

Bilateral Intraosseous Migration of Mandibular Second Premolars in a Patient with Nine Missing Teeth

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Abstract:

Intraosseous migration is an unusual developmental dental anomaly, which demonstrates horizontal movement of unerupted teeth only affecting the permanent dentition of the lower jaw. Mandibular second premolar is the most common impacted tooth after the third molars and maxillary canines. Distal migration of the second premolar is rare and early loss of the permanent first molar is one of the most important predisposing factors of intrabony migration of this tooth. Bilateral migration of the mandibular premolars is very rare compared to unilateral migration. Hereby, we present an 18-year-old man with bilateral intrabony migration of the mandibular second premolars to the mandibular angle (at the inferior and buccal side of the mandibular canal) in the presence of first molars. The patient also had nine congenitally missing teeth without any systemic complication or abnormality in the skeleton. The teeth were surgically extracted. The clinical and diagnostic features and treatment of this case are discussed.

Key Words: Bicuspid; Tooth Migration; Mandible

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INTRODUCTION

Disturbances involving abnormalities in tooth eruption are called ectopia, which may be seen, in regions around the oral cavity and also other areas of the body [1-3].

Transmigration or migration is a type of ectopia when teeth are present in regions distant from their normal developmental location. Therefore, it indicates the movement of an impacted tooth to an area far from its normal position [3]. Dental transmigration or intraosseous migration is an unusual developmental anomaly demonstrating the horizontal movement of an unerupted tooth which only affects the permanent dentition of the lower jaw [4,5]. The mandibular second premolar is the most commonly impacted tooth after the third mo-

lars and maxillary canines with an incidence of about 2.1% to 2.7% [6,7]. The frequency of intraosseous transposition of the mandibular second premolar is 0.25% and it more likely affects women (1.7:1 ratio). One of the most important predisposing factors of the intrabony migration of this tooth is early loss of the permanent first molar, which increases the chance of migration to 10% [8]. Bilateral transposition of the mandibular premolars is less common than the unilateral transposition [9].

The etiologic factors of tooth migration are still obscure, although a multifactorial condition has been stated. Both environmental and genetic factors are involved in the etiology of transmigration and the relationship between them is complex [9]. Sutton [10] suggested



Fig 1. Panoramic radiograph taken in year 2003.



Fig 2. Panoramic radiograph taken in year 2006

that initial angulation of the tooth and loss of the primary first molars can facilitate the transposition of mandibular premolars. However, Peck [4] showed that genetic factors could be more significant in canine migration because of the cases of bilateral migration, while migration of premolars may be casual or idiopathic. Distal intrabony migration is not yet completely understood because the teeth tend to have mesial migration as a result of masticatory forces [11]. Tooth migration is referred to a condition that normal eruption of a tooth is prevented; therefore, it is not in its normal developmental location in the jaw. Pathologic lesions such as a cyst or an odontoma may also cause tooth migration [5].

CASE REPORT

An 18-year-old man was referred to the Department of Oral and Maxillofacial Surgery of the School of Dentistry of Shahed University, in 2009 for surgical extraction of impacted teeth. The patient had no systemic disease or abnormality in the skeleton and no history of dental extraction. In the first panoramic radiograph (2003), both second premolars were distally inclined; their crowns were near the alveolar crest and the roots of the first molars, especially the left molar. The tooth bud of the mandibular left second molar was present but the right one was congenitally absent. Both maxillary lateral incisors, mandibular first premolars and all of the third molars were also

congenitally absent (Fig 1).

The second panoramic radiograph (2006) revealed a downward rotation (toward the inferior border of the mandible) and distal intraosseous migration of the second premolars. The mandibular left second molar was erupting normally (Fig 2).

The third panoramic radiograph (2009) showed continuous distal and downward migration of the second premolars. Both premolars were located at the inferior and buccal side of the mandibular canal and very close to the inferior border of the mandible, especially the right premolar. No root resorption had happened in the mandibular first and second molars. The left second molar had erupted completely in a normal pattern (Fig 3).

Teeth impaction had not caused any discomfort for the patient until then and there was no sign of a pathologic lesion in any of the panoramic radiographs.

DISCUSSION

Intraosseous migration of the premolars has a low prevalence compared to other teeth such as the canines, of which bilateral migration, especially in the presence of first and second molars, is very rare, [4,8,9].

In most studies [4,5,8,12,13], early loss of the first molar is assumed to be one of the causes of distal migration since the possibility of intraosseous migration of the second premolar is significantly increased in case of early loss



Fig 3. Panoramic radiograph taken in year 2009.

of the first molar [8], but in this case the first molars are present and have erupted normally. Another cause is the abnormal angulations of the tooth buds of the second premolars [10], which may be one of the etiologic factors in this case. In the present case, the second premolars in the first panoramic radiograph were near the alveolar crest, but were severely inclined distally. We believe that maybe the wrong angulation as well as lack of space between the crown of the second premolar and first molar in this angulation prevented the eruption at that time. In addition, according to this angulation, we think that the backward rotation had started almost one year before the first radiograph was taken. In the normal eruption path of the second premolar, the tooth should be upright and almost parallel to the first permanent molar. In some cases of bilateral intrabony migrations, there may be a positive family history, which was negative in the present case. Bilateral intraosseous migrations of the premolars can also be idiopathic [4] and considering that we did not find any reason to interpret the continuation of this downward and backward rotation, especially when it was bilateral, we suggest that maybe despite the reasons described above it was also idiopathic. Another important point in this case is the congenital missing of nine teeth without any known systemic complications or abnormality in the skeleton.

In the present case, the impacted second pre-

molars migrated to the mandibular angle similar to the cases reported by Loh and Ho [12] and Infante-cossio et al [1]. Orton and McDonald [14] and Jasmin et al [3] reported tooth migration to the coronoid process, while Okada et al [15] reported movement to the mandibular condyle.

Management of the intraosseous migration depends on the position of the migrated tooth, the pathologic lesion if present and also the extent of discomfort [16]. In the present case, the impacted teeth were surgically extracted under general anesthesia at Shahed University-affiliated hospital.

Routine periapical radiographs may not show the intraosseous migration because the tooth is usually horizontally under the roots of the permanent teeth and near the border of the mandible. Therefore, the radiographic examination should include panoramic and sometimes occlusal radiographs [1,15].

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