

Submandibular Space Infection: A Wake-Up Call for Parents and Caregivers

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ABSTRACT

Fascial space infection is the most prevalent infection and is regarded as a potentially life-threatening condition that can be caused by poor dental hygiene and other etiological variables, like tooth infections and compromised immunity. Fascial space infections of the head and neck region are usually odontogenic in origin and submandibular space infections is the most commonly encountered. The present case report describes a child with submandibular space infection with decreased mouth opening secondary to carious primary right mandibular second molar. The patient was kept under intravenous fluids, antibiotics and analgesics for 5 days. After discharge, pulpectomy of the offending carious tooth was performed followed by placement of stainless steel crown in subsequent dental visits.

Keywords: Fascial space, odontogenic, submandibular space infection.

INTRODUCTION

Most orofacial infections are considered to be odontogenic in origin.^{1,2} Many of these infections are caused by untreated dental caries, which can later progress to facial cellulitis and systemic toxicity.³ Early detection and treatment are essential for orofacial infections since the disease can spread quickly and cause serious systemic symptoms such fever, dehydration and impaired airway.^{3,4} This case report describes the management of submandibular space infection in a 5 year old child by intravenous administration of antibiotic and analgesics followed by endodontic treatment of the offending carious tooth and placement of stainless steel crown in subsequent visit.

CASE REPORT

A 5-year-old boy reported to the Department of Pediatric and Preventive Dentistry, Kantipur Dental College Teaching Hospital and Research Center with the chief complaint of pain and progressive swelling on right side of the face since 4 days. Pain was sudden in onset, severe in nature and it aggravated while having hot food and relieved on its own after few minutes. Swelling was progressive, resulting in difficulty in mouth opening and chewing food. The patient was on medication (syrup amoxicillin and paracetamol) for one day. Patient had normal gait, height and weight, was well oriented to time and place. There was no reporting of any relevant prenatal and medical history.

On extra-oral examination, facial asymmetry was seen due to diffuse swelling of approximately 4 cm x 4 cm on right side of the face involving submandibular space with limited mouth opening (approximately 2 cm) and angular cheilitis on right side (Figure 1). The overlying skin was erythematous, warmth and tender on palpation. Swelling was soft to firm in consistency. Submandibular and submental lymph nodes were tender to palpation.

On intraoral examination, there was swelling in the vestibular region in of mucobuccal fold in the same region. The patient was promptly administered

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intravenous (IV) fluids contemplating the decreased oral intake, IV antibiotics (clavam and metronidazole) and analgesics (paracetamol). Routine blood investigation and orthopantomogram (OPG) was advised. Blood investigations showed an increased neutrophil count. OPG showed disto-coronal radiolucency w.r.t tooth 85 involving enamel, dentin encroaching the distal pulp horn with inter-radicular and periapical radiolucency on mesial and distal root (Figure 2). Patient responded well to IV antibiotics after 48 hours with gradual recession in swelling (Figure 3A, 3B) and increase in mouth opening.

Access opening and biomechanical preparation w.r.t 85 with copious irrigation with normal saline was done under local anesthesia. Establishment of pus discharge was done from the root canal as well as from gingival sulcus (Figure 4). An open dressing was given for 24 hours to create a drainage path. Obturation was done with Metapex (calcium hydroxide with iodoform) followed by glass ionomer (GIC) restoration on fourth day of IV medicaments (Figure 5,6) followed by stainless steel crown placement (Figure 7) in subsequent visit.



Figure 1. Diffuse swelling on right submandibular region



Figure 2. OPG showing deep caries wrt 85 with periapical and inter-radicular radiolucency



Figure 3A,B. Follow up after 48 hours of intravenous antibiotic administration



Figure 4. Pus discharged from gingival sulcus



Figure 5. Obturation done with metapex followed by GIC restoration.



Figure 6. Pulpectomy wrt 85



Figure 7. Stainless steel crown placement

DISCUSSION

The fascial spaces in the head and neck are the potential spaces between the various layers of muscles, normally filled with loose connective tissue.⁵ Fascial space infection of the head and neck region usually originate from pre-existing dental infection.² Early diagnosis is particularly important when treating pediatric facial infections because the symptoms can progress quickly due to immune-compromised state of children, producing various systemic symptoms including fever, dehydration and compromised airways.²⁻⁴ Studies have shown that the proportion of children with dental sepsis increases markedly with caries experience⁶

Untreated dental infection can readily spread to the surrounding gingiva and soft tissues of the face and neck, these infections tend to pass along the path of least resistance.^{7,8} It usually begins on the buccal and lingual sides of the maxilla and mandible, respectively where the alveolar bone is the weakest to involve the primary fascial spaces and progress to involve the secondary spaces and even extra-facial regions.⁸ The spread of odontogenic infections of mandibular origin is largely based on the position of the tooth roots relative to the mylohyoid line.⁷

An infection that spreads inferiorly and medially along tooth roots above this line will cause sublingual space infections; an infection that spreads along those roots below this line will cause submandibular space

infections.⁹ It is mandatory to secure safe airway if there is bilateral submandibular space infection involvement.¹⁰ In the present case, since the submandibular space was unilaterally involved, no respiratory issue was seen.

Removal of the offending source and providing path of drainage is the most important aspect of treatment of space infection. In this case, there was adequate pus discharge from buccal vestibule and gingival sulcus. So extra-oral incision and drainage was not performed considering the unaesthetic appearance of the scar. Antimicrobial therapy clavam 125mg TDS IV was commenced and considering the anaerobic bacterial infection and metronidazole 150 mg TDS IV was infused. Patient responded well to antibiotic therapy within 48 hours with gradual recession in swelling and increased mouth opening. In case of odontogenic or orofacial infection, dental extraction is considered to be the gold standard definitive treatment, selected cases may be amenable to dental preservation through endodontic treatment.¹¹ Pulpectomy was performed in the present case considering the good prognosis of the offending

tooth and age of the child, followed by stainless steel crown placement in the subsequent follow-up visit which corroborated the successful outcome.

CONCLUSIONS

Submandibular space infection if not treated on time can lead to potentially fatal complication. Utmost of the space infection results from untreated dental caries, therefore, it is essential to improve oral health awareness and emphasize the importance of prevention, routine examinations and early intervention to treat caries to minimize oral sepsis.

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Conflict of Interest: None

INAPD

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