

Temporal space infection secondary to Mandibular Molar: a rare case report.

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Abstract

The infections of temporal region are very rarely found. They are usually due to translocation of oral microbes via odontogenic route to fascial spaces resulting in progressive degradation of connective tissue by the released enzyme and can be seen in the superficial or deep temporal regions. The untreated temporal space infection on time may proved to be fatal. Various factors like microbiological, host, nutritional and socioeconomic factors are responsible for progression of fascial space infection to the temporal region. This case report describes a young girl who came with complaints of painful swelling over left cheek and restricted mouth opening who was treated by incision and drainage in our department of oral and maxillofacial surgery.

Fascial space infections should be treated as early as possible as there are chances of rapid regional and systemic involvement leading to fatal outcome. Incision and drainage with removal of etiology and proper antimicrobial therapy is treatment modality of space infection. The recurrence of infection may occur because of inadequate drainage which progresses to distant secondary spaces. The abscess drainage from temporal space is adequate to resolve the abscess from other masticatory spaces.

Keywords: Temporal space, Abscess, incision and drainage, Antibiotics

Introduction

Fascial spaces are the potential spaces between layers of fascia normally occupied by loose connective tissue and

bounded by anatomical layers like fascia, bone and muscles.

Odontogenic infections usually progress to involve primary spaces and then to secondary spaces.

As fascial spaces are linked so infections propagate from one space to another. Direct involvement of secondary space is unlikely.

The Most common odontogenic infections is Ludwig's angina followed by peritonsillar, submandibular, and parotid abscess and rarely involved the temporal space abscess {1}.

The main cause of infratemporal space involvement is odontogenic infection mainly from maxillary molars followed by mandibular molars, other causes may include the tonsillitis, maxillary sinus fracture, temporomandibular arthroscopy, and extraction of infected and non-infected tooth{1, 2, 3,4}. Many factors are responsible for space infections like decreased host defense, nutritional status of the patient, virulence of bacteria and also with socio economic status and local factors like hygiene of the patient.

The infratemporal space is in closed proximity to important areas of the head. So, the infection in the infratemporal region needs great consideration both in examination and surgical practice. The infection might spread to the cavernous sinus through the pterygoid plexus or into the orbit through the valveless ophthalmic veins. Isolated infratemporal space infection is rarely seen and is very difficult to diagnose. The clinical symptoms like pain, trismus, and fever associated with infratemporal space infection are more likely to be diagnosed as a joint or muscle disorder. The hallmark of diagnosis of temporal space infection is trismus.

Case report

A 15-year-old female with the chief complaint of pain on the left side of the face and swelling in temporal area since

last 5 days, was referred to the Department of Oral and Maxillofacial Surgery, IMS, Banaras Hindu University.

On general examination patient was found with dull appearance, dehydration and mild pyrexia.

On examination of head and neck there was facial asymmetry due to a diffuse swelling on left side of face measuring 4×5 cm (figure 1a).

The swelling was tense, tender, and firm with raised temperature and extended below and above the zygomatic arch giving a characteristic dumbbell appearance (figure 1b).

Overlying skin was reddish with compromised temporalis muscle function of left side. Aspiration was done with wide bored needle, it yielded pus which confirmed our diagnosis of Temporal space infection.

On intra-oral examination-

The mouth opening was restricted and limited to 2cm. 36 and 46 were cariously exposed. On basis of clinical (figure 2a) and radiological (figure 2b) examination the patient was diagnosed as case of temporal space infection of left side and cause was identified as decayed 46 teeth as there was no focus of infection in maxilla.

All routine investigations were done and planned for incision and drainage with removal of etiology. Empirical antibiotic ceftriaxone and metronidazole with analgesic were started.

Treatment

- 1 Incision and drainage by Hilton's method was performed under local anesthesia via temporal approach (figure 3a).
- 2 After giving incision pus is drained out from the most dependent part.
- 3 The plane is decided and artery forcep is used and all the pus globules are breakdown and maximum amount of pus that can be drained is drained out.

- 4 Proper and copious irrigation with Metronidazole and Normal saline is done.
- 5 The corrugated rubber drain is placed and sutured with suture to both extreme side (figure 3b)
- 6 Bartons dressing is done which has advantage of soaking the pus and also it provide pressure necessary to cause slow and continuous drainage of pus (figure 4).
- 7 Pus was sent for culture and sensitivity and I.V Ceftriaxone and Metronidazole was continued with analgesics.
- 8 Culture and sensitivity showed insignificant result so same drugs were continued
- 9 Toileting of spaces was done after alternate day. Drain was removed in 3rd POD (figure 5).
- 10 Swelling got subsided and drainage got stopped on 4th POD, total oral opening was achieved in same day, so temporal stoma created was closed by suturing.

Patient was discharged on 7th POD after completion of I.V antibiotic dosage. Patient was recalled after 5 days for follow up and the clinical outcome was satisfactory.

A regular follow up was done for a week and we noticed no any sign of further progression of infection. Patient complains of no any symptom.

Discussion

Temporal space infections are the secondary space infection and because of their complex anatomy and location in antigravitic direction are rarely reported in literature with an incidence of 0.74% (1).

The most common cause of abscess in this region is reported secondarily to decaying maxillary molars followed by mandibular molars (3, 4).

Other cause may include maxillary sinusitis, maxillary sinus fracture (4).

Trismus is often the diagnostic hallmark to differentiate the infratemporal space infection from other conditions with facial swelling in temporal region.

Before the surgical procedure, standard antibiotic prophylaxis and medical supervision is essential for these patients. The treatment should specialize in prevention of spreading infection and possible life-threatening complications. Temporal space is divided into superficial and deep temporal space. Superficial temporal space is between temporalis fascia and temporalis muscle and deep temporal space between temporalis muscle and skull.

The zygomatic arch separates sub-masseteric space from superficial temporal space and lateral pterygoid muscle separates pterygomandibular space from deep temporal space.

Inferiorly this space continues to submasseteric space. Deep temporal space inferiorly communicates with infratemporal space (5, 6, and 7).

Temporal space along with infratemporal, sub-masseteric and pterygomandibular space altogether known as masticatory spaces (3).

In this case temporal space infection was from mandibular molar and first space to involve was masseteric space as primary space. The signs and symptoms of masseteric space infections are pain, fever, malaise, trismus, and swelling (18).

Rega et al in his study on 30 patients with masticator space abscess from odontogenic infection, 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).

Yonestsu et al further explained this in his study on 45 patients of deep neck space infection where out of thirty eight mandibular and seven maxillary extractions, ten of mandibular extractions involved temporal space while all maxillary involved the temporal spaces. So according to Yonestsu temporal space infections are common with maxillary tooth extractions than mandibular extractions (17).

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 or dumbbell shape swelling 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).

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 (11).

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 because the patient was started with repeated antibiotics before culture (12).

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 all pus was drained.

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.

Propagation of infection in retrograde direction is unlikely until and unless there is inadequate drainage, decreased host resistance to microorganism and increased resistance to antibiotics.

Established treatment of fascial space infection is incision and drainage or decompression of space with administration of broad-spectrum antibiotics and analgesics with pus for culture and sensitivity and administration of specific antibiotic according to culture and sensitivity report. Razdon et al stated that management of deep neck infections is usually troublesome 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 (13). 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(14, 15, 16).

Figure 1: Facial profile showing:



Figure 1 a: Facial assymetry.



Figure 1 b: Characteristics Dumble/Hour glass appearance.



Figure 2 a: Clinical examination showing: restricted mouth opening and carious 36 and 46.

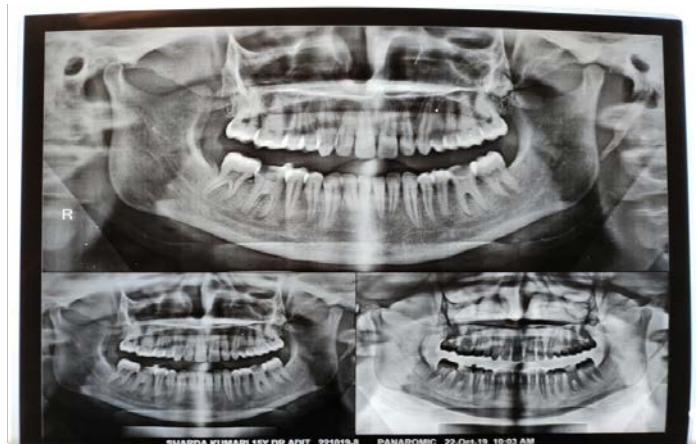


Figure 2b: Radiological examination (orthomopantogram) showing carious 36 and 46.

Figure 3 Showing incision and drainage by Hilton's methods



Figure a: Marking of incision by Temporal Approach.



Figure b: Placement of corrugated rubber tube.



Figure 4: Barton's dressing.

Figure 5: Follow up image showing disappearance of swelling



Figure a: 3rd day after incision and drainage



Figure b: 7th day after incision and drainage

Conclusion

Space infection has multifactorial cause and all the cause need to be treated.

Treatment of space infection is incision and drainage with removal of cause and empirical antibiotic followed by specific antibiotic after culture and sensitivity of pus.

While treating space infection every possible attempt should be done for complete evacuation of the space. Inadequate drainage can result in recurrence and spread of infection to neighboring spaces.

Early detection and treatment of primary space infection can prevent temporal space infection.

According to our case report, drainage of abscess from temporal space is adequate to drain the pus from remaining masticator spaces as all the masticatory spaces communicate with each other.

Ethical Approval: The study is approved by institute ethical board and IRB approval number is No.Dean/2018/EC/380.

Patient Consent: The subject gave informed to the work.

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