

## Complication in buccal space infection: A rare case report

Anupam Bhardwaj, Jahanvi Mishra, Amit B. Lall,  
Mayank Singhal, Sanjeev Tomar, Priyanka Takhellambam

Department of Oral & Maxillofacial Surgery, Santosh Dental College, Santosh Deemed To Be University, Ghaziabad.

### ABSTRACT:

Odontogenic infections have tormented mankind since the dawn of civilization. With the advancement of modern medicine and newer potent antibiotics, one is able to combat this potentially fatal disease. This case report aims to emphasize the importance of timely intervention, role of comorbidities and possible complications of space infection.

### KEYWORDS

Space infection, Abscess, Swelling, Incision and Drainage

### Imprint

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### INTRODUCTION:

Since the time of Galen in second century, fascial infections have been conceded<sup>1</sup>. This infection tends to spread through potential spaces that are normally filled with anatomical structures such as arteries, veins, nerves and lymph nodes that may lead to life threatening complications<sup>2</sup>. The odontogenic space infections are broadly classified into primary and secondary spaces. Primary maxillary spaces include the canine, buccal and infratemporal space infections and the primary mandibular spaces are namely the submental, sublingual, buccal and submandibular. Masseteric, pterygomandibular, superficial and deep temporal, lateral pharyngeal, retropharyngeal, parotid and prevertebral are the secondary spaces<sup>3</sup>.

The etiologic factors for these infections could be of odontogenic/ non odontogenic origin. Some of the odontogenic factors mentioned in the literature are caries

(65%), pericoronitis (36%), and periodontitis (21%)<sup>3</sup>. The microbiology of space infection includes the aerobic and anaerobic microbes which play pivotal role in the spread of the infection. These bacteria can further be classified into two groups which comprises of gram positive or negative cocci, and gram positive or negative bacilli<sup>1</sup>.

The spaces of maxillofacial region have definite boundaries according to their specific anatomical structure. The buccal space is medially bounded by the buccinator muscle, laterally by the zygomaticus major muscle, minor and risorius muscles, anteriorly by orbicularis oris and levator labii muscles, posteriorly it ends at the parotid gland, and superiorly the buccal fat pad of the temporal fossa<sup>4</sup>. Since there is lack of clear demarcation of superior, inferior and posterior boundaries in buccal space, it serves as an important pathways for rapid spread of infection<sup>5</sup>. Through this case report, the authors want to highlight the importance of early and accurate diagnosis, prompt surgical intervention (incision and drainage) comorbidities and supportive care.

### CASE REPORT

A 42-year female patient with the chief complaint of acute swelling involving the left side of the face from the past 5 days reported to the Emergency of Santosh Hospital. Patient gave a history of febrile episodes since the swelling started to develop. Patient had pain and mild swelling in the left upper back tooth region for which she visited a local dental clinic where she was prescribed medications (Ciprofloxacin 500mg and diclofenac 50mg+paracetamol325mg+seratopeptidase 15mg). Even after taking the prescribed medicine her pain persisted and in order to obtain relief, she applied hot fomentation about 3-4 times for couple of days which aggravated the swelling and associated with pyrexia. The patient gave a positive history of type 2 Diabetes Mellitus and Rheumatoid Arthritis since 5 years.

On local examination, there was a solitary diffuse swelling in the left midface region, extending superoinferiorly from the left infraorbital region till the lower border of the mandible and medially limited by the nasal bridge and laterally extending till the lateral canthus. Size of the swelling was so large that it obliterated the interpupillary distance of the left eye and caused inability to open the eye. The skin over the swelling was tensed, erythematous, shiny and stretched with the punctum of the swelling presenting over the left infraorbital region. On

palpation, there were local rise in temperature, tenderness, extraoral draining sinus with purulent discharge. The swelling was soft and compressible in consistency with diffused margins. Intraorally, obliteration of the buccal vestibule with tenderness over the upper left cuspid, bicuspid and maxillary first molar was observed. OPG and PNS X-ray were advised along with routine blood investigations. The blood investigations revealed reduced haemoglobin levels (7.6gm%) and raised TLC (12000 cu.mm). After thorough radiographic examination, a diagnosis of left buccal space infection with cellulitis involving the left periorbital region was made. Extraoral incision and dependent drainage of the abscess under intravenous antibiotic (Amoxicillin +clavulanate 1.2gm, Metronidazole 400mg, Gentamycin 80mg, Tazobactam 4.5mg), with extraction of the offending teeth was planned. Patient was reviewed after 2 days with marked reduction in the swelling and overall improvement in her general condition.



Fig 1: Pre operative clinical profile of the patient



Figure 2: Post operative clinical profile of the patient

## DISCUSSION

Origin of maxillofacial infections are multifactorial, it could range from a mere tooth decay, periapical lesion, periodontal lesion to direct trauma resulting in the breach of the epithelium<sup>1</sup>. The local anaesthetics that we use in modern dentistry have numerous detrimental side effects and one such side effect is inoculation of pathogenic microorganisms into the deeper tissue. Such clinical situation is termed as needle tract infection<sup>6</sup>.

There is tremendous amount of risk factor associated with oral cavity as maintaining sterility of the oral cavity becomes difficult<sup>7</sup>. Knowing the tendency to spread the odontogenic infections via the fascial spaces in the head and neck region, they tend to compromise vital structures and can involve the distant spaces<sup>8-11</sup>.

This case report on buccal space infection with facial cellulitis emphasises on the symptoms and complications that varied from acute, moderate to severe swelling due to gross collection of pus into the buccal space. Discolouration of skin preceded gross swelling which further led to abscess formation due to hot fermentation (a method of application of hot compressions by the patient, in order to obtain instant relief) which led to the increase in inflammatory response. Various literature correlated recurrent abscess formation in Diabetes Mellitus patients as it is a well-established fact that diabetes impairs immune response as compared to non-diabetic individual. Diabetes leads to macro and microangiopathies and obstructed granulocyte invasion which ultimately causes delayed wound healing<sup>12</sup>. The inherent immune response in subject plays a decisive role in infection control.<sup>13-15</sup>

This pronounced swelling, ultimately gave unsightly appearance to the patient and restricted the mouth opening (1cm approximately).

Once the buccal space infection is diagnosed, the main objective shifts in resolving the infection via evacuation of the pus content. The evacuation of purulent material is performed by surgical incision and drainage under local anaesthesia followed by extraction of the offending tooth, carried out under strict aseptic precautions. There are instances which are reported in the literature where the patient's condition fails to improve even after proper surgical treatment, at times patient's condition failed to improve. This occurs due to improper selection of antibiotics or resistant bacterial strain. The draining purulent

discharge is generally sent for culture and sensitivity testing which will help to decide the specific antibiotic against the microorganism and administration of specific antibiotic is advisable owing to increasing antibiotic resistance.<sup>16,17</sup> According to various literature, initially the infection shows aerobic predominance which later switches to anaerobic bacteria. With this wide spectrum of microbial culture present in the space infection, it is accepted to institute empirical therapy, however gram staining and culture sensitivity cannot be underestimated.

With the limitation of the present study being a case report, the evidence to make recommendations cannot be generated and quality trials with sufficient sample size are required.<sup>18</sup>

## CONCLUSION:

It is apt to state that the systemic condition of the host plays two significant role in maintaining and determining the surgical outcome in cases of space infection. Hence it is appropriate to incorporate early dental procedural interventions followed by improvised anaesthetic technique by drying the mucosa with antiseptic solution at the injection site. It is noteworthy to mention that thorough drainage of the infected site cannot be underestimated and supportive antibiotic therapy should be advocated for better treatment result.

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