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# Management of upper and lower molars that are displaced into the neighbouring spaces

P. Bozkurt\*, E. Erdem<sup>1</sup>

Ankara University, Faculty of Dentistry, Oral and Maxillofacial Surgery Department

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## Abstract

Our aim was to describe our experience of retrieval of accidental displacements of upper and lower molars into neighbouring anatomical spaces. Thirteen patients were evaluated retrospectively in terms of age, sex, affected side, jaw (mandible or maxilla), surgeon's experience, whether the extracted teeth had erupted, which portion of the tooth or teeth was displaced, the anatomical space into which the fragment was displaced, postoperative complaints, timing of the retrieval, type of anaesthesia, and surgical approach. There were no significant differences in sex, affected side, which part of the tooth was displaced, whether the extracted teeth had erupted, type of anaesthesia, or timing of retrieval. We conclude that this condition should be treated, although follow-up alone may be an option. The intraoral lingual pouch approach for complications of mandibular third molars and the intraoral Caldwell-Luc operation for those in the maxilla could be successful options for retrieval.

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**Keywords:** Complication; Root displacement; Tooth displacement; Tooth extraction

## Introduction

Many complications have been reported after extractions of unerupted teeth, including soft tissue trauma, fractured jaw, and sensory deficits of the lip and tongue,<sup>1</sup> and they may also be associated with the extraction of erupted teeth. One of them is accidental displacement of the tooth or root into the neighbouring spaces. Such fragments may be of different sizes and in different areas,<sup>2</sup> for example, the maxillary sinus, infratemporal fossa, buccal space, submandibular space,

pterygomandibular space, and lateral pharyngeal space.<sup>1</sup> Displacement can be caused by perforations of the lingual alveolar bone or sinus floor as a result of excess force, lack of surgical experience, failure of surgical equipment, as well as the anatomical features of the patient.<sup>1</sup>

We have retrospectively evaluated 13 accidental displacements of a tooth or fragment of a tooth into neighbouring areas, and describe our preferred methods of retrieval.

## Material and methods

We retrospectively evaluated the data of 13 patients who were referred to our clinic between 2004 to 2015 with accidental displacements of teeth or fragments of teeth. The study followed the protocol of the Declaration of Helsinki and was approved by the Ankara University Faculty of Dentistry Ethics Committee. Evaluated data included age, sex, side

\* Corresponding author at: Ankara Üniversitesi Diş Hekimliği Fakültesi, Ağız Diş ve Çene Cerrahisi, Emniyet Mahallesi, İncitaş Sokak, Yenimahalle, Ankara, Turkey. Tel.: +90 3122965563.

E-mail addresses: [poyzanbozkurt@hotmail.com](mailto:poyzanbozkurt@hotmail.com) (P. Bozkurt), [erdalerdem091@hotmail.com](mailto:erdalerdem091@hotmail.com) (E. Erdem).

<sup>1</sup> Ankara Üniversitesi Diş Hekimliği Fakültesi, Ağız Diş ve Çene Cerrahisi, Emniyet Mahallesi, İncitaş Sokak, Yenimahalle, Ankara, Turkey. Tel.: +90 3122965561.

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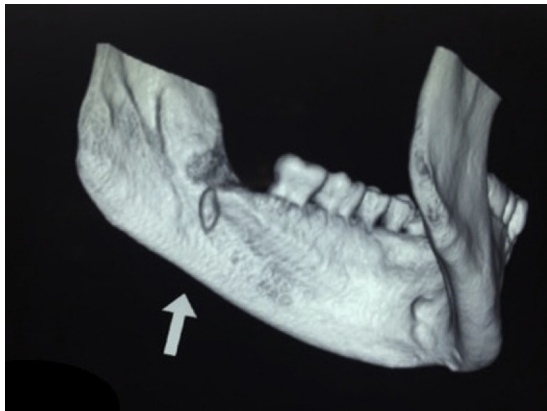


Fig. 1. Three-dimensional view of one of the displacements into the pterygomandibular space.

(left or right), jaw (mandible or maxilla), surgeons' experience, whether extracted teeth had erupted or not, which portion of the tooth or teeth was displaced, to which space the fragment had been displaced, preoperative radiographs, timing of the retrieval operation, type of anaesthesia, and surgical approach. Radiological evaluations were made with cone-beam computed tomography, orthopantomographs, and periapical radiographs. Data were entered into IBM SPSS Statistics for Windows (version 22, IBM Corp, Armonk, NY, USA) and analysed. The distribution of patients' personal and clinical details was evaluated. The significance of differences between upper and lower jaw by sex, side of tooth, whether the tooth had erupted, the fragment displaced, retrieval operation, and type of anaesthesia were evaluated with Fisher's exact test (two-tailed). The significance of differences between ages was evaluated with the Mann Whitney *U* test.

## Results

Results are shown in Tables 1 and 2. Teeth or fragments were displaced into the pterygomandibular space in six patients (Fig. 1), into the lateral pharyngeal space in one (Fig. 2), and into the maxillary sinus in five (Fig. 3).

## Discussion

Today removal of impacted third molars can be considered as routine in oral and maxillofacial surgical practice,<sup>3</sup> but iatrogenic displacement of a tooth or fragment of a tooth into a neighbouring anatomical space is a rare and challenging complication.<sup>4</sup>

The experience of the surgeon is an important factor. Of the 13 patients, an oral surgeon operated on six, a dentist operated on four, and for three patients the information was not available. Information about how many years each doctor had been in practice was also not available. Even oral surgeons

Table 1

Patients' personal and clinical details (n = 13). Data are expressed as number of patients unless otherwise stated.

Variable	Number
Sex:	
Male	6
Female	7
Mean (SD) age (years):	33 (9)
Range	17–46
Side affected:	
Right	7
Left	6
First molar affected:	
Lower third	7
Upper first	2
Upper second	1
Upper third	3
Eruption:	
Unerupted	10
Erupted	3
Displaced fragment:	
Whole tooth	3
Fragment of root	3
Single root	7
Space to which fragment displaced:	
Lower jaw: lateral pharyngeal space	1
Lower jaw: pterygomandibular space	6
Upper jaw: maxillary sinus	5
Upper jaw: retromaxillary space	1
Time of retrieval:	
During extraction	3
During first week:	4
1 month	1
2 months	2
3 months	1
5 months	1
At follow up	1
Type of anaesthesia:	
General	5
Local	6
Intraoral surgical approach:	
Floor of mouth	1
Buccal	1
Caldwell Luc	4
Lingual pouch	4
Extraction socket	2
Information not available	?

who are experienced in the extraction of teeth could face this complication. The operator should never underestimate the procedure, even when the extraction looks simple. Every extraction is unique, and meticulous clinical and radiographic examinations must be made before extraction.

Preoperative radiographs are another important factor when evaluating extraction of a tooth for possible complications. Only two preoperative periapical radiographs could be obtained for our cases, the first of which showed an upper third molar with incomplete root development, positioned distoangularly with crown-root relations to the second molar tooth. The second showed a lower third molar positioned mesioangularly with crown-crown relations to the second molar. The morphology of the root could not be evaluated

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