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Infra - Temporal &Temporal Abscess – Retrograde Infection from Mandibular Molars.

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Summary: *Abscess formation in the infra temporal and temporal fossae is rare. It is a serious sequel of odontogenic infection. Their presentation is unusual and consequently causes problems with diagnosis. Once diagnosed, treatment should be aggressive with intravenous antibiotics and surgical drainage. We report an unusual case of isolated infra-temporal space infection in a young and healthy patient who had irreversible pulpitis in first left mandibular molar.*

I. Introduction

The commonest Odontogenic infection like periapical abscess, pericoronitis and periodontal abscessis the most prevalent disease worldwide and is the principle reason for seeking dental care [1]. The term maxillofacial space infection refers to infections in the potential spaces and fascial planes of the complex maxillofacialregion.It may be odontogenic or non odontogenic in origin. The main causes of Infratemporal space infection are odontogenic infection, lymphadenitis, and trauma. The incidence of Infratemporal space infection has decreased significantly following the widespread use of broad-spectrum antibiotics and improved dental care in urban region of this country. However, Infratemporal space infection remain potentially lethal infections, because of the possibility of life-threatening complications, such as respiratory obstruction, necrotizing fasciitis, descending mediastinitis, pericarditis, artery rupture, brain abscess,and sepsis[2]. With regard to the proximity to some important anatomical areas of the head, management of the infratemporal space infection needs great consideration both in examination diagnosis and surgical care. The infection might spread through the pterygoid plexus to the cavernous sinus or through the ophthalmic veins into the orbit. Isolated infection of the infra temporal space is rare and difficult to diagnose[3].

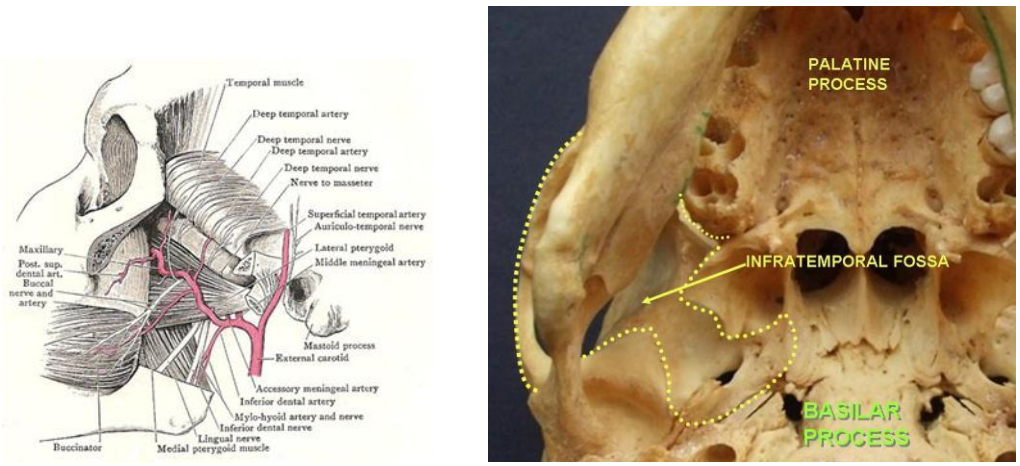

Figure 1: Anatomy of temporal space&bounderies.

II. Case Presentation

A 7 years old male patient reported with a significant pain and swelling around his left temporal region(Figure 2). He also complains of pain in his left mandibular posterior teeth. He developed symptoms one week before.

The left temporal area was warm, red, and markedly swollen. Slight tenderness without purulent discharge was observed in that swelled area. All branches of his facial nerve functioned normally. There was no cervical lymphadenopathy. Past medical history showed no systemic diseases andOtologic and rhinoscopic examinations were unremarkable. He had fever (39^0C) and restricted mouth opening was observed during the clinical examination.

Upon intra oral examination slight tenderness with purulent discharge was noticed around the mandibularfirst molar. Irreversible pulpitis was also noticed in the same tooth.

Figure 2: Front view of the patient.

During the investigation,2cc pus was aspirated from the temporal area, and the specimen was immediately forwarded for antibiogram evaluation. Radiographic evaluation was performed by digital panoramic radiography (Figure 3) which was suggestive of mixed dentition with caries involving 36. The caries is extending through enamel and dentine involving pulp. Infection has spread to periapical region involving mesial and distal root of the same tooth. There is rarefaction of lamina dura with widening of periodontal ligament space. The OPG is suggestive of deep caries with periapical abscess irt 36.

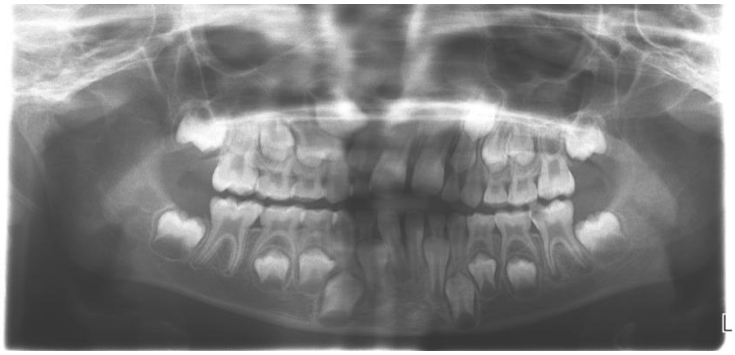

Figure 3:OPG suggestive of mixed dentition with caries involving left mandibular first molar.

With this the diagnosis of Temporal and Infra temporal space infection secondary to irreversible pulpitis of left first mandibular molar was arrived at. Under all asepsis conditions, and proper antibiotic coverage{Augmentin 325mg thrice a day, flagyl 200 mg thrice a day and Ketorol DT 10 mg twice a day for five days }, patient was taken up for Incision and Drainage.An incision is made 5cm lateral to the lateral canthus of the eye in the most dependent portion of the swelling, taking care not to injure the frontal / temporal branches of the facial nerve.The deep compartment is drained by advancing a haemostat through the temporalis muscle into the space between the temporalis muscle and temporal and sphenoid bone. Abscess was drained. Corrugated rubber drain was kept for 4 days for ongoing pus drainage.

Figure 4: 1 Month post operative

Left first mandibular molar was taken up and managed by root canal therapy. After two weeks there was no sign of infection, swelling to the patient. His mouth opening became 20 mm in seven days. Patient's limited mouth opening was improved by aggressive physiotherapy with tongue bundles. Post operatively the healing was uneventful (Fig 4). At the follow up examination, the patient's clinical outcome was found to be satisfactory.

III. Discussion

The temporal fossa is superior to the infratemporal fossa, above the zygomatic arch, and communicates with the infratemporal fossa below through the gap between the zygomatic arch and the more medial surface of the skull.It is an irregularly shaped space which lies behind the posterior surface of the maxilla and is bounded laterally by the ramus of the mandible and medially by the internal pterygoid muscle[4]. The anteromedial part of the fossa is referred to as the post zygomatic space which lies directly behind the maxilla and malar bone. It communicates with the temporal fossa through the gap between the zygomatic arch and the side of the skull and with the pterygopalatinefossa through the pterygomaxillary fissure. The inferior portion of the infratemporal fossa is called the pterygomandibular space, and lies between the lower part of the internal pterygoid muscle and the ramus of the mandible. These spaces communicate with each other but are at least partly separated, so that infection may for a time be confined to either one of the compartments. The contents of the infratemporal fossa include the lower part of the temporalis muscle which is inserted into the coronoid process of the mandible, the medial and lateral pterygoid muscle and the maxillary artery and the mandibular nerve with their branches which traverse this space. In relation to the lower head of the external pterygoid muscle the pterygoid venous plexus lies in the fossa. The posterior wall of the maxilla which forms the anterior boundary of this space is paper-thin and pierced by two or three small foramina which transmit the posterior superior alveolar vessels and nerves[4,5].

Uncontrolled and untreated mandibular odontogenic infections rarely spread superiorly to the infratemporal and temporal fossa There is three basic patterns of spread of infection from the masticatory space to temporal space has been identify. They are first, localization to the fossa itself due to primary cause, second, superior spread into the temporal fossa, and finally, inferior spread into the floor of mouth, neck, and parapharyngeal spaces despite the presence of distinct fascial barriers[3,6]. In the presented case, isolated infratemporal abscess occurred following the irreversible pulpitis in mandibular first molar in young, healthy patient. The possible cause of infection could be due to untreated pulpitis leading to periapical infection, followed by masticatory space infection[6]. As it remained unchecked it spread superiorly into the temporal fossa. The rapid spread of infection and mode of spread, indicates the urgency required for correct diagnosis and management of infections.

Etiology for the formation of the Infratemporal fossa abscess 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 secondary complication due to maxillary or mandibular molars. The primary challenge is diagnosis of infratemporal fossa abscess because of its localization in the temporal region. The clinical signs of infratemporal fossa abscess are not different from any other odontogenic infection findings. They are restricted mouth opening which is due to the influence of medial pterygoid and temporalis muscle. The pain is usually localized in front and upper side of the ear. In the present case, patient did complain of pain, swelling and restricted mouth opening. The other possible differential diagnosis for infratemporal fossa abscess includes nasopharyngeal abscess, facial neuritis and temporal artheritis. MRI is the most prefarable technique for detection of the abscess formation in the infratemporalfossa.Exact diagnosis of infratemporal fossa abscess is essential because the treatments of all

differential diagnosis are variable and depends on case to case. Steroids has been routinely prescribed for the treatment of arthritis and neuritis where as both drainage and antibiotics usage are used for the treatment of nasopharyngeal and infratemporal fossa abscess. If the steroid prescribing to a patient who has infratemporal fossa abscesses, infection will spread to the vital neighboring tissues hence in is required to perform a proper diagnosis for such infection[4-6].

To conclude with, infratemporal and temporal fossa infection are rare and is not commonly seen by clinicians and might be easily misdiagnosed. Infratemporal fossa infection occurs secondary to odontogenic infections with the common origin of mandibular molars. A careful medical and dental history, as well as oral, facial, and systemic examination is required. With this information, together with radiographic findings and knowledge of the anatomical structures involved, infratemporal fossa infection can be suspected and management properly.

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