of horizontal transmigration of canine which was associated with bilateral enostosis/idiopathic osteosclerosis between the premolars.

CASE REPORT

A 21 year old female patient reported with a complaint of missing lower teeth. On clinical examination, the patient had bilaterally missing permanent mandibular canines with no history of extraction (Fig. 1). All the other teeth were present except for the third molars bilaterally in the maxillary and mandibular arch. Radiograph revealed impacted mandibular canines; the right canine showed transmigration till the apex of the left lateral incisor with incomplete root formation whereas the left canine was found coronal to the right canine with the cusp tip just crossing the midline. Both the teeth were rotated with the lingual surface facing the apices of the mandibular incisors (Fig 2). In between the left premolars there was an irregular radiopacity found in the mesial aspect of the second premolar.
IOPA (Fig 3) was taken for the right premolar region which showed the presence of a well localized radiopaque lesion about 1x1 cm present distal to first premolar in the apical third. Based on the radiographic appearance and the asymptomatic nature of the lesion, a diagnosis of enostosis was given; however differential diagnosis of an odontome was also considered. The patient also gave history of congenitally missing canine in her elder sibling. Otherwise the patient was asymptomatic with a normal medical history.

DISCUSSION

Earlier terms such as aberrant, impacted, anomalous, malpositioned, displaced, misplaced, ectopic, transposition, maleruption, migratory tooth had been used to describe transmigration- the term given by Ando et al (2,3). Tarsitano et al. defined transmigration as a phenomenon in which an unerupted mandibular canine migrates crossing the midline. Since the report of the initial cases in 1950’s, many cases associated with unilateral canine transmigration in the mandible have been reported either in the horizontal or vertical axis. So far, around 160 cases have been reported which includes both unilateral and bilateral transmigration. The first case of maxillary canine transmigration was reported by Aydin et al. in 2003 (4).

Various hypotheses were put forward to explain the increased prevalence of transmigrated mandibular canine which includes rotation of tooth buds, larger cross-sectional area of the anterior mandible, abnormal displacement of the dental lamina, premature loss of deciduous teeth and subsequent occupation of the space by adjacent teeth, osteodental discrepancy, unfavorable arch length, retention of deciduous canine, crowding, excessive length of the crown of mandibular canines and long eruption path of canine tooth germs.
(2,3,5). Vichi and Franchi suggested that agenesis of the adjacent canines may favor retention of the primary canines and the excess space in the arch results in absence of correct guide for eruption. They suggested that proclination of the lower incisors; increased axial inclination of the unerupted canine could play an important role in the mechanism of transmigration (6). Bennett emphasized that a very small obstacle such as a root fragment could divert a tooth from its normal eruptive path (3) Marks and Schroeder suggested that a regional disturbance in the dental follicle may lead to local defective osteoclastic function with an abnormal eruptive pathway being formed (7). A role of genetics is also considered. Related pathologies which favor transmigration include supernumerary teeth, odontoma, dentigerous cyst, other impactions and Gardner’s syndrome. (8,9,10,11).

Mandibular canine impactions occurs 20 times less commonly than that of maxillary canine at a frequency of 0.8–2.8%. The shorter distance between the roots of maxillary incisors and floor of the nasal fossa, restriction of tooth movement by roots of adjacent teeth, maxillary sinus and mid-palatal suture act as barriers preventing the transmigration in the maxilla (5,9). Transmigration occurs more frequently in females with ages varying from 8 to 69 yrs. Transmigration is more common in the mandible and is usually unilateral-the majority of them involving the left-sided canines. Bilateral migration is infrequent occurring in only 9 to 14% of all transmigrant canines and most of them lie horizontally.

Absence or delayed eruption of permanent mandibular canines or over-retained primary canines is usually suggestive of an impacted or transmigrated canines which can sometimes be associated with agenesis of lateral incisors and premolar. Most transmigrated canines are asymptomatic but resorption of roots, tilting of adjacent teeth, neuralgic symptoms or migration to coronoid process causing pain and discomfort, follicular cyst formation and chronic infection with fistulization have also been reported (12).

Enostosis is a mass of proliferating bone within a bone or a morbid bony growth developed within the cavity of a bone or on the internal surface of the bone cortex (13). It is also called as idiopathic osteosclerosis (10), calcified island in medullary bone, sclerotic bone island, focal sclerosis, hamartous cortical bone, endosteoma, endosteosis, osteopoikylosis etc. Mirra et al (14) referred to it as “misplaced hamartous cortical bone” and this usually occurs as a localized, non expansile radiopacity.

Suggested causes include retained primary root fragments, bone deposited in response to unusual occlusal forces or anatomic variations analogous to tori. Recent investigations suggest that it represents areas that failed to resorb during enchondral ossification (Greenspan et al 1991) (15). Rarely enostosis are familial in origin.

The prevalence of enostosis ranges from 2.3% to 9.7% and is usually an incidental finding with a preference for pelvis, femur and other long bones (17). In the jaws, studies have reported a predilection for the mandible in the premolar- molar region. Idiopathic osteosclerosis should be distinguished from condensing osteitis or other alveolar bone related radiopacities such as periapical cemental dysplasia and ossifying fibroma. Occasionally it may be mistaken for metastases, osteoid osteoma, sclerotic osteosarcoma, calcified enchondroma, bone infarct or other lesions. Enostosis in the jaws are usually asymptomatic but rarely cause changes in the adjacent tooth position, pain, numbness and difficulty in orthodontic treatment. Accurate identification of the alteration is crucial in the differential diagnosis of other more significant lesions. Usually enostosis requires no treatment unless it shows a gradual increase in size which requires biopsy.

**TREATMENT**

Treatment of transmigration depends on canine’s radiographic position and clinical symptoms of the patient. Treatment options include surgical removal, transplantation and surgical exposure with orthodontic alignment and regular follow up (2,8,10,11). Surgical extraction is the favored treatment when the patient is asymptomatic with associated abnormalities such as cyst, neuralgia, resorption or displacement of adjacent teeth, periodontal disturbances, prosthetic problems or other possible foci of infection are present. If the patient is asymptomatic, the tooth can be left in place with regular follow-up to monitor movement of the teeth. If the mandibular incisors are in a normal position and space for the transmigrated canine is sufficient, transplantation may be undertaken.

In our patient, canine transmigration was an independent condition with no associated pathologic lesions except for the enostosis present between the premolars; it could have had a minimal or no effect in accelerating the transmigration process. So, considering the age and the asymptomatic nature of the condition, regular follow up of the patient was suggested without any surgical intervention.

**CONCLUSION**

Though literature had shown transmigrant canines both in the mandible and the maxilla with a higher frequency in mandible, no specific etiology was found to explain the nature of this anomaly particularly in canines. Rarely, pathological lesions have been found to be associated with it; they are mostly found in the place of the tooth or are associated with canines. Reports of occurrence of bilateral enostosis associated with transmigrated teeth have not been reported. Identifying the transmigration in earlier stages is
important to prevent damage to the other oral structures and also to avoid complications during treatment.

REFERENCES


