

# Infected Dental Follicle Secondary to Mandibular Parasymphyseal Fracture: A Case Report

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*Mandibular fractures are one of the most common maxillofacial traumatic injuries. They are also reported to be associated with highest rate of post-operative infection. In mixed dentition, management of tooth buds in line of fracture present great challenge to the surgeon. Timely management and non-invasive techniques can help in alleviating complications associated with fractures in children. Such cases should be kept on long-term follow-up for evaluation of proper growth and development. This case report documents a child having a history of previous mandibular fracture and extra-oral sinus tract associated with infected dental follicle.*

*Key words:* Tooth buds, greenstick fracture, sinus.

## INTRODUCTION

Pediatric maxillofacial trauma occurs but it is not something that most dental teams have to deal with on a daily basis. It is a highly specialized branch of traumatology. The treatment modalities vary from adults because of different anatomic considerations, growth potential, softer and elastic bones, higher cranial to facial skeleton size etc.<sup>1</sup>

Peak incidence of maxillofacial trauma in children is at 2-4 years (motor coordination develops), 6-10 years (falls and collisions) and in adolescents (sports-related) when there is increased physical activity and participation in sports events.<sup>2</sup> In primary dentition the frequency is equal in boys and girls.<sup>3</sup> However, the preponderance

is more in boys because they tend to indulge more in sports, vehicle driving and their physical activity is also more intense. The incidence of pediatric fractures among Indians is 5.5%.<sup>4</sup> Fractures of facial skeleton in children are not very common, but when they occur, mandible is second to nasal fracture in frequency.<sup>5</sup>

Facial fractures may have subsequent effects on facial growth, especially in case of mandibular condylar fracture, hence long-term follow-up is recommended. In all trauma cases, a thorough clinical and radiographic pre-operative evaluation of dentition as well as extra and intra-oral soft tissues is a must. Extra-oral imaging should be done if area of interest extends beyond dento-alveolar complex.

## Case Report

A 10-year-old female patient reported with the chief complaint of an extra-oral non-healing wound with occasional pus-discharge in chin region since 6 years. Patient gave history of fall from first floor 6 years back with sustained injury on lower jaw along with exfoliation of two mandibular anterior teeth. No relevant medical or family history was reported. Patient was taken to a nearby clinic where conservative management was done with no history of fracture fixation. Suturing was done for the wound on the chin and sutures were removed after one week.

Patient gave history of mild, intermittent swelling with pus discharge, two months after the injury. Patient was taken to a local hospital where an antibiotic ointment for local application and systemic antibiotics were prescribed. Patient was advised for a surgery in the region at a later stage.

On clinical examination, mild deviation of lower lip was noticed on mouth opening indicating weakness of facial nerve. Extra-oral examination revealed pus-draining sinus present on right side of chin. Pus discharge was noticed on digital pressure. Lesion was 0.5 cm X 1.5 cm in size with erythema and exfoliation of surrounding

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skin. The lesion was hard and tender on palpation (Figure 1). Patient was able to chew properly and there was no mobility of the fractured segments. Intra-oral examination revealed missing permanent mandibular right lateral incisor and canine with space loss.

Radiographic examination revealed lower border continuity defect indicating improperly reduced fracture and enlarged dental follicle in relation to 42 and 43 (Figure 2). Blood investigation revealed normal hemoglobin, bleeding time and clotting time.

Based on the history, clinical features and radiographic findings the diagnosis of infected dental follicle secondary to mandibular parasymphyseal fracture was established.

After thorough investigations, the treatment plan was formulated. Surgical treatment with extraoral approach was planned with excision of the sinus tract and removal of the involved dental follicle with partially formed tooth buds.

The procedure was performed under local anesthesia and in strict aseptic techniques. An elliptical incision was given extraorally and the fibrous tissue was excised. The tooth buds were removed creating a bony window (Figure 3 and Figure 4). Lining of the sinus tract was removed and sent for histopathological examination. After proper debridement and irrigation, the wound was closed in layers. Post-operative instructions were given to the patient and her guardians. Medications were prescribed: (Combination of amoxicillin and potassium clavulanate) 375mg twice daily for 7 days, Metronidazole syrup 7.5 ml three times daily for 7 days, syrup (Ibuprofen and Paracetamol) 7.5 ml twice daily for 3 days. Findings of the histopathological examination confirmed the presence of inflamed granulation tissue. Sutures were removed after one week.

The patient was examined at one, four and six month interval. There was complete healing of the extra-oral lesion (Figure 5). Radiographic examination revealed new bone formation around the roots of 44 and 41 and the radiolucency no longer visible. Lower border discontinuity defect was also healed completely (Figure 6).

The case was effectively treated surgically with reduction in scar-tissue on the chin and improvement in deviation of lower lip on opening. The patient was kept on follow-up and future treatment including space regaining followed by prosthesis placement was planned.

## DISCUSSION

Presence of a chronic extraoral sinus tract presents a diagnostic task to the clinician. A wide array of causes exists, which includes chronic osteomyelitis, actinomycosis, periodontal origin, endodontic origin, infected fracture site etc. Proper history and investigations are crucial to determine whether it is odontogenic or non-odontogenic in origin. In the present case, patient gave history of trauma, which along with clinical and radiographic findings confirmed the diagnosis of infected dental follicle secondary to parasymphyseal fracture.

In this case, extraoral approach was considered due to the presence of extra-oral sinus in the region. Extraction of tooth buds of mandibular left permanent lateral incisor and canine was carried out because of their poor prognosis and to prevent the underlying infection that may also affect other erupting permanent teeth.

Infection at the fracture site may be attributed to improper immobilization, inadequate reduction of the fracture segment and inapt use of antibiotics.<sup>6</sup> The immature immune system of children

Figure 1: Pre-operative view of extra-oral lesion



may contribute to the decreased resistance to infection. However in pediatric patients, relatively low incidence rate of complications has been reported. This may be attributed to the higher osteogenic potential in children.<sup>7</sup> Pre-surgical and post-surgical contamination of the fractured site is also influenced by the patient oral hygiene habits.<sup>8</sup> In this case report, the extra-oral wound paved way for infection of the dental follicle. This resulted in cessation of the tooth development (42 and 43) and also unhealed wound extra-orally. The infected follicle acted as a nidus for infection resulting in an open wound which also prevented the healing of bone defect on the lower border of the mandible.

As compared to adults, children have a greater osteogenic potential and faster healing rate, which allows rapid re-union of the fractured segments in a shorter period of time. This also aids in remodeling of imperfectly reduced fractures. Immature bone has an increased proportion of cancellous bone, which leads to an increased incidence of Greenstick fractures in children. Such cases can be simply managed by proper diagnosis, timely treatment and proper use of antibiotics. Soft tissue disruption should be carefully

Figure 2: Pre-operative panoramic



Figure 3: Surgically opened wound with bony window created

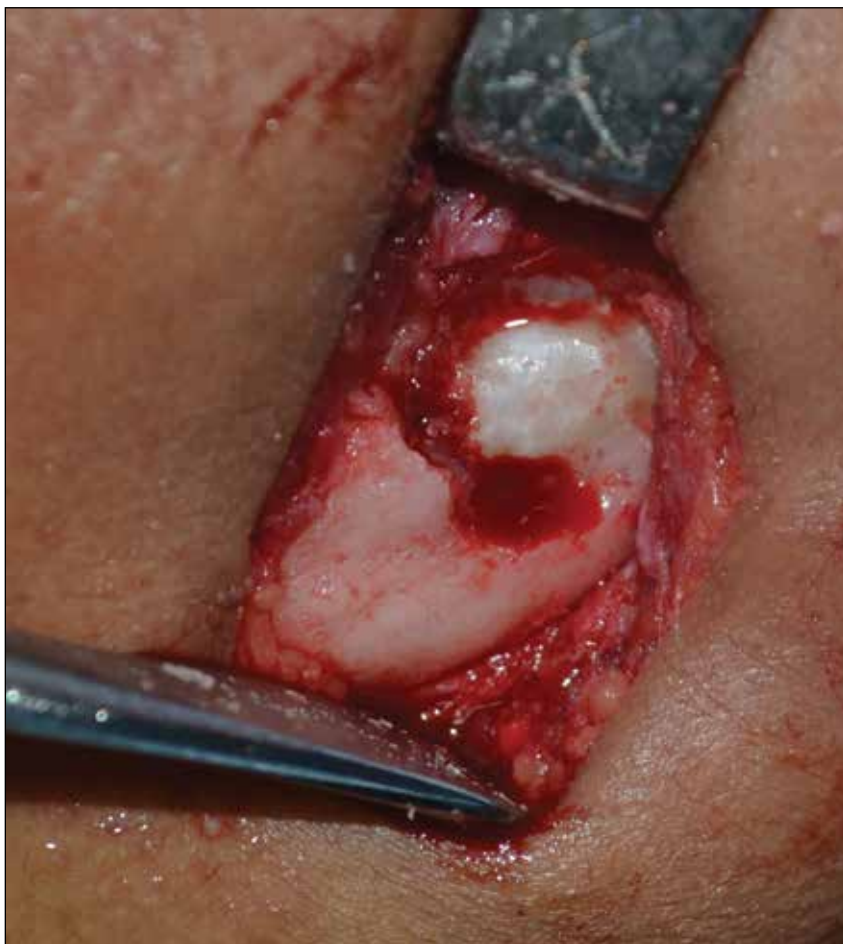


Figure 4: Extracted tooth buds (42 and 43)



Figure 5: Post-operative extraoral view (6 months later)



Figure 6: Post-operative panoramic (6 months later)



examined and possibility of underlying bone fracture should be overruled before proceeding for the treatment of the wound.

Managing infection is one of the most important and meticulous job of medical professionals. Despite the availability of various preventive measures and treatment protocols, infections superimposed on jaw fractures persist. This may be attributed to the immune system status of the patient, associated soft tissue injuries, antibiotic cover and healing capacity of the tissues. A thorough assessment of the clinical condition should be the basis of choice for management protocols. Complications associated with facial fractures affect the psychological well-being of the child patient and have a negative impact on the lifestyle also.

This case also highlights the need for early fracture stabilization in case of children. This also calls for the need of proper and advanced diagnostic tests and opportune management of the condition.

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