



First case of bimaxillary transmigration of impacted canines: report of a rare case and review of literature

Primeiro caso de transmigração bimaxilar de caninos impactados: relato de um caso raro e revisão da literatura

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Abstract

Objective: To present a rare case of bimaxillary transmigration of impacted canines. **Discussion:** Pre-eruptive migration of a tooth across the midline is termed transmigration. Transmigration typically affects the mandibular canines, but occurs rarely in maxillary canines as well. Transmigration of mandibular canine across the midline is rare. An even less common finding is transmigration of maxillary canine across the midline. The least common finding is bimaxillary occurrence of canines transmigration. **Conclusion:** Migration of both upper and lower canine teeth on the same side across the midline is called bimaxillary transmigration, which is a very rare phenomenon of oral and maxillofacial complex, often undetected in routine dental examination, neither clinical, nor periapical radiographic examination.

Keywords: Bimaxillary Transmigration. Canine teeth. Tooth impaction. Tooth migration.

Resumo

Objetivo: Apresentar um caso raro de transmigração bimaxilar de caninos impactados. **Discussão:** A migração pré-eruptiva de um dente através da linha média é denominado transmigração. A transmigração tipicamente afeta os caninos inferiores, mas pode ocorrer raramente em caninos superiores também. Transmigração de canino inferior através da linha média é rara, porém um achado ainda menos comum é a ocorrência de transmigração bimaxilar de caninos. **Conclusão:** A migração de caninos superiores e inferiores no mesmo lado e cruzando a linha média é chamada de transmigração bimaxilar, um fenômeno raro de sistema

bucal e maxilofacial, frequentemente diagnosticado em exame clínico odontológico de rotina ou exame radiográfico periapical.

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

Introduction

While canine impaction is more prevalent in the maxilla than in the mandible, canine transmigration is more frequent in the mandible. In general population, the incidence of mandibular canine impaction ranges from 0.35% to 0.44% (1). An even less common finding is the migration of a mandibular canine from its normal position to the contralateral side of the arch, crossing the midline. This phenomenon is known as transmigration, and it occurs almost exclusively with mandibular canines (2).

Tarsitano et al. (3) defined transmigration as a phenomenon in which an unerupted mandibular canine migrates, crossing the mandibular midline. Javid (4) modified Tarsitano's definition, adding that at least one half or more of the length of the tooth is required to cross the midline. Joshi (5) considered the tendency of a canine to cross the barrier of the mandibular midline suture is a more important parameter than the distance of migration after crossing the midline.

Case report

A 19-year-old boy was referred to Piramerd Dental Specialty Centre for dental rehabilitation, in November 2011 by his physician, with a complaint of improper chewing and gastric problem.

History revealed the extraction of lower anterior teeth and upper right central incisor at mixed dentition period between 8 to 10 years old. Inspection revealed multiple missed teeth in both arches. The panoramic radiograph revealed both maxillary and mandibular canines on the left side to be impacted. The unerupted maxillary canine was impacted mesio-angularly and its tip crossed the midline. In addition alignment of incisors were disturbed. The unerupted mandibular canine was impacted mesio-angularly and crossed the midline and its tip taught the mesial surface of the crown of the contralateral canine tooth. And its root crossed the midline as

shown in Figure 1. Our diagnosis was bimaxillary canine transmigration.

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 (6). Migration of a canine to the contralateral side generally is a unilateral phenomenon, while left-side transmigration occurs more frequently and in mesial direction (1, 7). 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 (7). Transmigration of canines has been reported more frequently in females than males in the ratio 1.6:1 (8). Joshi (5) observed four cases of bilateral transmigration among a collection of 28 cases and Qaradaghi (9, 10) recorded three cases in two separate published articles. 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 (1).

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 (11). 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 (6) and odontomas (12). From the data published, it is possible to define various behavioural patterns of the transmigrated mandibular canines.



Figure 1 - Panoramic radiograph shows both upper and lower impacted canines at the left side have crossed the midline

Classification of mandibular transmigrated canines:

- Type 1: The canine is impacted mesio-angularly 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 below the 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 (13). Qaradaghi (9) recorded two cases of bilateral vertical transmigration of the canines to the midline and named as (Kissing canines).
- Type 6: It is defined as the parallel migration of both canines at the same rate to the contralateral sides. In other words, it is a combination of Type 1 and Type 2 (10).

In spite of the record of isolated cases of maxillary transmigrant canines (1, 2, 10), the rarity of maxillary transmigrant canines makes it difficult to establish their classification and the few cases

documented in the literature correspond to isolated cases.

Regarding the mandibular canine transmigration, Mupparapu's type 1, followed by type 2, are the most frequently occurring pattern. Types 3 and 4 occur less frequently, while type 5 is the least frequent (13). Pattern 1 corresponds to our case.

In our case, premature extraction of anterior teeth during root formation of the canines might be the cause of transmigration. What is surprising in this case is that both left canine teeth in both facial jaws were involved in bimaxillary transmigration by the same direction and (approximately) at the same rate and speed (if the upper one had not been restricted by the upper right lateral incisor), migrated by the same distance, at the same horizontal angulations. 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 mentioned previously in the literatures.

Conclusion

Migration of both upper and lower canine teeth on the same side across the midline is called bimaxillary transmigration, which is a very rare phenomenon of oral and maxillofacial complex, often undetected in routine dental examination, neither clinical, nor periapical radiographic examination.

References

1. Aydin U, Yilmaz H, Yildirim D. Incidence of canine impaction and transmigration in a patient population. *Dentomaxillofac Radiol.* 2004;33(3):164-9.
2. Aydin U, Yilmaz H. Transmigration of impacted canines. *Dentomaxillofac Radiol.* 2003;32(3):198-200.
3. Tarsitano J, Wooten J, Burditt J. Transmigration of non-erupted mandibular canines: report of cases. *J Am Dent Assoc.* 1971;82(6):1395-7.
4. Javid B. Transmigration of impacted mandibular cuspids. *Int J Oral Surg.* 1985;14(6):547-9.
5. Joshi MR. Transmigrant mandibular canines: a record of 28 cases and a retrospective review of the literature. *Angle Orthod.* 2001;71(1):12-22.
6. Camilleri S, Scerri E. Transmigration of mandibular canines: a review of the literature and a report of five cases. *Angle Orthod.* 2003;73(6):753-62.
7. Stafne EC, Giblisco JA. *Oral roentgenographic diagnosis.* 4th ed. Philadelphia: WB Saunders; 1975.
8. Peck S. On the phenomenon of intraosseous migration of nonerupting teeth. *Am J Orthod Dentofacial Orthop.* 1998;113(5):515-7.
9. Qaradaghi IF. Bilateral transmigration of impacted mandibular canines: report of two cases and review. *Rev Clín Pesq Odontol.* 2010;6(3):271-5.
10. Qaradaghi IF. Transmigration of impacted canines: a report of four cases and a review of the literature. *Hellenic Orthod Rev.* 2009;12(1-2):35-42.
11. Costello J, Worth J, Jones A. Transmigration of permanent mandibular canines. *Br Dent J.* 1996;181(6):212-3.
12. O'Carroll MK. Transmigration of the mandibular right canine with development of odontoma in its place. *Oral Surg Oral Med Oral Pathol.* 1984;57(5):349.
13. Mupparapu M. Patterns of intra-osseous transmigration and ectopic eruption of mandibular canines: review of literature and report of nine additional cases. *Dentomaxillofac Radiol.* 2002;31(4):355-60.

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