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Case Report

Unraveling the Trismus Trap: A Rare Case of Submasseteric Abscess in a Patient with TMJ Ankylosis

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ABSTRACT

Submasseteric space infection is a rare deep facial space infection that can pose diagnostic and management challenges due to its close proximity to critical anatomical structures and its potential to mimic other conditions such as parotid abscess. This report presents the case of a 33-year-old male with a history of temporomandibular joint (TMJ) ankylosis, who developed a submasseteric space abscess secondary to pericoronitis of an impacted third molar. In the literature there are very few publications documenting such variations. This case highlights the complexities of diagnosing and treating submasseteric space infections, especially in patients with predisposing conditions such as TMJ ankylosis. It underscores the importance of a multidisciplinary approach, imaging-guided diagnosis, and tailored surgical intervention for optimal outcomes.

INTRODUCTION

Submassetric space infection is a rare deep space facial infection occurring between the masseter muscle laterally and the mandibular ramus medially[1]. The space is contiguous with other masticator spaces like pterygomandibular and infratemporal spaces, increasing the risk of infection spread[2]. Critical structures like the mandibular nerve, facial artery, and lymph nodes are in close proximity posing a higher risk[3]. Common etiologies include including odontogenic infections (most commonly third molars), trauma, or extension from post-surgical cause[4]. Rarely, infections can originate from adjacent anatomical spaces or misdirected injection needles[5,6].

These infections can spread via the mandibular fascial plane, leading to serious complications such as facial swelling, trismus, and in severe cases, airway obstruction.[7,8] Trauma or surgical interventions in the maxillofacial region may further predispose to secondary infections within the submassetric space[9].

Submassetric infections are often misdiagnosed due to its non-specific clinical features often mimicking other infections such as parotitis or parotid abscess due to its close proximity to the parotid gland[10]. A high degree of clinical suspicion is necessary for accurate diagnosis in combination with imaging techniques such as computed tomography (CT) and magnetic resonance imaging (MRI).

Management includes antibiotic therapy along with pus drainage intraorally or extraorally depending upon feasibility [11,12,13].

CASE REPORT

We report a atypical case of 33-year-old male with history of Temporomandibular joint (TMJ) ankylosis operated 20 years ago presented in dental department**,** with history of right sided facial swelling for 2 weeks. The patient reported poor oral intake and a one-finger mouth opening. He had not adhered to postoperative physiotherapy following the TMJ ankylosis surgery and had not attended follow-up appointments.

The swelling had an insidious onset with no preceding trauma or dental pain, although the patient admitted to using warm compressions, which exacerbated the condition. He had poor oral intake but denied fever, dysphagia, odynophagia or difficulty in breathing.

An orthopantomogram (OPG) revealed periapical pathology in relation to 14. He was prescribed a course of antibiotics recalled for follow-up after 5 days. He returned 2 weeks later with worsening swelling. He reported initial improvement followed by an increase in swelling over the past 2 days(Fig 1).

On examination, patient was mildly febrile. There was a

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Fig.1 Patient's Preoperative Photograph

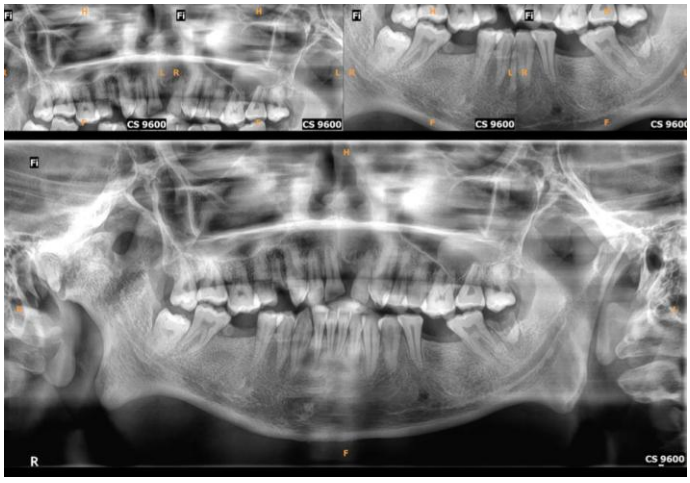

Fig 2- Orthopantomogram showing pericoronitis in 48

large diffuse hard swelling extending from the preauricular area anteriorly, angle of mandible posteriorly, to the level of parasymphysis region, measuring about 10x7cm in size. The overlying skin was intact without erythema, punctum or discharge. The swelling was tender and firm in consistency with small area of fluctuation with less than 1 finger mouth opening. The cause of infection was thought to be pericoronitis of the impacted third molar, as seen in the panoramic view(Fig 2). Orthopantomogram also revealed radiolucent area in the right ramus region below the sigmoid notch. A cone beam CT (CBCT) confirmed bony ankylosis at the right condylar head and an osteolytic lesion in the right ramus region below the sigmoid notch, suggestive of a traumatic bone cyst.

His complete blood count results included a total leukocyte count of 6730 with 63.7% neutrophils and 25.7% lymphocytes, hemoglobin level of 13.3 g/L, and a platelet count of 312,000. The C-reactive protein and erythrocyte sedimentation rate (ESR) test results were

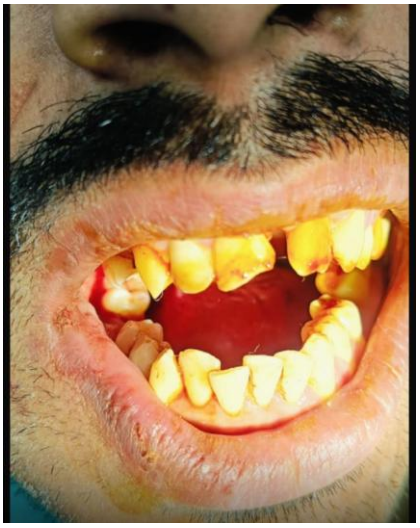

Fig 3. I&D attempted under LA

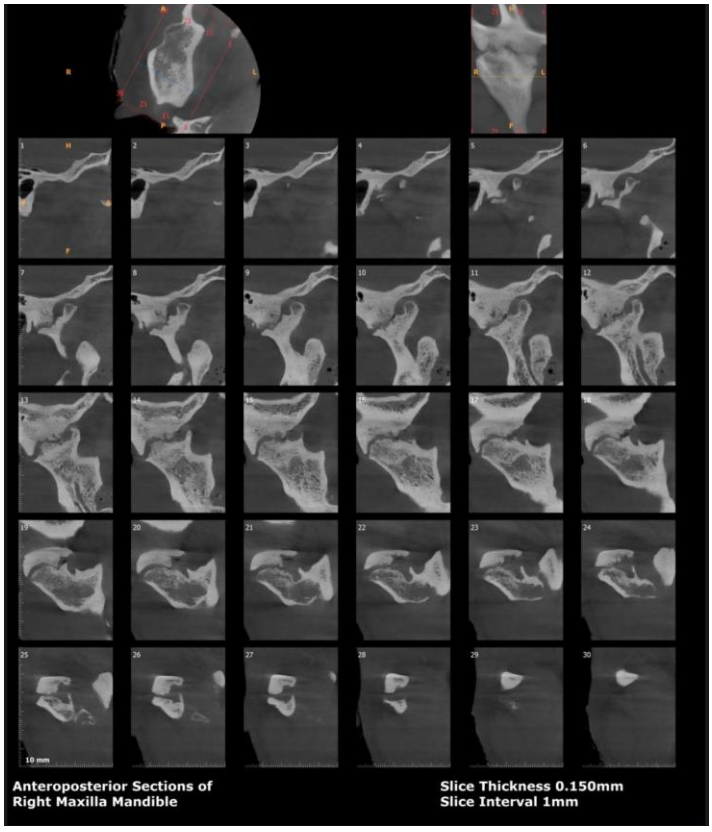

Fig 4. Ankylotic Mass near Right TMJ

78.23 mg/L and 11 mm/hr, respectively.

The patient was diagnosed with a submassetric space abscess, and was started on empirical antibiotics and magnesium sulphate dressing was started.

Under local anesthesia, an attempt was made to extract

Fig 5. Under General Anaesthesia

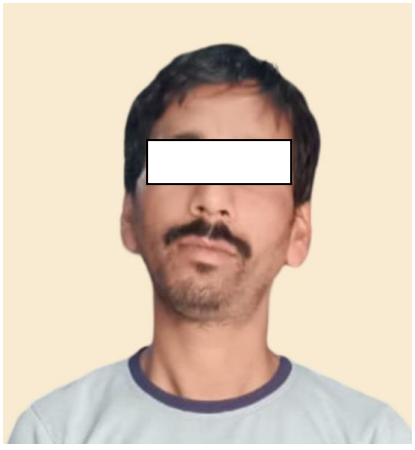

Fig 6. Follow up photograph

the offending tooth and perform intraoral incision and drainage (I&D) of the abscess(Fig 3). However, the procedure was unsuccessful due to limited mouth opening and restricted space in the buccal corridor caused by an ankylotic mass and chronic muscle calcification along with submassetric space abscess(Fig 4). Consequently, the procedure was scheduled to be performed under general anesthesia.

Due to a difficult airway as assessed by the anesthetist, a plan for awake fiberoptic intubation was made. The patient was prepared for the operating room based on the preoperative assessment. For awake intubation, the patient was nebulized with 4% lignocaine, and intramuscular glycopyrrolate was administered 30 minutes before the procedure. Additionally, superior laryngeal and transtracheal blocks were performed. The patient was successfully nasally intubated on the second attempt.(Fig 5)

Plastic Surgery opinion was taken. The mouth opening was forcefully increased and was stabilised with bite block. The vestibular mucosa was incised along the anterior border of the masseter muscle. While one hemostat was positioned against the lateral surface of the ramus, another hemostat was introduced through the intraoral wound and directed posteriorly. Through the intraoral route, the masseter muscle was detached from ramus.

Following this, a 1.0 cm horizontal incision was marked 2.0 cm below the lower border of the mandibular angle. The tip of the hemostat was guided buccally toward the targeted site, facilitating drainage of pus. A Corrugated drain was then attached to the hemostat and hemostat was removed. The drain was fixed with 4-0 silk. The pus was sent for antibiotic sensitivity testing and culture. Trans-alveolar extraction of the offending tooth was also done. Postoperative care included thrice-daily irrigation of the drain with hydrogen peroxide, betadine, and saline. Magnesium sulfate dressings were continued. Pt was managed on empirical IV antibiotics.

Pus culture sensitivity report revealed Streptococcus mitis and Staphylococcus epidermis as the causative organism.

The drain was removed after 5 days. The patient was discharged after 5 days with oral antibiotics. Serratiopeptidase and Vitamin c were also advised for chronic muscle calcification in the region for right TMJ along with mouth opening exercises.

At the follow-up visit after 14days a mouth opening of two fingers was recorded(Fig 6). The patient was counselled regarding surgical management of TMJ ankylosis.

DISCUSSION

Submassetric abscesses can arise through various pathways, including odontogenic infections, needle injections, and direct extension from adjacent tissues.[1] Pericoronitis of the gingival flap of third molars or caries-induced dental abscesses are the most common observation in masseteric space infections.[13] Infection in this region causes trismus, facial swelling and pain often complicating the management. Trismus is a conclusive diagnostic feature however TMJ ankylosis of the same side posed additional challenge in diagnosis and treatment. TMJ ankylosis, a condition characterized by fibrous or bony fusion of the mandibular condyle to the cranial base, is commonly a sequela of trauma, infection, or systemic conditions like ankylosing

spondylitis[14]. Prior surgical intervention and non-compliance of patient with postoperative physiotherapy likely contributed to chronic muscle calcification and limited mouth opening.

The identification of *Streptococcus mitis* and *Staphylococcus epidermis* as causative organisms aligns with existing literature emphasizing the polymicrobial nature of such infections[15]. Diagnostic imaging, particularly OPG and CBCT, played a pivotal role in identifying the abscess and underlying bony pathology, including the osteolytic lesion suggestive of a traumatic bone cyst.

Once a submassetric space infection is diagnosed, the key to resolving the infection is surgical evacuation of the pus[11,12]. Kay and Killey[12] in 1963 described intraoral through- and-through drainage technique preferably under endotracheal anesthesia. It helps in improving mouth opening and better engagement of instruments for extraction of offending tooth. The decision to perform awake fiberoptic intubation due to the patient's difficult airway highlights the importance of meticulous preoperative planning in cases involving significant anatomical alterations.

Apart from antibiotics use of magnesium sulfate dressings and adjunctive therapies like Seratiopeptidase and Vitamin C further underscores the need for comprehensive postoperative care to address chronic muscle calcification. The patient's improvement in mouth opening from one finger to two fingers postoperatively is a testament to the efficacy of the combined surgical and rehabilitative approach.

CONCLUSION

This case highlights the complexities of diagnosing and managing submasseteric space infections, particularly in the presence of predisposing factors like TMJ ankylosis. The challenges of limited mouth opening, altered anatomy, and difficult airway management underscore the importance of a multidisciplinary approach, involving dental surgeons, anesthetists, and plastic surgeon. Prompt diagnosis using imaging techniques and appropriate surgical intervention remain critical to managing such cases effectively. The improvement in the patient's clinical condition post-surgery and the successful resolution of the infection emphasies the importance of tailored management strategies. Moreover, this case underscores the need for patient education regarding compliance with postoperative exercises and follow-ups to prevent recurrence and improve quality of life.

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