

## The Arrow Impaction, Intraosseous Migration of Mandibular Second Premolar, Literature Review and a Case Report

**Munira H AlSahahrani\***

*Teaching Assistant, Department of Oral and Maxillofacial Surgery, King Khalid University, College of Dentistry, Abha, Saudi Arabia*

**\*Corresponding Author:** Munira Hussein AlSahahrani, Teaching Assistant, Department of Oral and Maxillofacial Surgery, King Khalid University, College of Dentistry, Abha, Saudi Arabia.

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### Abstract

**Background:** The prevalence of impacted mandibular second premolar has been found as 2.1 - 2.7% and its intraosseous distal migration is 0.25%. Intraosseous distal migration of mandibular second premolar tooth is a very rare condition. It may present with a pathological condition and it can be present without any pathology like this case.

**Case Presentation:** This case report is presented an extreme intraosseous distal migration of a mandibular left second premolar tooth, which has been found incidentally in routine dental radiography of a 21-year-old Saudi female. The impacted tooth seen above the mandibular canal in the ascending ramus at the level of the lingual which looks like an arrow.

**Conclusion:** If any patient came with missing mandibular second premolar, the next step is to do further investigations along with a proper history taken to exclude any previous extractions, because the distal migration or the transmigration of such tooth may happen.

**Keywords:** Arrow; Premolar; Impacted; condyle; Migration

### Abbreviation

MSP: Mandibular Second Premolar

### Introduction

Impacted tooth is a tooth which is completely or partially unerupted and is positioned against another tooth, bone or soft tissue so that its further eruption is unlikely, described according to its anatomic position [1]. The mandibular second premolar is highly variable developmentally. Agenesis, abnormal tooth germ position, and distal inclination of the developing tooth are among the reported developmental anomalies [2]. In addition, the second most frequently impacted tooth was found to be the mandibular second premolar, excluding third molars, in some populations [2,3]. Intraosseous migration of an impacted tooth is a dental anomaly that occurs mostly in the permanent dentition of the mandible [4], particularly in canines and molars. The prevalence of migration of impacted premolars in the lower jaw is low. The condition is more frequent in women [4,5]. The prevalence of impacted mandibular second premolar in the ascending ramus without a pathological conditions is very rare.

### Case Report

A-21-year-old female came to the diagnosis clinic at King Khalid University, College of Dentistry, Abha, Kingdom of Saudi Arabia in February of 2018 with complain of pain in her upper anterior teeth. In the diagnosis, her medical history was not significant. An extra

oral examination has no abnormalities. An intraoral inspection revealed Angel's class I canine relation in both sides and multiple missing teeth#18, 17, 27, 28, 35, 36, 37, 38, 46, and gingivitis (Figure 1 and 2).



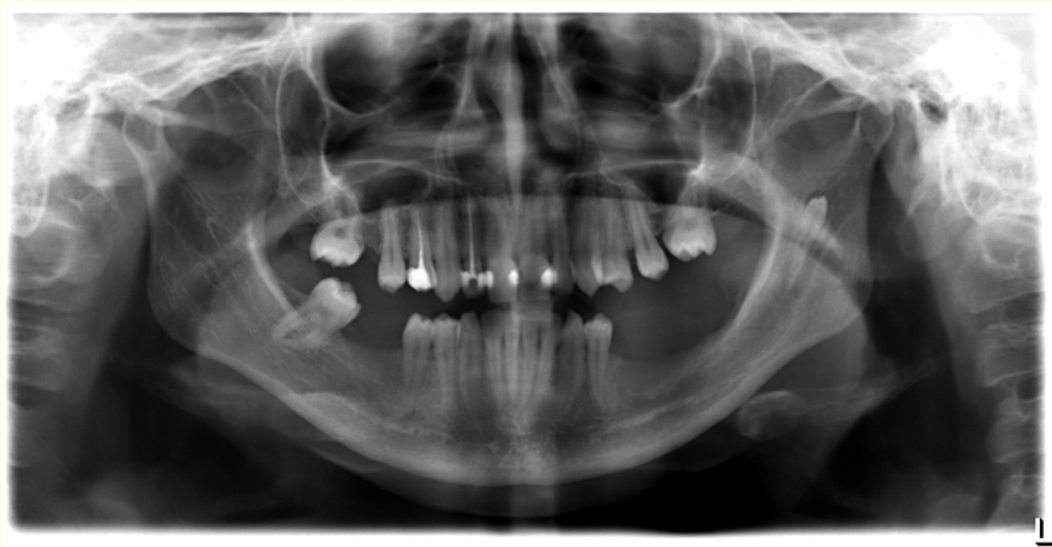
**Figure 1:** Clinical presentation revealed defective restorations, and plaque accumulation.



**Figure 2:** Occlusal view of the lower jaw, presented with multiple missing teeth, and severe alveolar ridge resorption.

Incidentally and after taking an OPG (Orthopantomograph), how an impacted mandibular left second premolar above the mandibular canal in the ascending ramus at the level of the lingual in a vertical direction which looks like an arrow (Figure 3). There is a pericoronal radiolucency what is present the normal follicular space.

The patient was symptoms free and unaware of this anomaly before the dental examination. In addition, no pathology or conditions that might cause eruption anomalies were noted in her family history or in her medical history. As it's approximating the mandibular canal, the patient was advice to take periodic panoramic radiographs (twice a year) for early detection of any undesirable changes. The lateral Cephalometric (Figure 4) showed the tooth clearly in the ascending ramus of the mandible.



**Figure 3:** Panoramic view shows a distal migration of left second mandibular premolar above the mandibular canal.



**Figure 4**

Before conducting this study a written consent form was obtained from the patient in order to proceed with documentation.

### Discussion

Compared with other teeth, the intrabony migration of the premolars has the lowest rate. Some of the etiological factors which can cause the distal migration for the tooth like prolonged retention, the early loss of primary tooth, trauma, endocrine system disorders and a wrong direction of the tooth bud [5].

The MSP distal migration can occur due to many reasons, such as the development of MSP tooth bud with a degree of distal inclination under the distal root of a primary second molar, although a resorption of deciduous tooth root and an early loss of permanent molar cause such migration. Reportedly, MSP can migrate in extreme distal directions till it reaches the mandibular angle and coronoid process which happen in a slow manner and takes time [4]. It was demonstrated that 55.5% of ectopic eruption in MSP is found on the right side and 44.4% on the left side. MSP intraosseous migration used to be asymptomatic, unilateral and horizontal, it can be seen at any age up to 62 years, mostly in 20 year old adults, like in this case [4-6]. A systematic review of 10 cases of ectopic eruptions of MSP from 1988 to 2010 was conducted, this study states most of the cases are seen in the condylar and sub-condylar area [7].

For asymptomatic cases a periodic follow up with panoramic radiographs to rule out any pathological changes is recommended. In symptomatic cases, the extraction is indicated. Endoscopy technology can reduce the post-operative negative outcomes and offers great illumination if it used [8].

The management options for an extremely migrated MSP ranges from no intervention in asymptomatic cases with periodical radiographic examination to the extraction in cases with noticeable resorption of an adjacent root, pain, periodontal conditions and pathological cystic formation [4]. In specific cases where no significant signs or symptoms are present like this case, no treatment is required and a periodic radiographic observation, should be considered.

### Conclusion

During clinical examination, if any patient came with a missing MSP should be further investigated, and a proper dental history should be taken to exclude any previous extractions, because in a very rare cases the migration of the tooth can happen. Investigations can be done by taken an OPG (Orthopantomograph), a lateral Cephalometric, an occlusal radiograph and a Cone Beam Computed Tomography (CBCT). Tooth impaction is a well-known condition in dentistry, specifically in the oral and maxillofacial surgery field. The severity of the tooth impaction and its condition decides the treatment approach. In some cases where the tooth impaction causes pain or has a pathological changes the extraction should be done. Otherwise if there is no signs or symptoms, with a high risk of damaging the vital structures such inferior alveolar nerve, a conservative approach of no treatment with periodic radiographic observation is suggested.

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### Conflict of Interest

None.

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