Transmigration of Impacted Mandibular Canines: A Report of Four Cases

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Abstract

Intraosseous movement of an unerupted tooth across the midline of the jaw is known as dental transmigration. This infrequent event is mostly found in the mandibular canines. There are four new cases of mandibular canine transmigration presented here. The literature on this anomalous phenomenon is also reviewed.

Key Words: Case report, impacted teeth, transmigration.

Introduction

Intraosseous movement of an unerupted tooth across the midline of the jaw is known as dental transmigration (1-3). According to some definitions, a true transmigration is when a tooth is migrated by more than half of its length from the midline (4). The mandibular canines are the most commondental group presenting this rare phenomenon which seems to have an unclear etiology (5-7). A transmigrated tooth can involve its adjacent teeth and cause root resorption, inclination, calcific metamorphosis or other pathological conditions (8). It can also be surrounded by radiolucent area indicative of a cyst (6,9). However, some of them show no pathologic change such as cases reported by Aras et al. (10). According to the mentioned probable complications caused by transmigrated tooth, it seems substantial to diagnose this dental anomaly by radiographs and try to give the best treatment plan in order to minimize the subsequent complications as soon as possible. The aim of this report is to report four new cases of transmigrated mandibular canine.

Case Report

The following cases were detected from those who referred to our Clinic of Oral and Maxillofacial Radiology over one year (during January 2011to December 2012). All patients had no systemic disorder and the transmigrated canines were detected accidently by the time of diagnosis. As there was no pathologic change with the impacted teeth, all patients preferred not to undergo any treatment. The details of all patients have been summarized in Table 1.

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Table 1. Details of the patients

Cases	Sex	Age (years)	Transmigrated canine	Involved jaw	Radiologic position of canine crown	Associated pathology	Treatment
1	Female	21	Left	Mandible	apices of right premolars	No	Follow-up visit
2	Male	45	Right	Mandible	Apex of left canine	No	Follow-up visit
3	Female	42	Right	Mandible	Apex of left canine	No	Follow-up visit
4	Female	41	Left	Mandible	Apices of right lateral and canine	No	Follow-up visit

Case 1

The panoramic radiograph of a 21-year-old woman revealed a transmigrated mandibular left canine which had completely crossed the midline. It was positioned horizontally bellow the apices of right canine and premolars (Fig. 1).

Case 2

A 45-year-old man was referred to our clinic. His clinical intra-oral examination showed that the mandibular dental midline was shifted to the right. The panoramic radiograph revealed a transmigrated mandibular right canine causing the root resorption of the contra lateral side canine (Fig. 2).

Figure 1. The panoramic radiograph revealed a transmigrated mandibular left canine which had completely crossed the midline

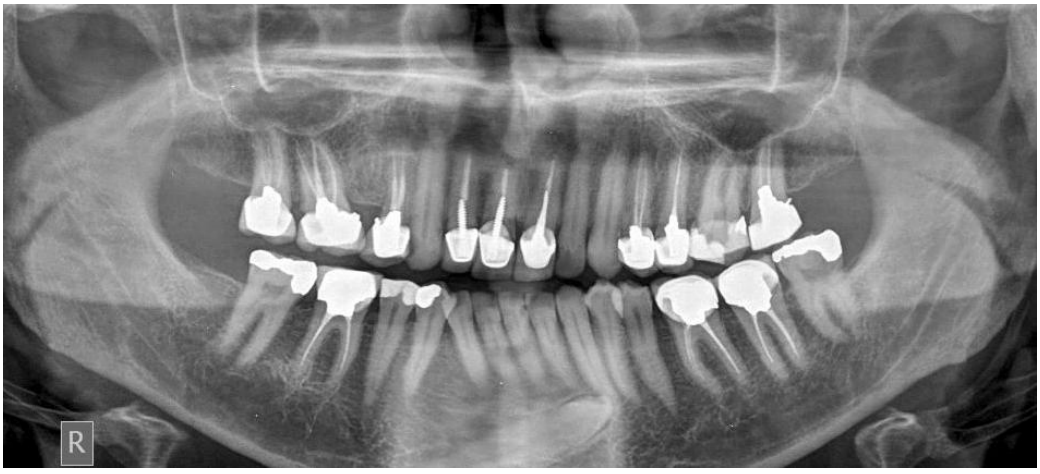

Figure 2. The panoramic radiograph revealed a transmigrated mandibular right canine causing the root resorption of the contra lateral side canine

Case 3

A 42-year-old woman was referred to the clinic. Her oral examination showed spacing among mandibular incisors. The lower deciduous right canine was also over-retained. The panoramic radiograph indicated a transmigrated mandibular right canine which was positioned near the apices of the left lateral incisor and canine (Fig. 3).

Case 4

The panoramic radiograph of a 41-year-old woman showed the impacted mandibular left canine migrated to the right side. The presence of an idiopathic osteosclerosis was also evident in the tooth 46 region (Fig. 4).

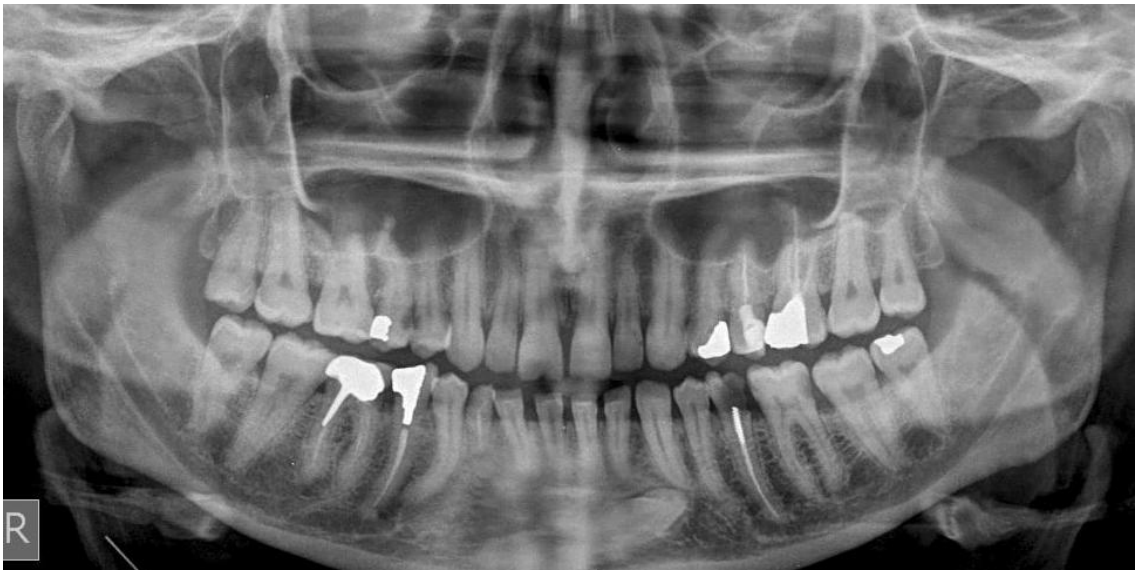

Figure 3. Orthopantomograph indicated a transmigrated mandibular right canine which was positioned near the apices of the left lateral incisor and canine

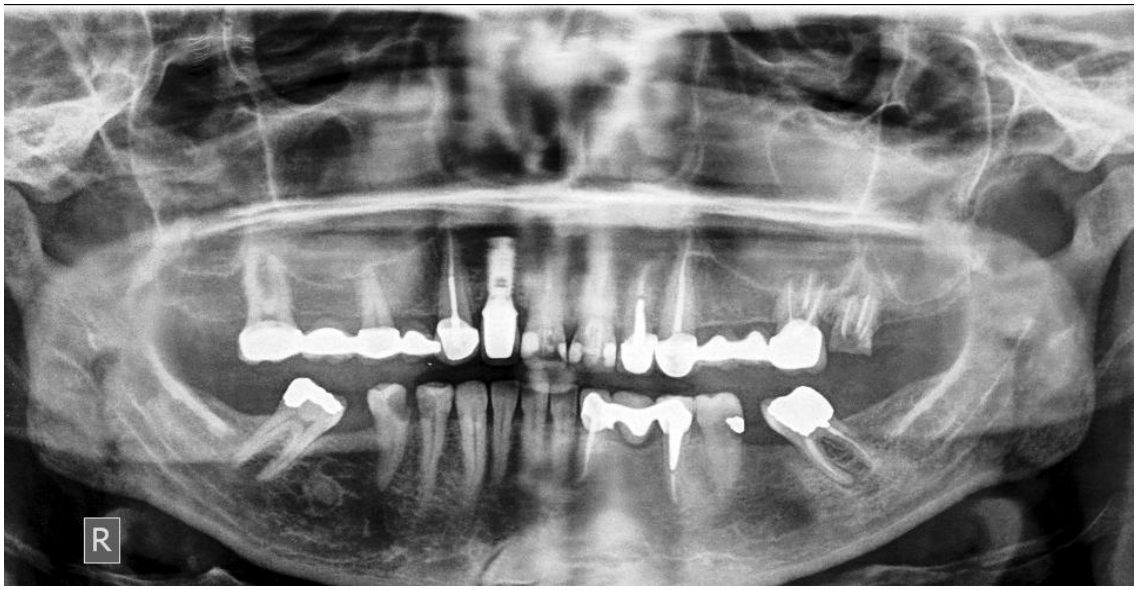

Figure 4. The impacted mandibular left canine migrated to the right side

Discussion

A large number of studies concur that dental transmigration exclusively affects canines, although Kara et al. (11) published other types of teeth migrated to the contra lateral side. According to their analyses, transmigrant lateral incisor and premolar represented 0.0017% and 0.0026% of their cases respectively. As stated by Aydin et al. (12) the incidence of canine transmigration was 0.31%. However, this percentage differs in diverse studies. In our study, the prevalence of canine transmigration was 0.018% which was recorded in patients who referred to our Clinic of Oral and Maxillofacial Radiology during January 2011to December 2012.

Canine impaction is more frequently located in the maxilla (13-15). However, canine transmigration largely takes place in the mandible, although there have been some studies reporting maxillary transmigrated canine (2,5,16). In our study, all transmigrations were detected in mandible. The maxillary canine transmigration occurs rarely due to some anatomical reasons such as the little space between the apices of maxillary incisors and the floor of nasal fossa, and also the midpalatal suture which limits the movement of canine (17).

Transmigration of mandibular left canine is reported more than the right one (18-20). However, Joshi et al. (21) believe that its prevalence is nearly the same between two sides. In two of our four cases the affected tooth was the right one. It is also almost a unilateral phenomenon (14, 20), though some bilateral cases are published too (11,14,18,22). Gonzales et al. (19) described that only 9-14% of all canine transmigration cases were bilateral. It should be noticed that almost none of the bilateral and maxillary cases are known as true transmigrated ones according to Javid's definition about transmigration (4).

Canine transmigration is more prevalent in females than males in the ratio of 2:1 (13). However, there is a slight difference of this proportion according to various studies. Aktan et al. (14) suggest that this may be because of the fact that more women are intensive about their dental treatment than men. In agreement with this, three of our four cases were females.

It is recommended that if the primary canine is over-retained or the permanent canine has not erupted more than one year after the expected age of eruption, a panoramic radiograph or other supplementary radiographs such as occlusal or lateral cephalogram might be required for detecting the probable impacted or migrated canine (13,23). Besides, computed tomography (CT) scan seems to be the best technique for three dimensional position of the impacted tooth (14). Gonzales et al. (19) observed over-retained deciduous canine in one third of their cases indicating the presence of migrated canine. Other clinical features founded in some cases are the shift of dental midline to the affected side and proclination of mandibular incisors, especially in those which the impacted canine is remained in the symphyseal area (18,21). In our second case, the mandibular dental shift and in our third case, the over-retained primary canine, werethe relevant clinical findings.

Howard (24) suggested that there is a tendency of crossing the midline while the axial inclination of the canine is 30 to 95 degrees to the midsagital plane and its occurrence is more probable while this angle exceeds 50 degrees.

According to Al-Waheidi (25) there is a variety of hypothesis about the etiology of canine transmigration including the location of canine germ infront of the lower incisors and a facial force that pushes it to the opposite side, the ectopic position, the atypical strong force of eruption towards the crown, and finally the displacement of the crypt of affected tooth. Other etiological factors are over retention or early loss of deciduous tooth, tooth size discrepancy, agenesis of the adjacent tooth, excessive length of crown, inappropriate alveolar arch length, presence of supernumerary tooth or cysts or odontomas or tumors found in the path of the tooth bud, trauma, endocrine disorders and heredity factors (1,18,21). In addition, the conical shape of the crown and root of the canine and the probable cyst surrounding its crown makes the transmigration process easier (20).

There are several treatment options for these patients which depend on the location of the impacted tooth and its pathological status. In the majority of case reports, transmigrated canine was asymptomatic. However, some other cases presented evidences of pathological changes like cyst formation (6,9,25), neuralgia, consequent root resorption or malposition of the adjacent teeth (17,18). Therefore, surgical extraction seems to be the best treatment for these cases (22). Buyukkurtet al (9) reported a case in which an extraoral submental approach was planned. It should be noted that innervations of the transmigrated tooth is from the original side. Hence, an anesthesia of the originating side is essential during surgical treatment (17,20,21).

Some other treatments such as transplantation or exposure and orthodontic movement may be considered in younger patients (about 8-9 years) in which the tooth has not migrated far away from its original place. The normal position of the other teeth and enough space for placing the impacted tooth should be noticed in these cases (13,19). Eventually, in some asymptomatic cases it is preferred not to treat the impacted tooth, although regular clinical and radiologic follow up are advised for evaluating its location. As mentioned before, none of our cases were intent to treat the transmigrated canine,

since no significant relevant pathological change was found.

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