

# Minimally invasive transmaxillary endoscopic retrieval of a displaced third maxillary molar into the infratemporal fossa

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The aim of this paper was to report a case of displaced impacted maxillary third molar into the infratemporal fossa during extraction, which was referred to the Otorhinolaryngology Department, Tanta University Hospital, Egypt. Retrieval of such displaced tooth was done through transmaxillary endoscopic approach, with no reported complication within 3 years of follow-up.

## Keywords:

accidental displacement, endoscopic infratemporal fossa approach, endoscopic skull base approaches, exodontia complications, impacted third molar, impacted tooth, tooth displacement

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## Introduction

Extraction of impacted maxillary third molars is a common surgical procedure performed by dentists and oral surgeons. Infratemporal displacement of impacted maxillary third molar during extraction is frequently mentioned but rarely reported [1].

The medial wall of the infratemporal fossa is formed anteriorly by the lateral pterygoid plate and posteriorly by the tensor veli palatini muscle. The lateral limit of the infratemporal fossa is the ramus of the mandible. Internal carotid artery, internal jugular vein, and lower cranial nerves belonging to the parapharyngeal space are the main structures located in the posterior wall of the infratemporal fossa. It is surrounded by the maxillary sinus anteriorly. It contains the maxillary artery and its branches, the pterygoid muscles, the mandibular nerve, and the pterygoid venous plexus [2].

This report describes minimally invasive endoscopic removal of an unusual case of impacted maxillary third molar that was accidentally displaced into the infratemporal fossa during extraction.

Surgical intervention as well as all complications were discussed with the patient, and consent was considered for the approach and reporting of his case with approval of our institutional review board.

## Report of a case

A 36-year-old male came to the Otorhinolaryngology Department, Tanta University Hospital, Egypt. The patient's history revealed surgical removal of impacted right maxillary third molar tooth 1 week before by an oral surgeon with missing of the extracted tooth; the oral surgeon informed the patient of the intraoperative accident. Intraoral clinical examination revealed

absence of the right maxillary third molar with edematous tissues from previous manipulation.

The orthopantomography (panoramic radiograph) suggested a displaced tooth inside the right infratemporal fossa (Fig. 1). Computerized tomography without contrast medium was performed to determine the precise position of the tooth in a three-dimensional fashion. The displaced tooth was found closely related to the skull base in the region of lateral aspect of the right infratemporal fossa (Figs. 2 and 3).

Under general anesthesia, the maxillary sinus was exposed through small Caldwell-Luc approach (Figs. 4 and 5), with the aid of 0° 4-mm rigid endoscope connected to endoscopic camera head, then exposure of the posterior wall of maxillary sinus, then incision of the periosteum of the posterior wall of maxilla was performed, followed by dissection of the tooth from surrounding tissues and its removal with forward Blakesley nasal forceps (Figs. 6 and 7), then the wound after that was closed with vicryl 4/0, and paracetamol with augmented penicillin was prescribed.

Postoperative recovery was uneventful. The patient did not present any complaint in the period of 3 years of follow-up.

## Discussion

Many surgical approaches have been described to recover a maxillary third molar displaced into the

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Figure 1



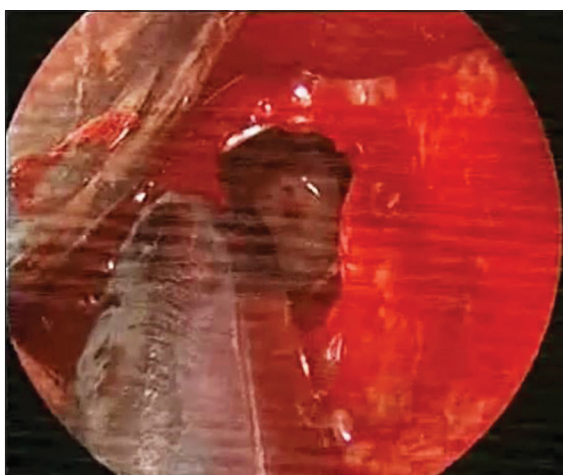
Panoramic radiograph suggesting a displaced tooth inside the right infratemporal fossa.

Figure 3



Three-dimensional computerized tomography (lateral view), showing right maxillary third molar displaced into the infratemporal fossa.

Figure 5



Opening of the anterior wall of maxillary sinus using 3-mm osteotome and 2-mm Kerrison punch.

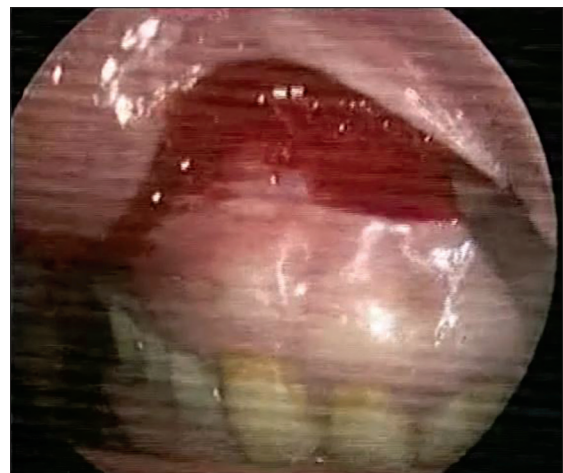
infratemporal fossa, such as buccal sulcus incision that can be combined with the hemicoronal approach, Gillies's approach, Caldwell-Luc approach after removal of the whole posterior maxillary wall, resection

Figure 2



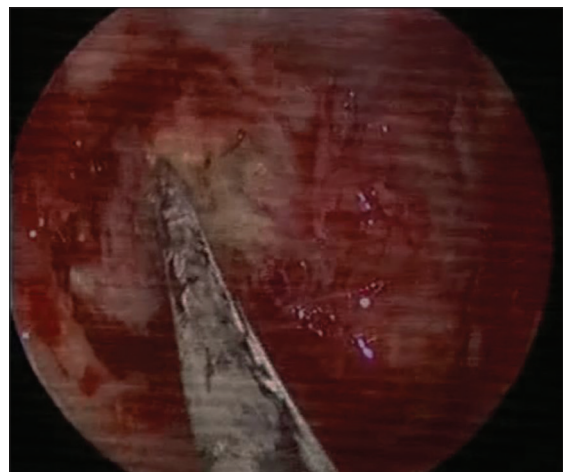
Computerized tomography (axial view) showing right maxillary third molar displaced into the infratemporal fossa.

Figure 4



Intraoral vestibular incision 3 using 15 blade.

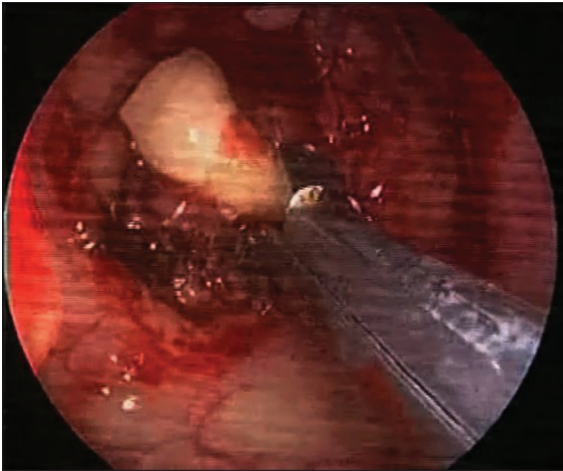
Figure 6



Creation of a window in the posterior maxillary wall and then incision of the periosteum of the infratemporal fossa using a sickle knife.

of the coronoid process, and also interventional radiology using the computerized tomography-guided

Figure 7



Retrieval of the displaced tooth after careful dissection from the infratemporal soft tissues.

placement of a bone trocar above the displaced tooth [3–8]. However, extensive infratemporal tissues dissection is obvious in all of these approaches, with expected morbidities such as hemorrhage, neurological insults, and failure to recover the displaced tooth.

Transmaxillary endoscopic approach to the infratemporal fossa is a direct approach, completely under vision technique with the possibility of dealing with complications which may occur like dealing with internal maxillary artery bleeding by clipping, cauterization, or ligation.

Although an intraoperative navigation was not available in this case management, but of course it is of much more value for dealing with such rare complication, so the author recommends its use in the future cases.

Transnasal endoscopic approach to the infratemporal fossa was not considered in this work owing to somewhat aggressive resection of lateral nasal wall or modified endoscopic Denker approach and may be considered for future research to manage such pathology.

This case report describes a minimally invasive endoscopic surgical technique for removal of displaced third maxillary tooth into the infratemporal fossa with better visualization and satisfactory outcome results. Moreover, the transmaxillary endoscopic approach to

the infratemporal fossa can be helpful for dealing with other pathologies in the infratemporal fossa and skull base.

## Conclusion

Transmaxillary endoscopic approach to the infratemporal fossa is a direct approach and completely under vision technique for retrieval of displaced third maxillary molar into the infratemporal fossa.

## Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Nil.

## Conflicts of interest

There are no conflicts of interest.

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