

Transmigration of mandibular canines: A review of literature

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Abstract

Introduction: Transmigration of mandibular canine is a rare entity and is defined as the phenomenon of an unerupted tooth crossing the midline. The exact cause is unknown and the transmigrated tooth usually is asymptomatic. However transmigration might compromise esthetics and occlusion. The current literature review is presented to draw attention towards prominent aspects of this anomaly in developing an understanding for managing such patients.

Material and Methods: Several electronic databases were searched. Hand searching was done to short list relevant articles. A total of 47 studies were initially retrieved out of which 35 relevant studies were selected for the review.

Results: Transmigration is a rare developmental anomaly and has been reported to affect the mandibular canines exclusively. Left side of the arch is reported to be more affected than the right and females show a greater prevalence.

Conclusions: Transmigration of mandibular canine is an uncommon phenomenon of unknown etiology that is usually symptom less. An in-depth evaluation of transmigration would be helpful to develop significant clinical management of the affected patients.

Keywords: Transmigration; impacted teeth; canine; unerupted teeth

Introduction

Transmigration of a tooth is a rare entity and is defined as the phenomenon of an unerupted tooth crossing the midline or when more than half of the impacted tooth has passed through the midline.^{1,2}

Failure of eruption of the mandibular canine is usually an atypical occurrence.³⁻⁶ An unerupted tooth infrequently migrates to a distant location, away from its parent site of development and eruption. The mandibular permanent canine is the only tooth reported to migrate across the midline.² The distance of the transmigrant canine as reported ranges from labial side of the incisor roots to a position below the distal root of the first molar on the contra lateral of the arch.^{7,8}

Material and Methods

The review of this literature was done based

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on the guidelines given in Pakistan Orthodontic Journal. Internationally published research literature, review articles and relevant citations were included. After the electronic literature search, a hand search of key orthodontic journals was undertaken to identify recent articles. The review was restricted to articles dealing with transmigration of canines. Exclusion criteria included articles that did not follow the objective of this review and articles in a language other than English.

Results

A wide search of published articles (The Angle Orthodontist, American Journal of Orthodontics and Dentofacial Orthopedics, British Dental Journal, European Journal of Orthodontics) was done using both the electronic database and hand searching. A total of 47 studies were retrieved initially. 35 studies having close relevance to the current study objective were used to express the review of literature for the transmigration of mandibular canines.

Discussion

Transmigration is a very rare entity and the literature shows that maxillary canines usually never transmigrate. The mandibular permanent canine is the only tooth reported to migrate across the midline.⁹ Javed² reported only 1 transmigrated impacted canine in a survey of 1000 subjects while Zovolane¹⁰ did not find any significant occurrence of the entity among 4000 subjects. Most of the authors have reported a single case however, Brutzo¹¹ found 2, Trarsitano¹ and Dhooria¹² found 3, Howard¹³ reported 4 cases respectively. In later studies, Javid² reported 3 cases of bilateral transmigrated mandibular canines. The left canine is more involved than the right and females tend to show more transmigration than the males.¹²

The exact cause of transmigration is still not clear,^{13,14} however abnormal displacement of dental lamina in embryonic life is a commonly accepted explanation.^{15,16} Other possible etiological factors published in literature are hereditary, cysts, tumors, odontomas and a physical barrier in the normal path of eruption.^{17-24,29,30}

Howard¹³ stated that axial inclination of impacted canines is also associated with transmigrations. He reported canines that lie between 30° to 95° in midsagittal plane tend to cross the midline while those between 25° to 30° do not transmigrate.

Vechi and Franchi²⁸ suggested that agenesis of adjacent teeth; particularly lateral incisors may prevent exfoliation of relative deciduous teeth that makes excess space available and provokes transmigration due to possibility of deviation of mandibular canines from their path of eruption.

Shanum²⁹ documented that abnormally strong eruption forces may also cause transmigration of mandibular canine through the dense symphyseal bone as a result of conical shape of the tooth.

The literature reports that usually the transmigrated canines do not show any pathologic conditions and are symptom

less.^{16,17} However, certain authors^{19,25} reported a cyst or odontoma associated with this entity. The investigations reveal that it is difficult to state whether these pathologic conditions were responsible for the transmigration or actually the pathologies occurred after migration of canine.

There are several treatment options proposed in literature for the transmigrated mandibular canines.

Most of the authors advocated that impacted teeth should be removed surgically as early as detected.³¹⁻³⁵ Thoma¹⁹, Feidder²⁰ also published that transmigrated canines usually have to be removed rather than a heroic attempt to reposition them to their original place. This is particularly true when mandibular arch is crowded and requires therapeutic extractions.

Howard¹³ suggested that if the mandibular incisors are in normal position and sufficient space is available, the transmigrated canine can be auto-transplanted.

Few of the orthodontists^{23,30} successfully attempted orthodontic alignment of transmigrated canines. However, they suggested that it depends on the severity and distance to how much the canine has to be moved to accommodate in the arch. Greater the distance greater are the chances of failure. Some of the authors^{26, 29} suggest that symptom less, unerupted teeth can be left in place and a series of successive radiographs should be taken periodically to detect if any pathologic changes occur. They shall only be removed if they show any pathology.

Conclusions

Transmigration of mandibular canine is an uncommon phenomenon of unknown etiology that is usually symptom less and is discovered usually at the time of routine radiographic examination, done for the purpose of orthodontic treatment. A high quality perspective of this entity might be helpful in developing meaningful clinical management of affected patients.

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