

CASE REPORT- ODONTOGENIC BUCCAL SPACE INFECTION IN A PEDIATRIC PATIENT TREATED CONSERVATIVELY: A CASE REPORT

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ABSTRACT

This case report presents the management of a buccal space infection in an 11-year-old child, originating from the mandibular right first permanent molar (tooth 46). The patient reported with swelling in the right buccal region, accompanied by pain and difficulty in mastication. Clinical and radiographic findings confirmed the involvement of the buccal space secondary to pulpal infection. Immediate endodontic intervention was initiated. In the first visit, access opening was done and thorough biomechanical preparation (BMP) of the canals was carried out to reduce the microbial load followed by triple antibiotic paste (TAP) was placed as an intracanal medicament to ensure complete disinfection. The swelling gradually subsided as the infection resolved. Once symptoms were alleviated, the tooth was obturated, and a stainless steel (SS) crown was placed to restore form and function. This case highlights the importance of timely diagnosis and conservative endodontic therapy in managing space infections effectively while preserving the permanent tooth in pediatric patients.

INTRODUCTION

Odontogenic infections are among the most common causes of head and neck infections, especially in children and adolescents. These infections can extend beyond the alveolar bone into various facial spaces, leading to space infections that may rapidly progress if not diagnosed and managed promptly. The buccal space, located between the buccinator muscle and the skin of the cheek, is frequently involved due to its proximity to the posterior teeth and thin cortical plates in the mandibular region.^[1]

The mandibular first permanent molar is often affected by deep caries in mixed dentition due to its early eruption and anatomical complexity, making it susceptible to pulpal and periapical infections. If left untreated, the infection may breach the cortical plate and involve the adjacent fascial spaces, such as the buccal space, presenting as facial swelling, pain, and systemic signs in some cases.^[2,3]

Timely diagnosis through clinical and radiographic examination, followed by appropriate endodontic management, is essential to avoid the spread of infection and preserve the permanent tooth. Conservative approaches including biomechanical preparation (BMP),

use of intracanal medicaments like triple antibiotic paste (TAP), and proper coronal restoration can effectively resolve such infections without the need for surgical intervention in many cases.^[4] This case report discusses the successful management of a buccal space infection in an 11-year-old child using a conservative endodontic approach.

CASE REPORT

An 11-year-old male patient reported to the Department of Pediatric and Preventive Dentistry at Kothiwal Dental College and Research Centre with a chief complaint of pain and swelling on the right side of the face for the past two days. The pain was continuous, dull in nature, and gradually increasing in intensity. The patient had no significant medical or previous dental history.

On extraoral examination, a diffuse swelling was observed on the right side of the face, extending anteroposteriorly from the corner of the mouth to the angle of the mandible and superoinferiorly from the infraorbital margin to the lower border of the mandible. The overlying skin appeared stretched but not erythematous. On palpation, the swelling was tender, firm in consistency, and mildly warm, suggestive of an

acute localized infection likely involving the buccal space(Fig. 1).



Fig. 1: Pre-operative extraoral photograph.

Intraoral examination revealed gross destruction of the mandibular right first permanent molar (tooth 46), with deep carious involvement and extensive loss of crown structure. The surrounding gingival tissue appeared inflamed, and the vestibule adjacent to the affected tooth was obliterated due to the underlying swelling. Pus discharge was not evident intraorally(Fig.2: Pre-operative intraoral photograph of 46)

A radiographic examination was carried out using an intraoral periapical radiograph (IOPA), which revealed a well-defined radiolucency involving the periapical area of tooth 46, suggestive of chronic periapical infection. The extent of the radiolucency, along with clinical findings, confirmed the diagnosis of a buccal space infection secondary to pulpal necrosis of 46(Fig.3:)



Fig. 2: Pre-operative intraoral photograph of 46.



Fig. 3: Pre-operative radiograph of 46.

On the same visit, local anesthesia was administered, and access opening was performed. Upon entering the pulp chamber, purulent discharge confirmed pulpal necrosis. Thorough biomechanical preparation (BMP) was initiated using K-files in a step-back technique. The canals were irrigated intermittently with 1.5% sodium hypochlorite and normal saline to ensure effective debridement and disinfection.

Following instrumentation, the canals were carefully dried using sterile paper points. To further manage the infection and promote healing, triple antibiotic paste (TAP)—a combination of ciprofloxacin, metronidazole, and minocycline—was placed into the canals as an intracanal medicament. The access cavity was sealed with a temporary restorative material, and the patient was scheduled for follow-up after 10 days.

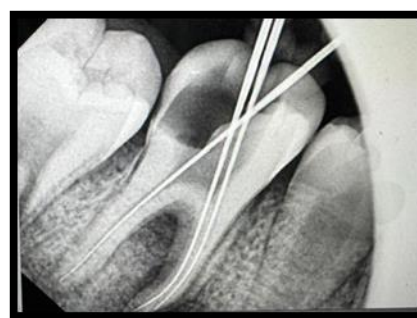


Fig. 4: Working length determination.

At the follow-up visit after 10 days, the patient reported significant relief from symptoms, and the facial swelling had completely subsided. Clinical examination confirmed the resolution of the buccal space infection. The access cavity was reopened, and the previously placed triple antibiotic paste was removed using K-files and copious irrigation with 1.5% sodium hypochlorite.

After ensuring complete removal of the medicament, the canals were thoroughly dried with sterile paper points. Metapex (calcium hydroxide with iodoform) was placed as an intracanal medicament to promote continued periapical healing and create an environment unfavorable for bacterial regrowth.(Fig.5) The access cavity was sealed with temporary restorative material, and the patient was recalled after 21 days for evaluation of periapical healing and obturation planning.

After the initial 21-day period, the patient was asymptomatic; however, to ensure optimal periapical healing, Metapex was reapplied as an intracanal medicament. The canals were re-irrigated, dried with sterile paper points, and a fresh dressing of Metapex was placed. The access cavity was sealed temporarily, and the patient was recalled after another 21 days.



Fig. 5: Metapex application.

At the next visit, the patient remained symptom-free, and radiographic evaluation showed favorable signs of periapical healing. The Metapex was removed, canals were irrigated, dried, and obturation was carried out using gutta-percha and endodontic sealer via the lateral condensation technique. The access cavity was restored with a suitable core buildup material. (Fig.6)



Fig. 6: Obturation.

In a subsequent visit, once the obturation was confirmed radiographically and clinically stable, a stainless steel crown (SSC) was placed to provide full coronal coverage and long-term protection of the tooth. The patient was placed on regular recall to evaluate healing and crown retention. (Fig.7)



Fig. 7: Stainless steel crown placement.

DISCUSSION

Space infections of odontogenic origin are commonly encountered in pediatric dental practice, with the buccal space being among the most frequently involved due to the thin cortical plate of the mandible and the proximity

of molars to this space.^[5] In children, rapid spread of infection can occur due to high vascularity and reduced resistance, necessitating timely diagnosis and prompt intervention.^[6]

Tooth 46, being the first permanent molar, often erupts early and is susceptible to caries because of its anatomical features and difficulties in maintaining hygiene at this age. If left untreated, a deep carious lesion can result in pulp necrosis and subsequent progression of infection into fascial spaces such as the buccal space.^[7]

In the present case, upon clinical and radiographic confirmation of infection, emergency endodontic access was performed, followed by biomechanical preparation (BMP). Proper cleaning and shaping of the canals is crucial in reducing bacterial load and preparing the canal for intracanal medication.^[8]

Triple antibiotic paste (TAP), a combination of ciprofloxacin, metronidazole, and minocycline, was used as the intracanal medicament. TAP is well-established for its effectiveness in eradicating endodontic pathogens, particularly in cases involving necrotic pulps and periapical pathology.^[9] Its use has been shown to support periapical healing and is especially suitable for young permanent teeth.

Following initial improvement, Metapex was placed to maintain a sustained antimicrobial effect and support periapical repair. Metapex, a calcium hydroxide and iodoform-based material, has shown good clinical outcomes in pediatric patients due to its antibacterial and resorptive properties.^[10]

After sequential medicament phases and clinical resolution of symptoms, obturation was completed using gutta-percha and endodontic sealer through the lateral condensation technique. This method offers a dense seal and is reliable in permanent molars.^[11] A stainless steel crown (SSC) was placed in a subsequent visit to provide full coverage protection, restore masticatory function, and prevent fracture of the treated tooth—a standard in pediatric endodontics.^[12]

This case highlights that with a systematic and evidence-based approach, space infections in children can be effectively managed while preserving the tooth structure and function, avoiding more invasive surgical options or premature extractions.^[13]

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