

Submandibular Space infection arising from grossly decayed primary molar with systemic condition- A case report

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ABSTRACT:

Isolated cases of space infections from primary teeth with a systemic condition are usually rare. If such cases occur, the ensuing systemic condition causes easy spread of infection causing involvement of several tissue spaces. In this condition, evaluation and care of systemic infection is of utmost importance in conjunction with local oral etiology. Common systemic cause of facial infection is resistance to commonly used antibiotics. In following case, both the systemic as well as local oral etiology was taken care.

Keywords: Antibiotic resistance, Neutropenia, Primary molar, Submandibular space infection.

INTRODUCTION

Severe infections arising from primary teeth involving fascial spaces is a rare phenomenon. Usually it is not often to find a primary teeth involving fascial spaces because the infection finds another path i.e. through the furcation area and is confined within the vestibule, but if the infection is not subsided in due course of time it takes another path that is by involving the fascial spaces in the primary dentition.¹ From the deciduous mandibular molars the fascial spaces involved are vestibular, buccal, submandibular or sublingual whereas that from the maxillary molars the space usually involved is infraorbital.

The route of facial infection usually depends on the configuration of roots, position of roots in the bone, and thicknesses of bony plates. The rarity of infection spread is also limited amounting to good immunity in child patients.^{1,2}

CASE-REPORT

A seven years old boy reported to us with a severe swelling involving lower left facial region. *There was no history of cough, dyspnea, and stridor. On examination, the*

patient had a temperature of 38.6°C, pulse of 112, and respiratory rate of 22.

Extraoral examination revealed 3*2 cm swelling involving the left lower facial region, it was tender to touch, redness and local raised temperature was also evident. Submandibular and sublingual lymphnodes on left were palpable and tender to touch. (Figure 1)

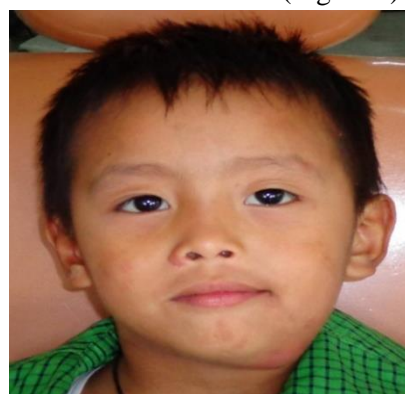


Figure 1: Pre-Operative Extra Oral Photograph

Intra oral examination revealed a grossly decayed tooth #75 (FDI notation) along with other carious teeth #84,51,52,62. Intraorally there was slight puffiness in the vestibule surrounding teeth #74 and #75. High plaque deposits denoting poor oral hygiene was also evident.(Figure 2)



Figure 2: Intra Oral View Showing Large Carious Lesion

Provisional diagnosis: Submandibular space infection of left side and irreversible pulpitis of tooth #75.

Investigations: Intraoral periapical view of tooth #75 and routine blood investigations. Radiographs confirmed pulpal pathosis of tooth #75.(Figure 3) Routine blood investigations showed slight neutropenia.



Figure 3: Pre-Operative Radiograph

Final diagnosis: Submandibular space infection of left side and acute irreversible pulpitis of tooth #75. Neutropenia due to unknown etiology.

Treatment done: Emergency access opening was done under local anaesthesia to create a drainage path but no discharge was evident from the root canals of #75, the canal was left open by placing a loose cotton dressing to maintain the patency. The patient was kept on antibiotics for three days and was recalled. During the subsequent visit the swelling was still evident. It was therefore decided to drain the pus extraorally. Patient was prepared after taking a thorough consent from the parents. Proper aseptic protocol was taken to ensure no infection occurred concomitantly. Area was scrubbed with 10% povidone iodine solution, anaesthetic spray was applied and local infiltration was done, then with a help of #15

BP blade a stab incision was given in the most dependent part. (Figure 4, 5 & 6) Care was taken to ensure the incision was parallel to the skin crease to avoid the scar formation due to esthetic reasons. The purulent discharge was collected and sent to department of microbiology for further investigations like gram staining and antibiotic sensitivity. After draining the discharge, taping was done and the patient was discharged and was continued on same medication till the sensitivity report was sought. Gram stain indicated abundant gram positive cocci. Antimicrobial sensitivity studies were done for aerobic pathogens. Anaerobic pathogens did not undergo antimicrobial sensitivity or beta-lactamase testing. The report revealed *Staphylococcus aureus* as the principal bacteria. Regarding antibiotic sensitivity it was found to be resistant to Ampicillin 11 (R), among the other drugs tested it was found to be sensitive were Clindamycin 25(S), Erythromycin 24(S), Gentamycin 18(S) & Linezolid 32(S).



Figure 4: Exudate of Aspirate

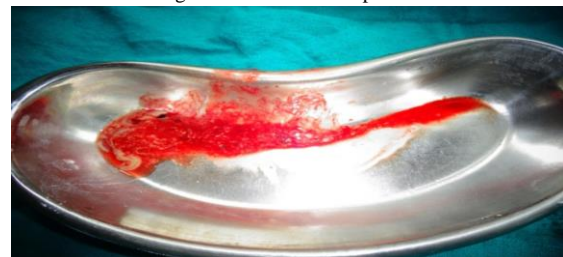


Figure 5: Exudate Retrieved During Drainage



Figure 6: Post Operative Clinical Oral View

After the sensitivity report the patient was placed on erythromycin 250 mg b.i.d for 5 days. Tab Brufen was administered on a s.o.s. basis. It was during this visit the pulpectomy was completed by cleaning and shaping the canal upto #35 file alongwith copius irrigation with normal saline and chlorhexidine. The canal was simultaneously filled with Metapex. (Figure 7) Temporary filling was done and the patient was recalled after 5 days. During subsequent visit the lesion showed drastic improvement . During this visit permanent filling was done with G.I.C. and a stainless steel crown was placed on the tooth. (Figure 8) Patient was again recalled after 2 weeks to see the healing.

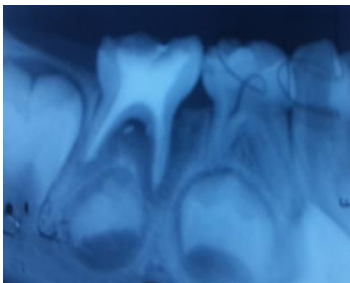


Figure 7: Post-Operative Radiograph



Figure 8: After Crown Placement

After 1month the lesion was perfectly healed and revealed no infection. (Figure 9)



Figure 9: 1 Month After Surgery Postoperatively

DISCUSSION

It is not often to see a primary tooth involving fascial spaces. Low involvement of facial spaces in children is related to 1) Drainage through thin and porous furcal bone 2) porous and less calcified bone that easily provide pathways for early movement of infections into oral cavity, 3) small length of roots of primary teeth, 4) high immunity associated with growing child.^{1,3}

In present case the child's blood report revealed neutropenia but the cause somehow was undermined. May be the associated neutropenia could have exacerbated the inability of the child to fight off infection-resultant the infection spread to vestibular and buccal spaces.

Spreading infections are a serious concern in children because of ensuing Ludwig's angina. It is a serious emergency in children due to severe dyspnoea (greater tongue fall back associated in children), narrower airway (lumen of larynx is very less developed), asphyxia (children have greater respiratory rate). All of these can precipitate a severe emergency and prevention of which is of utmost importance.

The predominant pathogens included in children usually include the gram-positive organisms such as beta-hemolytic streptococci (18%) and *S. aureus*(18%). Prevalent anaerobic

pathogens included *B. melanogenicus*(17%) and *Veillonella* species (14%).^{2,3} This incidence of *Veillonella* species is higher than that reported in other studies. Antibiotics covering gram positive, anaerobic, gram-negative, and beta-lactamase-producing organisms should be selected for empiric therapy pending more specific culture and sensitivity results.⁴ It is important to adequately treat the etiologic focus of infection that led to the subsequent head or neck space infection.

In present case although emergency access opening was done to allow for pus drainage and lower spread of infection; the ensuing neutropenia systemically could not take care of

buccal space infection necessitating direct drainage of infection.^{5,6} The infection at last was brought to control due to proper selection of broad spectrum antibiotics, local drainage of infection and proper debridement of root canals.^{7,8}

Takeaway points-or pediatric significance

1. Space infections are usually rare in children but if present the ensuing etiology should be properly understood.
2. Neutropenia due to unknown reason can be an aggravating factor for spread of infection.
3. If such condition is not treated in time with utmost care and immediate intervention there can be serious life threatening conditions in children like Ludwig's angina.
4. In submandibular space infection proper selection of antibiotics, local drainage of infection and proper debridement of root canals should be done.

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