

A rare complication following maxillary third molar extraction: infratemporal fossa abscess

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ABSTRACT

Infratemporal fossa abscess formation is a very rare and life threatening condition and also its differential diagnosis is a very difficult process. Infratemporal fossa abscess following the non-infected, asymptomatic, erupted maxillary third molar extraction in a young and healthy patient is an unexpected and unusual complication.

A 25 years old, male patient with a significant infratemporal fossa abscess and his treatment protocol was presented in this case report.

Keywords: Infratemporal fossa abscess, infratemporal fossa infection, intraoral drainage, third molar extraction

INTRODUCTION

The masticator space lies down from the infratemporal fossa to deep nasopharyngeal space. The infratemporal fossa is an irregularly shaped space below the greater wing of the sphenoid bone (containing the foramen ovale), lateral to the ramus of the mandible and the gap between the zygomatic arch and temporal bone.¹

Isolated infratemporal fossa abscess formation is a relatively rare condition. Infratemporal fossa abscess usually occurs following the maxillofacial tuberculosis, maxillary sinusitis, maxillary fracture or peritonsillar infection.² The differential diagnose of infratemporal fossa abscess is clinically complicated. The early diagnose of the infratemporal abscess formation is important because it may cause intracranial or neck spread of infection.³

In this case report, infratemporal fossa abscess formation following the asymptomatic maxillary right third molar extraction in a healthy, male, young patient and its treatment protocol were presented.

CASE REPORT

A 25 years old, ASA I male patient referred to the clinic with a significant pain around his right temporal region. In addition, he had high fever and his general situation was poor. Restricted mouth opening was observed during the clinical examination.

Two weeks before he applied to our department, his erupted maxillary right third molar was extracted in another clinic without any complication. Two days before he applied to our department, he started to receive an oral penicillin therapy. Healing of oral mucosa was not sufficient however there was not any infection or pus drainage at the extraction side clinically. He had a severe trismus and his maximal interincisal distance was 9mm. Radiographic evaluation was performed by digital panoramic radiography (Figure 1) and magnetic resonance imaging (MRI). Panoramic radiograph was normal however MRI revealed that there was an

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Figure 1. The extraction socket of the upper right third molar can be detected on the panoramic radiograph.



A



B

Figure 2. A. The abscess formation behind the maxillary sinus can be detected by MRI on sagittal plane. **B.** The abscess formation behind the tuber of maxillary bone can be detected by MRI on coronal plane.

abscess formation in the infratemporal fossa (Figure 2A and 2B).

Intraoral puncture was made by 24 gauge needle.

The needle was directed superiorly, medially and posteriorly behind the tuber of maxilla and moved in to the abscess formation. 4cc pus was aspirated and specimen was immediately forwarded for

antibiogram evaluation. Following the puncture, the dissection was performed along the tuber of the maxilla and abscess was drained (Figure 3). The drain was kept for 4 days for ongoing pus drainage.

Combined intramuscular 1 gram ampicillin-sulbactam, 500 mili-gram oral metronidazole were prescribed to the patient and patient used these antibiotics



Figure 3. The intraoral dissection and drainage were performed along the tuber of the maxilla.

for one week period. Patient also used muscle relaxants for two weeks.

His mouth opening became 15 mm in seven days.

Trismus was keep going approximately one month. Patient's limited mouth opening was improved by aggressive physiotherapy with tongue bundles. The patients' recovery was successful and there was no recurrence of infection.

DISCUSSION

The masticator space includes the mandible, masseter, medial and lateral pterygoid, and temporalis muscles. The masticator space can be divided two separate spaces as superior infratemporal fossa and medial deep nasopharyngeal space.⁴ Some authors distinguish an additional third space within the masticator space, termed the submasseteric space, located between the masseter muscle and the ramus of the mandible.⁵ Most frequently infected masticatory space is submasseteric space.⁶

Masticatory spaces infection usually starts from the mandibular odontogenic infections, may spread superiorly to the

infratemporal fossa part of the masticator space; this route is accepted as the most common pathway of infratemporal fossa infection.⁷

In the presented case, isolated infratemporal abscess occurred following the non-infected erupted maxillary third molar extraction in young, healthy patient. The possible reasons of the infection would be the unsterile tooth extraction procedure, needle track infection or infected hematoma.

Infratemporal fossa abscess formation is generally occurs with external otitis, orbital cellulitis, panfacial cellulitis, maxillary sinus fractures, neighborhood infections or mediastinitis. There are few infratemporal fossa abscess cases in the literature which were reported as an upper or lower third molar extraction complication.^{3,8,9}

The primary challenge is diagnosis of infratemporal fossa abscess because of its localization. The clinical signs of infratemporal fossa abscess are restricted mouth opening due to the influence of medial pterygoid muscle and pain and; they are not different from any other odontogenic infection findings. The pain is usually localized in front and upper side of the ear. Nasopharyngeal abscess, facial neuritis and temporal arteritis are the possible differential diagnosis for infratemporal fossa abscess. MRI is the most preferable technique for detection of the abscess formation in the infratemporal fossa.¹⁰

Exact diagnosis of infratemporal fossa abscess is essential because the treatments of all differential diagnosis are variable. The treatment of arthritis and neuritis is performing only with the prescribing of steroids. The treatment of nasopharyngeal and infratemporal fossa abscess include both drainage and antibiotics usage. If the steroid prescribing to a patient who has infratemporal fossa abscesses, infection will spread to the vital neighboring tissues.

Intraoral drainage of the infratemporal fossa abscess is a difficult procedure due to the anatomic complexity and visualizing problems. Although early reports describe an external approach to drainage the infratemporal fossa through a modified Blair incision,¹¹ the presented abscess was managed successfully by an intraoral approach without any recurrence, scar or patient hospitalization.

Due to previous antibiotic usage of the patient, the result of the antibiogram test was unreliable. Infection had not been taken under control despite of previously used amoxicillin. Intramuscular ampicillin-sulbactam was prescribed to the patient for the improvement of the bio-availability of the antibiotic therapy and successful treatment of IFA, which has the potential to spread to cranium or mediastinum. Ampicillin-sulbactam therapy was preferred as it is effective on wide range of penicillin resistant gram positive and negative bacteria. Additionally, oral metronidazole was also given in order to control the possible existence of anaerobic bacteria and muscle relaxant was prescribed to the patient for helping the improvement of limited mouth opening.

CONCLUSION

The clinicians should always be aware of the infratemporal fossa abscess formation as a differential diagnosis of restricted mouth opening. Even though it is a very rare condition, infratemporal fossa abscess is a dangerous infection and can easily be treated with early diagnosis.

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