

Case Report

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The First Case of Endoscopic Transnasal Removal of an Ectopic Molar Tooth from the Pterygomaxillary Fossa: A Low Morbidity Approach

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ABSTRACT

Ectopic teeth erupted in the maxillary sinus (MS) or Pterygomaxillary Fossa (PF) are rarely reported. Though often asymptomatic, patients with ectopic teeth in the MS or PF may suffer from facial pain/numbness, purulent nasal discharge, facial edema, epiphora, and haemoptysis. Caldwell-Luc procedure is traditionally performed to remove ectopic teeth from the sinus, though several side effects and complications have been reported. The maxillary facial pain and numbness following such procedure can be extremely bothersome. This paper reports the case of a young woman suffering from maxillary facial pain and swelling due to an ectopic molar tooth in the PF and related maxillary sinusitis. Tooth removal and MS cleaning were carried out through a transnasal endoscopic approach. The postoperative course was uneventful. The patient did not complain any facial pain or numbness. We conclude that transnasal endoscopy is a painless and easy approach for the removal of ectopic teeth from the PF thanks to the low morbidity of intranasal antrotomy and advantages of endoscopic vision.

KEYWORDS: Endoscopic extraction; Transnasal removal; Ectopic tooth; Pterygomaxillary fossa.

INTRODUCTION

Ectopic teeth erupted in the maxillary sinus (MS) or pterygomaxillary fossa (PF) are rarely reported.¹⁻⁴ The causes of eruption of a tooth into the maxillary sinus are still unclear. However, some clinical conditions are suspected to be involved, such as developmental disturbances (cleft palate), displacement of teeth by trauma, interventions or cyst, infection, genetic factors, crowding, and dense bone.¹⁻³

Caldwell-Luc approach, traditionally performed to remove foreign bodies and ectopic teeth from the sinus, may have several side effects and complications (facial pain, teeth sensory impairment or injury, cheek edema, infraorbital nerve numbness and neuralgias, maxillary hematoma/sinusitis, maxillary wall weakness, etc).^{4,5}

In this paper, we report the case of a young woman suffering from maxillary facial pain and swelling due to an ectopic molar tooth in the PF and related maxillary sinusitis. Tooth removal and MS cleaning were carried out through a transnasal endoscopic approach, thus preventing the side effects of Caldwell-Luc "external" approach. To our knowledge, this is the first case of endoscopic extraction of an ectopic molar from the PF in the literature. The surgical details and advantages of our approach are discussed, together with the etiopathogenesis of our findings.

CLINICAL REPORT

A 23-year-old woman was referred by her dentist to the Department of Otolaryngology–Head & Neck Surgery of “Carlo Poma” Civil Hospital of Mantova (Italy) for the management of an ectopic molar in her left PF. She suffered from recurrent episodes of left maxillary pain and swelling. Her medical history was not significant. She denied any previous dental/maxillary trauma.

Panoramic radiograph and CT scans of the maxillofacial region showed an ectopic molar tooth occupying the left PF and MS posterior portion, together with a complete erosion of the maxillary sinus posterior wall. A follicular cyst surrounded the tooth (Figures 1 and 2).



Figure 1: Ortopantomography showing the ectopic molar tooth in the left pterygomaxillary fossa.



Figure 2: Axial CT scan, showing the ectopic molar tooth occupying the left posterior maxillary sinus and pterygomaxillary fossa. Notice the erosion of the maxillary sinus posterior wall likely caused by the tooth-related follicular cyst (*).

A decision was taken, together with the patient, to endoscopically remove the tooth through a transnasal approach, in order to prevent the facial pain/numbness and teeth sensory impairment secondary to Caldwell-Luc approach.

Under general anesthesia with orotracheal intubation, the ectopic tooth was removed by transnasal endoscopic sinus surgery without any bony window through the canine fossa: complete left uncinectomy and extended intranasal antrotomy were carried out with a 0° endoscope. The MS was examined with a 45° endoscope: a curved ostium seeker was used to confirm

the erosion of MS posterior wall and identify the tooth, which extended from the posterior portion of the MS, through the sinus posterior wall, into the PF. The tooth crown was oriented antero-medially, while the root was placed postero-laterally. The ectopic molar was surrounded by soft connective tissue compatible with a follicular cyst. The tooth was delicately luxated anteriorly with a “frontal sinus type” curved hook. The cystic tissue connecting the tooth to the MS floor was cautiously detached with a hook and Weil forceps (Figure 3). The tooth was extracted from the maxillary sinus into the middle meatus through the antrotomy window and then removed through the nasal fossa (Figure 4). The specimen was then sent for histopathological examination, which turned out to be a dentigerous cyst.²



Figure 3: Vision of the left maxillary sinus through a medial antrotomy (70° endoscope): the ectopic tooth is detached from the surrounding follicular cyst and removed from the pterygomaxillary fossa.



Figure 4: A blunt curved aspirator is used to extract the ectopic molar tooth through the left nasal fossa.

Preoperative antibiotic (amoxicillin/clavulanate 2.2 g iv) prophylaxis was administered. No nasal packing was placed. The postoperative course was uneventful. The patient did not complain any facial pain or numbness and no analgesic therapy was required. No sign of infection or fistula was observed. The patient has been on a regular follow up for more than a year with no evidence of recurrence.

DISCUSSION

The etiology of ectopic eruption of teeth in the MS remains unknown, though a role of trauma, infection, pathological conditions (tumors or dentigerous cysts), crowding, and developmental anomalies has been suggested. In particular, abnormal interactions between the oral epithelium and the

underlying mesenchymal tissue during development may potentially result in ectopic tooth development and eruption.^{1-4,6,7} Ectopic teeth in the MS may be permanent, deciduous, or supernumerary, with third molars being the most common ectopic dental elements in the MS.⁶ As to ectopic molar tooth in the PF, to our knowledge, no other case has been reported so far in the literature.

In our case, no history of trauma, infection, or pathological condition was referred. Therefore, the etiology of the ectopic tooth was considered idiopathic. Basing on radiological and intra operative findings, we assumed the ectopic tooth initially developed in the posterior part of the MS and then migrated through the MS posterior wall into the PF. Such migration was likely enabled by the erosive/compressive effect of the tooth-related follicular cyst, which caused the interruption of the MS posterior wall and pushed the tooth into the PF. Our patient reported episodic left maxillary pain and swelling. In the literature, ectopic teeth in the MS have been associated with a variety of clinical manifestations, such as facial pain/headache, purulent nasal discharge, cheek edema/numbness, nasolacrimal duct obstruction/epiphora, and haemoptysis.^{1-4,6,7} However, most patients are asymptomatic and ectopic teeth are discovered on routine dental radiographic examinations.¹⁻⁴ Further imaging techniques, such as maxillo-facial CT scan without contrast, are usually required to confirm the exact localization of the ectopic tooth and perform an appropriate treatment planning.^{3,6,7}

Caldwell-Luc approach is the traditional procedure performed to attain direct view into the MS and remove ectopic teeth from the sinus.³ In those cases, an extended (depending on tooth size) bony window of the MS anterior wall is removed, with consequent morbidity for the patient.^{3,5,6} In particular, teeth sensory impairment or injury, cheek edema, infra orbital nerve numbness and neuralgias, maxillary hematoma/sinusitis, and maxillary wall weakness have been reported as possible side effects/complications of “external” Caldwell-Luc procedure.^{3,5} Our decision to remove the tooth through a transnasal endoscopic approach was due to the request of the patient who asked to avoid any risk of postoperative facial pain/numbness and required a “minimally” invasive surgical approach. Endoscopic surgery is associated with lesser operative and postoperative morbidity than Caldwell-Luc approach.^{3,5-7} Indeed, in our case we did not notice any complication of endoscopic surgery (i.e. orbital injury, CSF leak, loss of vision, diplopia, meningitis, nasolacrimal duct stenosis and epiphora) or oro-antral fistula.^{6,7} In addition, intranasal antrotomy favors blood/mucous drainage from the maxillary sinus into the middle meatus and nose, which reduces the risks of local infections.⁵ Finally, endoscopic magnification and “behind-the-corner” vision enables a relatively easy removal of the ectopic molar from the pterygo-maxillary fossa, which would be extremely more complicated in case of “external” approach.^{6,7} In fact, while foreign bodies within the anterior part of the MS can be easily approached through a “minimally invasive” (i.e. tiny opening of MS anterior wall) Caldwell-Luc Procedure, an ectopic tooth in the PF would require a more

extended opening through the MS anterior-lateral wall, which would increase the risk of postoperative facial pain/numbness and teeth sensory impairment. On the contrary, the endoscopic intranasal approach allows an optimal access to the PF and posterior MS with no risk of facial pain and teeth involvement.

CONCLUSIONS

Transnasal endoscopy is an easy and safe approach for the removal of ectopic teeth in the PF through MS thanks to the low morbidity of intranasal antrotomy and advantages of endoscopic vision. In particular, endoscopic approach should be considered in young patients who request a “minimally” invasive surgical approach and want to avoid the postoperative facial pain/numbness secondary to Caldwell-Luc procedure. An accurate imaging planning is mandatory for the correct selection of the surgical approach.

CONFLICTS OF INTEREST: None.

CONSENT

The authors obtain written informed consent from the patient for submission of this manuscript for publication.

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