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STUDY TO KNOW THE MANAGEMENT OF DISPLACED OR ROTATED DEVELOPING TOOTH CRYPTS OCCURS AT MANDIBULAR FRACTURE SITES

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Abstract:

Objective: *The aim of the study is to know the management of displaced and rotated developing tooth crypts occurs on the mandibular fracture site.*

Study Design: *A Prospective Study.*

Place and Duration: *In the Oral and Maxillofacial Surgery Department of Mayo Hospital, Lahore for two year duration from June 2016 to June 2018.*

Methods: *Six children were examined in Mayo Hospital, Lahore for two years. The subjects were examined by displacing or rotating permanent tooth buds in fracture sites with newly dislocated fractures in the jaw body. Patients were confirmed with X-rays. Clear modality and selective fixation were recommended according to fracture requirements.*

Results: *All fractures also improved well without apparent complications, as well as mesial or apical rotated teeth heels, but the prognosis of crypts rotated by 180 ° resulted in a defective eruption. The mean follow-up was six months, but the parents were asked to follow the teeth at six-month intervals until the teeth completely exploded.*

Conclusion: *These cases reflect the occasional and different findings of the displaced tooth buds during pediatric facial bone trauma. Often, these tooth buds are ignored during diagnosis and treatment, and then create problems.*

Key words: *mandible fracture, open reduction, crypts and repositioning.*

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INTRODUCTION:

The pediatric jaw has a high proportion of teeth. The chin forms the lower third of the face and helps with sucking, chewing, speaking and facial aesthetics. Mandibular fractures often occur in children due to clogging and folding of teeth[1]. The frequency of fractures in pediatric jaw ranges from 15% to 86.7%; the face is greater than half (8% to 54%), the second is smaller and compared to the jaw. Studies at the Punjab Dental Hospital in Lahore show that the rate of jaw fractures in infants up to 10 years of age is 15.9%[2]. The most common causes of pediatric mandibular fractures are traffic accidents (RTA) and falls. Thoren 1992 reported that 57% of the fractures in children were due to RTA and 18% were due to falls. While older children at school age are exposed to jaw injury in sporting activities, adolescents are often exposed to severe injuries[3]. The main reason in Pakistan are accidents (trees, roofs) and then traffic accidents. Pediatric mandibular fractures are sometimes accompanied by displacement or avulsion of the frontal and permanent teeth and it has been observed that the developing tooth buds are displaced, rotated or even avulsed in the fracture area[4]. "

The treatment of some fractures is different from the treatment of similar fractures in adults. Successful treatment of pediatric mandibular fractures can achieve several goals, including: restoration of obstruction, function and facial balance[5]. The specific treatment of mandibular fractures depends on the location of the fracture, the retention of the buds in the fracture line, the degree of bone displacement, the condition of the dentist and the experience of the operators[6]. The development of permanent teeth and fracture line fractures requires careful management during the treatment of pediatric mandibular fractures, reduction and fixation methods[7]. The aim of this study was to describe the management options of pediatric mandibular fractures associated with displaced or rotated permanent tooth buds in the fracture site and to evaluate the follow-up target of these epidemics.

MATERIALS AND METHODS:

This Prospective Study was held in the Oral and Maxillofacial Surgery Department of Mayo Hospital Lahore for two year duration from June 2016 to June 2018. All patients had displaced mandible fracture. The ages of the patients ranged from 3 to 10 and there was a 5: 1 ratio in men and women. The teeth were aligned clinically and confirmed with orthopantomography (OPG), lateral mandibular lateral and posterior anterior radiography (PA). One-patient had bilateral unilateral condyle fracture and one-sided fracture in radiographic confirmation. Management of these patients was planned by the following methods;

1 Acrylic occlusion brace
2 Rigid fixation
3 Eyelets intermaxillary fixation
4. Metal arch bar splint (Eric)

The rigid fixation by 2mm titanium mini-plates with 6mm length mono-cortical self-tabbing crosshead screws of 2mm diameter was used in patients without associated condylar fracture. Acrylic occlusion and Eric splint occlusion were performed after model surgery and used for three weeks in patients with condylar fractures. Intermaxillary fixation was preferred in relatively elderly patients with no condyle fracture for three weeks.

All persistent crypts that were being developed were mechanically repositioned after open reduction in the fracture area and care was taken to avoid damage to the repositioning buds with an average follow-up time of six months.

RESULTS:

Treatment of fractures was planned with acrylic occlusion splints in patients with condylar fractures. The cause of splint fixation was to avoid future ankylosis of the temporomandibular joint in these patients. Transparent acrylic occlusal splints were stabilized with 0.45 gauge circumo- mandibular wires. The Eric Arch-bar with 0.35 gauge wire was adapted to a single patient because the child was very small and the possibilities of acrylic splints were not available at that time. The fixation of the eyelets between the teeth was performed on a child because it was stable mixed dentition and the fracture line was under the risk of iatrogenic nerve damage.

The rigid fixation was performed in two patients with mandibular fracture without condylar fracture, with a self-locating monocortical cross screw of 2.0 mm in diameter, 6 mm long, 2.0 mm titanium mini plates. The plate is fixed to the lower buccal edge in the hope of recovering the future by developing permanent tooth buds. The statistics of the patients are shown in table 1.

TABLE 1

Patient	Age	Sex	Etiology	Tooth position in #	Associated #	Surgical protocol
	3.6yrs	Male	Stairs fall	Rt lower canine bud	None	Eric arch bar & no IMF
	4.9yrs	Female	Animal hit	Rt lower lateral incisor bud	None	Rigid fixation
	5.2yrs	Male	Roof fall	Lt lower lateral incisor bud	Bilateral	Acrylic occlusal splint
	7yrs	Male	Tree fall	Rt lower canine bud	Unilateral	Acrylic occlusal splint
	8.7yrs	Male	RTA	Lt lower second premolar bud	Lt. lrg femur bone	Eyelets wiring
	10yrs	Male	RTA	Rt lower second molr bud	None	Rigid fixation

One mesially rotated bud was repositioned after the fracture had healed as at the time of reduction, the rotated bud was not approached and the mini-plate was fixed extra-orally through open traumatized contused wound. In two patients, the tooth buds were moved to the surrounding soft tissues and follicular buds were noted at operation day and repositioned carefully. Three tooth buds (1800) were closed by orienting the crown towards the basal bone, and an open reduction was made, taking care not to damage the buds to reposition these buds. In another case, the tooth moved apically and was easily managed during an open reduction of the fracture.
Open reduction was mandatory in all patients, because the tooth buds had to be repositioned before fracture fixation.

Minimal and careful surgical intervention was performed to prevent iatrogenic trauma in developing tooth structures. Postoperative radiographs confirmed the exact fit of the tooth bud and the relative success of the procedure. After surgery, all patients were hospitalized for two days. None of the patients developed an infection or serious complication at a mean follow-up of 6 months. All patients had excellent fracture healing. The overall improvement and the success of the surgery was good, the teeth buds had a relatively clear definition rotated 180 degrees (Figures 1 to 12).

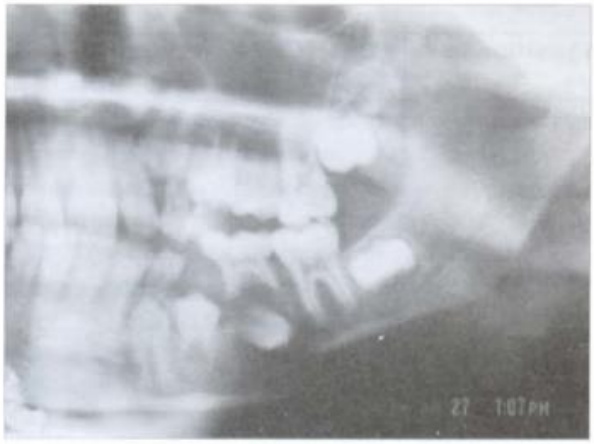
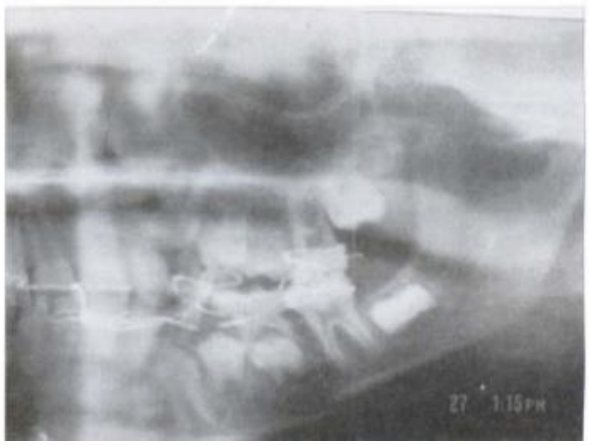


Fig 1. Inverted left lower 2nd premolar

Fig 2. Fracture at left lower 2nd premolar



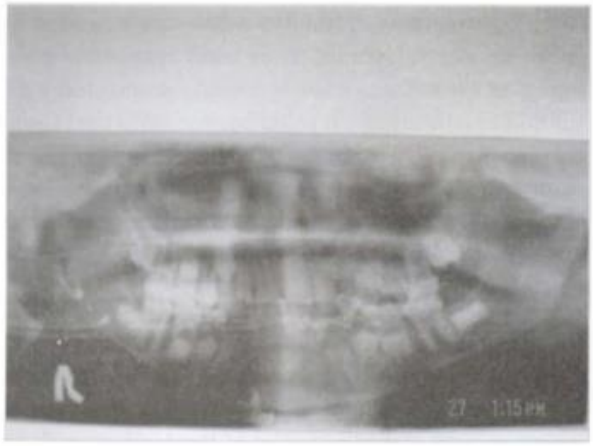


Fig 5. 2 weeks post-op follow up

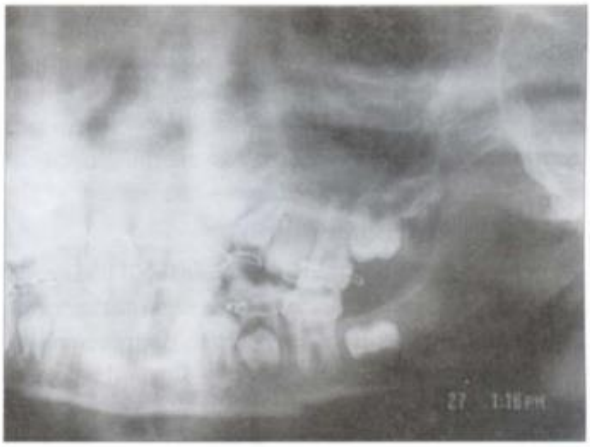


Fig 6. 4 weeks post-op follow up

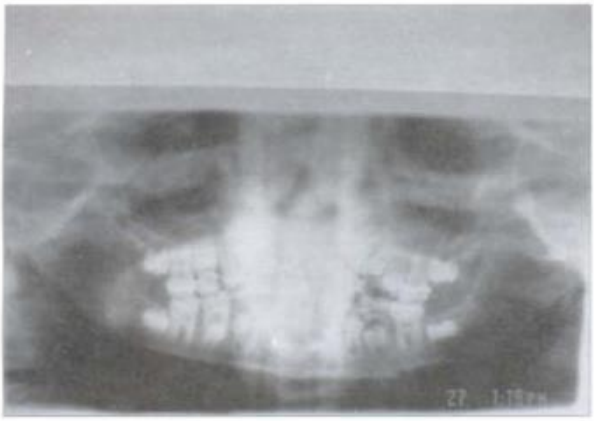


Fig 7. 6 weeks post-op follow up

Fig 8. 12 weeks post-op follow up

DISCUSSION:

Dental treatment of traumatic injuries in children requires a methodical approach to care. Common injuries in the growing age group are in the jaw and often cause the jaw to break. Sometimes, the buds in development are rotated or displaced in the fracture line, which may require repositioning to reduce the fracture sections[8]. Dental records can be maintained until permanent teeth explode to assess the degree of damage to dentists' development. After the placement of the tooth bud, the improvement in the fracture site was assessed and, when the scope of the surgical intervention was guaranteed, the surgeon operator should evaluate the benefits against risks[9].

Fig 9. After IMF removal at 4 weeks

Fig 10. Follow up at 6 weeks

Fig 11. Follow up at 10 weeks

Fig 12. Occlusion at 10 weeks follow up

Careful follow-up is recommended because of any trauma in the jaw, because the ultimate goal of treatment is to prevent damage to the permanent successor[10]. Dilatations of crowns constitute 3% of traumatic lesions in the development of permanent teeth[11]. Patients with teeth reversed at 180 degrees showed a false root formation compared to the contralateral non-traumatic tooth. There was a high correlation between the degree of penetration of the first tooth and the frequency and severity of the change in permanent tooth development during mandibular injuries[12]. Damage in the development of teeth after primary tooth injury is often inevitable, and the pulp necrosis on the gums and so on. External resorption may be, but it was rare[13]. Treatment or antibiotics were rarely needed in

follow-up examinations. Overall, these teeth responded positively and had a low morbidity associated with subluxation injuries[14]. It can be concluded that these variable responses cannot be correlated with open clinical diagnoses. However, in some combinations, histological parameters may be associated with clinical findings in the treatment of jaw fractures associated with tooth buds[15].

In a multivariate analysis, pulp necrosis was observed in the teeth after trauma and after the determinants; The patient's age at the time of injury, the degree of displacement of the tooth, as well as the degree of pain and the presence of a crown fracture.

CONCLUSION:

These cases reflect the occasional and different findings of dislodged dental buds during pediatric facial bone trauma. Often, these tooth buds are ignored during diagnosis and treatment, and then create problems. It is recommended to treat these fractures with open reduction and carefully reposition the buds to reduce fracture fractures. In the follow-up, the healing of the fracture site was excellent, but 180 degrees of rotated shoots were found to be defective bud development compared to the contralateral side. This may have occurred due to follicular injury during repositioning or surgery. All cases should be evaluated until the outbreak of outbreaks to reach a conclusion.

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