

Case Report

A rare case of temporal and infratemporal space abscess secondary to masseteric space infection

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Received: 20 September 2019

Revised: 27 November 2019

Accepted: 02 December 2019

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ABSTRACT

Abscess in the temporal and infratemporal space are very rare. They develop as a result of the extraction of infected maxillary molars. Temporal space infections or abscess can be seen in the superficial or deep temporal regions. A 27-year-old lady who had undergone extraction of 2nd mandibular molar five days ago came with complaints of painful swelling over left cheek and restricted mouth opening. On examination, an ill-defined diffuse parotid swelling was seen and treated with empirical antibiotics for which patient didn't respond. On examination, a diffuse hourglass swelling was seen extending from left parotid region to temporal region. CT scan revealed a bulky parotid gland with abscess involving parotid, masticator, infratemporal and temporal scalp region with reactive cervical lymphadenopathy on the left side. Surgical drainage of the abscess was done from the temporal space; subsequently, all other space abscess resolved. On conclusion, masseteric space infection leads to infratemporal and temporal space abscess as they communicate. Drainage of abscess from temporal space is adequate to resolve the abscess from other masticator spaces.

Keywords: Temporal space, Abscess, Molar extraction, Antibiotics

INTRODUCTION

Infections of deep neck space remains a common and complex problem. Most common deep neck space infection remains Ludwig's angina followed by peritonsillar, submandibular, and parotid abscess.¹ Temporal and infratemporal space infections are rare. The main etiological factors are maxillary sinusitis, tonsillitis, maxillary sinus fracture, temporomandibular arthroscopy, drug infection, dental caries and extraction of infected and non-infected tooth.² The infections of odontogenic origin are frequently associated with maxillary molars followed by mandibular molars.^{3,4} We report a case of temporal and infratemporal space abscess secondary to parotid abscess after mandibular tooth extraction.

CASE REPORT

A 27-year-old lady presented to ENT OPD with history of pain and swelling over the left cheek for five days. The patient also had difficulty in opening mouth, dysphagia to solids and liquids with otalgia in the left ear. The patient underwent 2nd mandibular molar extraction on left side ten days back. On examination, a diffuse swelling was seen over the left parotid region, which was soft and tender. Ultrasound examination showed left submandibular lymphadenopathy with acute parotitis. She was put on IV antibiotics inj. amoxycillin-clavulanic acid and inj. metrogyl for five days for which she didn't respond and developed another swelling in the temporal region. On examination, a diffuse hourglass swelling was seen extending from left parotid region inferiorly to temporal region superiorly, which was soft and tender

(Figure 1). Later she was advised CT scan, which showed left parotid gland enlargement with pus collection in the parotid space measuring $4.3 \times 4.8 \times 2.7$ cms and tracking anteriorly into masticator space. Anterosuperiorly, the collection is extending into the infratemporal fossa measuring $5.3 \times 2.8 \times 2.9$ cms and into the superficial temporal space measuring about 10×3 cms (Figure 2). CT scan also showed bulky masticator muscles with oedematous changes. Incision and drainage of abscess were performed from the temporal space region and sent for culture and sensitivity, which showed no growth. Inj. cefotaxime was given empirically for seven days for which the patient responded well. The patient was in follow up for six months and was symptoms free (Figure 3).



Figure 1: Hourglass swelling of the parotid and temporal region.



Figure 2: CT scan brain showing well defined, peripherally enhancing hypodense collection with air foci in parotid space tracking into masticator space, infratemporal fossa, and temporal scalp region.



Figure 3: Follow up image showing disappearance of hourglass swelling.

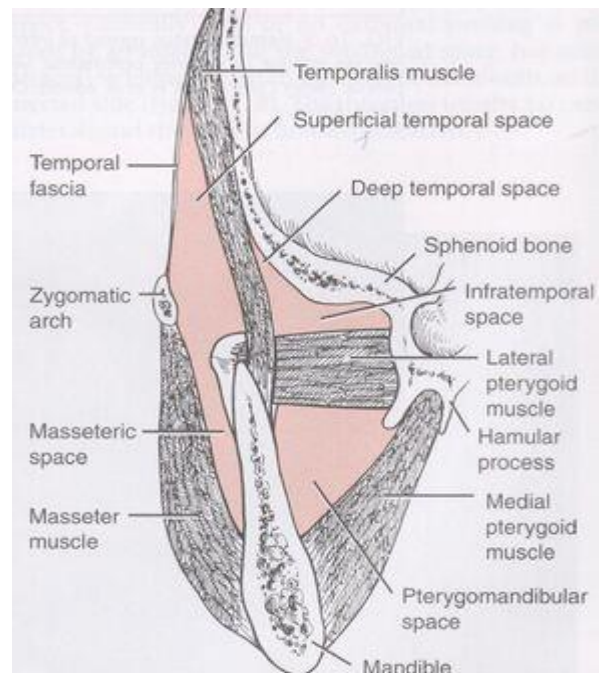


Figure 4: Relations of temporal space with other spaces.

DISCUSSION

Temporal space abscess is rare and has been rarely reported in the literature with an incidence of 0.74%.¹ Peterson stated that temporal space is divided into superficial and deep temporal spaces. The superficial temporal space extends superiorly to the pericranium, lateral to the temporalis muscle and medial to the temporoparietal fascia, inferiorly it is continuous with the masseteric space. Deep temporal space is extending superiorly to the attachment of the temporalis muscle to the inferior temporal crest and lateral to the temporal

bone and deep to the temporalis muscle, this space is continuous inferiorly with the infratemporal space (Figure 4).^{6,19} Schuknecht et al stated that the temporal space along with infratemporal space, masseteric, pterygomandibular spaces could be grouped as masticator space.³ Yonetsu et al further explained the relations of these spaces to masticator space like parotid space lies posteriorly to the masticator space, parapharyngeal space medially and submandibular and sublingual space inferiorly.⁴ Rega et al in his study on 30 patients with masticator space abscess from odontogenic infection, where he explained the extension of infection into the masticator space which can extend superiorly against gravity which was similar to our present case where the pathway of spread is poorly understood.³ The pathway of spread from masticator is divided into three basic patterns. One is limited to masticator space, the second pattern is extending to the base of the skull, and the last pattern is spread downwards to the floor of the mouth and upper part of neck.⁷

Our present case had a history of mandibular molar tooth extraction five days before the symptoms appeared. In a similar case report by Adnan et al same history was extracted from the patient 1 week before the symptoms arrived.² Yonetsu et al further explained this in his study on 45 patients of deep neck space infection where out of 38 mandibular and 7 maxillary extractions, 10 of mandibular extractions involved temporal space while all maxillary involved the temporal spaces. So according to Yonetsu temporal space infections are common with maxillary tooth extractions than mandibular extractions.⁴

Our case presented with swelling and difficulty in opening mouth. Chatterjee et al had their patient who presented with a similar complaint of swelling in the temporoparietal region and trismus.⁸ Gallagher et al and Diacono et al reported trigeminal neuralgia and paraesthesia as additional presentation due to involvement of maxillary and mandibular branches of the trigeminal nerve, which was not seen in our case.^{9,10} When swelling is extending to superficial temporal space from infratemporal space it gives an hourglass appearance of the face which is mainly due to the tight connection of the temporal fascia to the zygomatic arch which was seen in our case.²

Bratton et al stated that in all head and neck space infections, CT is standard than MRI for diagnosing them, CT has correctly diagnosed masticator abscess in all 30 patients. In the present case, CT with contrast was conducted that revealed the diagnosis with all extensions.¹¹ Schwimmer et al further agreed to this by observation on three patients with infratemporal space and temporal space abscess where all the three patients were correctly diagnosed with a CT scan with the extensions and management were planned accordingly.¹²

According to Stephanopoulos et al, most common pathogens include gram-positive aerobic alpha-hemolytic

streptococci, facultative anaerobes in the *Streptococcus anginosus* group and gram-negative rods such as *Prevotella*, *Porphyromonas* and *Fusobacterium* species.¹³ Banerjee et al in their case report, isolated gram-positive cocci and non-hemolytic streptococci sensitive to all the drugs. In our case, there was no growth identified mainly because the patient was started on antibiotics before culture.¹⁴

In our case patient was managed with surgical drainage of the abscess followed by the empirical antibiotic. The surgical incision was given in the temporal region on the most dependent part and drained all the pus. An attempt was not made to drain the abscess from other spaces. As there was communication from the remaining masticator spaces to temporal space, the abscess got subsided after draining from only one space. Razdon et al stated that management of deep neck infections is usually troublesome that is because of the complex anatomy of the neck, polymicrobial etiology, and life-threatening complications. Management of fascial space infection includes intravenous high dose antibiotics, analgesics, surgical drainage, and elimination of the primary source of infection.¹⁵ Adnan et al managed their patient similar to our case with incision and drainage followed by moxifloxacin after which swelling and trismus subsided.²

Leventhal et al and others advocated the possible complications of the temporoparietal region due to spread of infection along different routes, which are necrotizing fasciitis, descending mediastinitis, respiratory obstruction, pericarditis, brain abscess, sepsis, and orbital involvement.¹⁶⁻¹⁸

CONCLUSION

Temporal space abscess can come secondarily to masseteric space infection. According to our case report, drainage of abscess from temporal space is adequate to drain the pus from remaining masticator spaces. All the masticator spaces can communicate with each other in the spread and drainage of abscesses.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: Not required

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Cite this article as: Narayana ML, Gaur U, Chaithanya NR, Sravani AL. A rare case of temporal and infratemporal space abscess secondary to masseteric space infection. *Int J Otorhinolaryngol Head Neck Surg* 2020;6:384-7.