

Space Infection – Review Article

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ABSTRACT :

Infections that are originating from dental pulp, jaw, bones, periodontium or surrounding tissues close to it, can also spread commonly or regionally and involve potential spaces of head and neck. Tobacco usage, poor oral hygiene, sugar prosperous eating regimen leads to odontogenic space infection. Management includes surgical and antibiotic management.

Keywords: *Odontogenic space infection, management, antibiotic management, surgical management*

INTRODUCTION:

Shaphiro defined space infections as potential spaces between the layers of fascia, normally filled with loose connective tissue and various anatomical structures like veins, arteries, glands, lymph nodes etc. Abscess, phlegmons, cellulitis can spread along fascial planes from the cranium base to the mediastinum and motives life threatening complications^[5]. Among the dental infections, streptococcus and mixed flora organisms are typically recognized in majority of dental infections. There regular protocol for management of odontogenic space infections are incision and drainage, elimination of center of attention of antibiotics. But when treating patients with haemophilia, diabetes, certain measures to be taken before surgery is done.

Epidemiology:

Orofacial odontogenic infections are combined aerobic-anaerobic infections, and bacteriology often excogitates the existence of commensal oral flora⁽⁸⁾. Odontogenic infections have been mainly viewed in males (71%) with a male to female ratio of 2.45:1. The age of patients ranged from 15-65 years with mean age occurrence being 37.25 years. Most frequently affected age group was 21-30 years (29%) followed by 31-40 years (28%). Most common cause of odontogenic infection were caries (65%), pericoronitis (36%), and periodontitis (21%). Most commonly involved teeth were mandibular 1st molar (41.9%), accompanied by mandibular 2nd molar (16.1%) and mandibular 3rd molar (15.3). In patients with odontogenic space infection of single space, submandibular space (44.26%) was most frequently affected accompanied by Buccal space (27%) and Pterygomandibular spaces (9.83%).

Etiology:

Dental infections are one of the most common diseases of human body and can be a cause of death. A casual relationship installed between dental infections and severe life threatening conditions like Ludwig's angina. Buccal space infections arise primarily from mandibular or maxillary bicuspid. Some of the predisposing factors are tobacco usage, poor oral hygiene,

Decay brought about due to consuming sugar rich foods frequently and some of underlying factors like Diabetes mellitus, neutropenia, rheumatoid arthritis(9).

Classification:

Based on mode of involvement, dental infections are classified as :

In Primary maxillary, the spaces involved are of Canine, Buccal, Infratemporal. In Primary Mandibular, the spaces involved are of Submental, Sublingual, Buccal, Submandibular.

Secondary spaces are of Masseteric, Pterygomandibular, Superficial and Deep Temporal, Lateral Pharyngeal, Retropharyngeal, Parotid, Prevertebral.

Among these, face involves buccal space, canine space, parotid space and masticatory space. And Suprahyoid bone involves sublingual space, submental space, submandibular space, lateral pharyngeal space, and peritonsillar space. Infrahyoid bone involves pretracheal space. And retropharyngeal space and space of carotid sheath have significance on spaces of total neck.

Canine space is the region between anterior surface of maxilla and overlying levator muscles of upper lip. Caused by infection in maxillary canine and first premolar and mesiobuccal root of first molars. Symptoms acquire drooping of angle of mouth, swelling of cheek and upper lip, redness and marked tenderness of facial spaces.

Buccal space is the potential space and lies between buccinator and masseter muscle. Involved teeth are maxillary and mandibular premolars and molars. The most important clinical sign seen is the gum boil in vestibule.

Retrozygomatic space is the another name of infratemporal space. Infections of buccal roots of maxillary 2nd and 3rd molars leads to infratemporal space infections. Extraoral symptoms acquire Trismus, bulging of temporalis muscle and intraorally swelling in tuberosity area with temperature of 104 degree.

Infections in mandibular premolar and 1st molar leads to sublingual space infection. Symptoms involve elevated tongue, swelling of floor of mouth and it becomes discomfort in swallowing because of pain.

Space between mylohyoid muscle and digastric muscle lies submandibular space. Contents are submandibular gland and facial vein and artery. Caused mainly by infections in mandibular 2nd and 3rd molars.

Submental space infection is caused due to lymphatic drainage of infected lower anterior teeth. Contents are submental lymph nodes and anterior jugular veins. Painful submental edema is the clinical sign(2).

If all the three of the primary mandibular spaces become involved with the infection, then it is known as Ludwig's angina. Onset was rapid. It is bilaterally spreading gangrenous cellulitis. It also spreads posteriorly to the secondary spaces. Patient experiences severe trismus, drooling of saliva, tachypnea and dyspnea. The cellulites may progress and causes upper airway obstruction and leads to death(7).

Extension of odontogenic infection beyond mandibular spaces is unusual. When it does, it may spread to deep neck spaces from sublingual, submandibular or pterygomandibular spaces and leads to various complications such as upper airway obstruction or mediastinitis.

Lingual and auriculotemporal nerves, inferior alveolar neurovascular bundle and mylohyoid nerve and vessels are the contents of pterygomandibular space. Pericoronitis, infected mandibular 3rd molars causes infection in pterygomandibular space. Symptoms involves trismus,swallowing difficulty.

Masseteric nerve, superficial temporal artery and transverse facial artery are the contents of sub masseteric space. In this case, patient complains of extra oral swelling, and it is confined to the boundaries of masseteric muscle. Patient experiences limitations in mouth opening(3).

Space which is secondary to the initial movement of pterygopalatine and infra temporal space is Temporal space. It involves both the superficial part and deep part.

Infections from third molars and tonsillar infection leads to lateral pharyngeal space infections.

Retropharyngeal space lies posteromedial to lateral pharyngeal space. Patient experiences severe trismus and always fatal when it involves retropharyngeal space. Diagnosis is made by taking radiograph of neck laterally.

Potential space between two layers of prevertebral fascia,the alar and prevertebral layers is the prevertebral space. This space is also known as Danger space No.4(10).

The most common complication which may occur is upper airway obstruction. Whenretropharyngeal space swells, narrowing of airway occurs. When an attempt is made to insert endotracheal tube to protect the airway, it ruptures.

Diagnosis:

The diagnosis is typically accomplished on the basis of recordstaken and physical examination of the patient. Culturesare taken intraoral play a higher position in diagnosis.Blood cultures, Gram staining,susceptibility testing of extraoral specimens obtained by needle aspiration(1).

OPG or AP radiograph of teeth to examine periapical abscess or advanced periodontal diseases.

CT of face and neck to verify source and extension of orofacial space infections(6).

Management:

There are constantly some of the goals to manage odontogenic infections. The goals to be performed are: The primary thing is to achieve Airway protection followed by incision and drainage, to know the etiological element behind it, appropriate antibiotic therapy(4).

In case of severe infections,Metronidazole can be combined with penicillin. And the patients who are allergic to penicillin, Clindamycin is the choice of drug. In most of the patients,3rd generation cephalosporins with metronidazole is used.There always lies two goals to manage the odontogenic infection surgiacally.Simply the procedure follows as opening tooth, extirpation of pulp and incision and drainage. The primary goal is to remove cause of infection. Secondary goal involves drainage of accumulated pus and necrotic debris.

If fever and regional lymphadenopathy are present along with space infections or if the infection has spread into surrounding tissues,anti-infective agents are prescribed.

CONCLUSION:

The best management of space infection constantly lies in having good understanding of the cases and preventing complications. Severely immuno-compromised patients are particularly at high threat for spreading orofacial infections. The management involves understanding seriousness about this condition and aids diagnosis and planning.

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