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Bilateral transmigration of impacted mandibular canines: report of two cases and review

Transmigração bilateral de caninos inclusos mandibulares: relato de dois casos e revisão

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Abstract

Objective: To present and discuss a rare case of transmigration of bilateral mandibular canines. To review the literature and to discuss treatment. **Discussion**: Transmigration of the canine tooth is an uncommon phenomenon, often undetected in routine dental examinations. The less common finding is type 5 (the canine is positioned vertically in the midline with the long axis of the tooth crossing the midline) and the least common phenomenon is bilateral occurrence of type 5. There is no known etiology for its occurrence. **Conclusion**: Transmigration of mandibular canines across the midline is a rare condition. An even less common finding is bilateral transmigration of canines across the midline.

Keywords: Canine teeth. Transmigration. Bilateral transmigration. Tooth impaction. Tooth migration.

Resumo

***Objetivo**: Apresentar e discutir um caso raro de transmigração bilateral de caninos mandibulares; revisar a literatura; e discutir tratamentos. **Discussão**: A transmigração de caninos é um fenômeno incomum que frequentemente não é detectado no exame clínico de rotina. O achado menos comum é o tipo 5 (canino posicionado verticalmente com o seu longo eixo cruzando a linha média) e o fenômeno menos comum é a ocorrência bilateral do tipo 5 de transmigração. A sua etiologia é desconhecida. **Conclusão**: A transmigração de caninos mandibulares cruzando a linha média é rara e um achado ainda menos comum é a transmigração bilateral de caninos cruzando a linha média.*

***Palavras-chave**: Dentes caninos. Transmigração. Transmigração bilateral. Inclusão dentária. Migração dentária.*

Introduction

Although migration of teeth is a well-documented ectopia, pre-eruptive migration of a tooth across the midline of the jaw (termed "transmigration"), is a rare phenomenon. There are currently at least 50 published reports on canine transmigration, with the first reported in 1951 (1). Canine impaction is more prevalent in the maxilla than in the mandible, but canine transmigration is more frequent in the mandible. In the general population, the prevalence of mandibular canine impaction ranges from 0.35 to 0.44 percent (2). An even less common finding is the migration of a mandibular canine from its normal position to the contralateral hemiarch, crossing the midline. This phenomenon is known as transmigration, and it occurs almost exclusively with mandibular canines (3). Studies have suggested that transmigration of canines is a rare phenomenon with an prevalence of about only 0.31% (4).

Tarsitano et al. (5) defined transmigration as a phenomenon in which an unerupted mandibular canine migrates, crossing the mandibular midline. In 1985, Javid (6) modified Tarsitano's definition, adding that one-half or more of the length of the tooth was required to cross the midline. In 2006, Auluck et al. (7) suggested that the actual distance of canine migration across the mandibular midline is less important than the tendency of the canine to cross the midline. Joshi (8) felt that the tendency of a canine to cross the barrier of the mandibular midline suture is a more important consideration than the distance of migration after crossing the midline.

Report of cases

Case 1

A 39-year-old lady was referred to the Yara Dental Clinic for management of upper left primary canine tooth. On inspection, the upper left permanent canine was absent. The panoramic radiograph revealed that the upper left canine was impacted, as well as both mandibular canines were impacted and transmigrated to the midline; both canines were "kissing" each other with labial surfaces (Figure 1). History did not reveal any symptom of pain or sensitivity in the region. There was no history of tooth extraction in the region of the unerupted teeth. Nothing was felt on palpation in the midline. The diagnosis was bilateral mandibular canines transmigration.

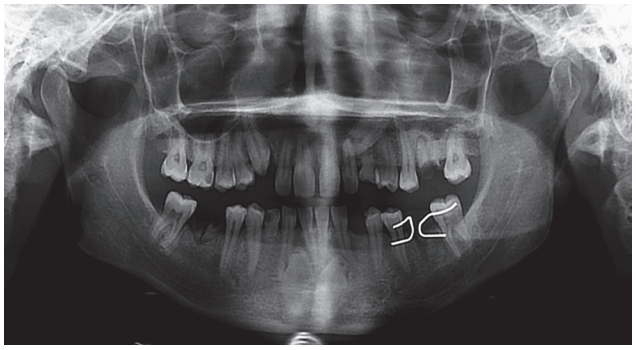

Figure 1 - Both lower canines have crossed the midline and "kissed" each other with labial surfaces

Case 2

A 15-years-old female patient was referred by a psychiatrist to the Peramerd Dental Specialty Centre, Department of Oral and Maxillofacial Surgery, in January 2010 by his psychiatrist, with a complaint of an ugly smile. There are no relevant family history of dental abnormalities. The patient was unhappy with her smile and complained that she was "isolated from her friends".

Inspection revealed that both mandibular canines were erupted ectopically in the midline. Radiograph examination revealed the ectopic eruption of both canines in midline. Our diagnosis was bilateral canines transmigration.

Figure 2 - Midline eruption of both canines

Figure 3 - Both lower canines have crossed the midline and kissed each other with labial surfaces

Discussion

Dental transmigration is an infrequent eruptive disorder that happens almost exclusively to mandibular canines. The rarity of transmigrant canines makes it difficult to establish their prevalence, and most cases documented in the literature correspond to isolated cases (9). Migration of a canine to the contralateral side generally is a unilateral phenomenon, while left-side transmigration occurs more frequently and in mesial direction (2, 10). Migration of impacted tooth is believed to occur during the immature tooth apex period. It has been reported that distant migration is possible in the developmental stage of the tooth apex due to rich blood circulation and active alveolar bone formation (10). Transmigration of canines has been reported more frequently in females than males in the ratio 1.6:1 (11). The left canine is more involved than the right canine (4). Joshi (8) observed four cases of bilateral transmigration among a collection of 28 cases. The larger cross-sectional area of the anterior mandible compared with the anterior maxilla may be a reason for the higher frequency of mandibular canine transmigration (2).

Transmigration of maxillary canine is uncommon due to the shorter distance between the roots of maxillary incisors and the floor of the nasal fossae and restriction of the path of tooth movement by the roots of adjacent teeth, the maxillary sinus and the mid-palatal suture, which probably act as a barrier (12).

A specific etiology of this anomaly is not known, but traumatic factors, heredity, the long eruption path of canine tooth germs, premature loss of primary teeth, filling of this space by an adjacent tooth, disharmony of tooth-size, unfavorable alveolar arch length, over length of crowns can be the causative factors (9) and odontomas (13). From the data published, it is possible to define various behavioural patterns of the transmigrated mandibular canines. In particular, Mupparapu (14) used five criteria to classify the transmigrated canines, as follows:

- Type 1: The canine is impacted mesioangulary across the midline, labial, or lingual to the anterior teeth with the crown portion of the tooth crossing the midline.
- Type 2: The canine is horizontally impacted near the inferior border of the mandible belowthe apices of the incisors.
- Type 3: The canine has erupted either mesial or distal to the opposite canine.
- Type 4: The canine is horizontally impacted near the inferior border of the mandible below the apices of either premolars or molars on the opposite side.
- Type 5: The canine is positioned vertically in the midline with the long axis of the tooth crossing the midline.

Qaradaghi (15) added a 6th type , which is defined as "the parallel migration of both canines at the same rate to the contralateral site". In other words, it is acombination of type 1 and type 2.

Mupparapu's type 1, followed by type 2, is the most frequently occurring pattern. Types 3 and 4 occur less frequently, while type 5 is the least frequent (14). Pattern 5 corresponds to our case, which is the least frequent type and is rarer than the Mupparapu's type 5 because bilateral mandibular canines were transmigrated. The bilateral transmigration cases presented in this study indicates the critical role of genetic determination.

What is surprising in these two cases is that the same teeth in both facial halves are involved in bilateral transmigration at the same speed and rate, migrated by the same distance, at the same horizontal level and "kissed" each other by the same surface. This fact cannot be explained on the basis of random germ movement, trauma or crowding in the dental arch and emphasize the role of a vague control mechanism rather than the etiologies which mentioned previously in the literatures. We can name this case as "kissing

canines" or "mirror image" canines which is defined as the migration of both canines at the same rate and on the same horizontal axis parallel to each other and meeting each other at the midline.

With respect to the treatment of these canines, ideally interceptive treatment should be carried out, although it is extremely difficult, if not impossible, to predict the appearance of this anomaly. For interception, it is best to detect patients presenting characteristics which are most related to transmigration when they are between 8 and 9 years old, and these patients should undergo a clinical radiology examination so that action can be taken quickly (8).

The literature describes different options for managing transmigrant mandibular canines. Treatment, in part, depends on the canine's radiographic position and clinical manifestations: surgical extraction (16), transplantation of the canine (17) and orthodontic treatment (18). When patients choose extraction, clinicians need to take the innervation of the tooth into account, since the innervation originates from the original side. Consequently, anesthesia of the nerve on the original side is indicated (19).

Some clinicians prefer not to treat an impacted canine if symptoms are absent or when there is a serious risk of damaging important anatomical structures. In these cases, clinicians must perform periodic clinical and radiologic follow-up visits to ensure early detection of potential pathology associated with an impacted canine (3). In our first case the canines had migrated to the midline, respectively, but as the patient was asymptomatic for a long period of time, the follow up was planned. In the 2nd case we extracted both canines because the patient was unhappy with her smile and she returned happily to her friends.

Conclusion

We can name this case as "kissing canines" or "mirror image canines" which is defined as the migration of both canines at the same rate and on the same horizontal axis parallel to each other and meeting each other at the midline.

Conflict of interest

The author declared that there is no conflict of interest in the present manuscript

Informed consent statement

The patients signed informed consents, kept in the records of the Institution.

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