

## ORIGINAL ARTICLE

### Retrospective Study on the Incidence of Pediatric Fractures and its Associated Complications

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#### ABSTRACT:

**Background:** Mandibular fractures are frequently observed facial skeletal injury amongst the pediatric trauma subjects. The aim of the present study was to retrospectively analyse the incidence of pediatric fractures and its associated complications. **Materials and methods:** The present study was performed in the retrospective manner in the Department of Dentistry, UPRIMS&R, Saifai. In this study, all the paediatric subjects who reported to the department for pediatric facial fracture were included in the study. All of the subjects underwent reduction under GA. Postoperative antibiotics was administered amongst all the subjects. All the data was arranged in tabulated for and analyzed using SPSS software. **Result:** According to the present study total of 28 patients with fractures were analyzed. Right side was involved in 75% of subjects (n=21) and left side was affected in 25% (n=7). Shortening and overgrowth were the most common complication, which accounted for 14.3% of cases. **Conclusion:** From the above study we can conclude that there is clearly male predominance amongst pediatric facial fractures. Accident is the most common source of injury

**Keywords:** Accident, Fracture, Paediatric

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#### INTRODUCTION

Mandibular fractures are frequently observed facial skeletal injury amongst the pediatric trauma subjects.<sup>1-3</sup> In a study by Posnick and colleagues' thirty-nine percent of the fractures were of the mandible. The sites for mandibular fracture included the condyle amongst 55% of the cases, parasymphysis amongst 27% of the cases, body amongst 9% of the cases and angle amongst 8% of the cases.<sup>4</sup> Juvenile bone has unique physical properties that along with space occupying dentition give way to pattern of fractures that are not seen amongst adults. The fractures fragments amongst children can become partially united within 4 days and after that fractures are difficult to reduce by the 7<sup>th</sup> day.<sup>5</sup> Therefore, there is a need for different types of fixation as quickly as possible within shorter duration of time. There are very rare cases of nonunion or fibrous union amongst children and remodeling occurs excellently under the action of masticatory load even when there is imperfect apposition of bone. The organization of mandibular fractures amongst children differs from that of adults because of concern of growth. In children the final result is determined by the effect that growth function and not merely by initial treatment. The aim of the present study was to retrospectively analyse the incidence of pediatric fractures and its associated complications.

#### MATERIALS AND METHODS

The present study was performed in the retrospective manner in the Department of Dentistry, UPRIMS&R, Saifai. In this study, all the paediatric subjects who reported to the department for pediatric facial fracture were included in the study. The demographic details of the subjects were obtained from the patient's record. The study was approved by Institute's ethical board. The

source of injuries was obtained from the hospital record including accident, falls or sports injuries. The subjects complete medical history was obtained from the medical records. All of the subjects underwent reduction under GA. Postoperative antibiotics was administered amongst all the subjects. Anteroposterior and lateral X-rays were taken to assess any angular deviations. Scanometry or panoramic radiographs were used to evaluate shortening or over-growth. All the data was arranged in tabulated for and analyzed using SPSS software. The results were expressed as percentage of total.

#### RESULTS

According to the present study total of 28 patients with fractures were analyzed. Table 1 shows that there were 16 males and 12 females involved in the study. The male:female was 1.3:1. The mean age of male subjects was 7.26+/-2.32 years and the mean age of females was 8.25+/-2.30 years.

Table 2 shows the most commonly affected side. Right side was involved in 75% of subjects (n=21) and left side was affected in 25% (n=7). There was a significant difference in the site of involvement, right side being more commonly affected than left.

Table 3 shows the mechanism of trauma leading to fracture. Majority of subjects met with an accident (42.8%). There were 32.1% subjects who sustained fracture because of fall and rest of the subjects had fracture due to collision (32.1%).

Table 4 shows the complication encountered after 11 months of follow up. Shortening and overgrowth were the most common complication, which accounted for 14.3% of cases. There were 4 cases which showed wound infection. There was one case of fracture malunion, in which reoperation was done to correct the position.

Table 1 : Gender distribution of the study population

Sex	frequency	percentage
Male	16	57.1
Female	12	42.9
Total	28	100

Table 2: Patient distribution according to the side affected

Side affected	frequency	percentage
Right	21	75
Left	7	25
Total	28	100

Table 3: Distribution of patient according to source of injury

Injury	frequency	percentage
Fall	9	32.1
Collision	7	25
Accident	12	42.8
total	28	100

Table 3: Complications encountered during postoperative period

complications	frequency	Percentage
Wound infection	4	14.3
Overgrowth	4	14.3
Shortening	4	14.3
Loss of fracture position	1	3.6

**DISCUSSION**

Facial injuries are fewer amongst pediatric patients, especially children below the 5 years of age, the incidence fractures varies between 0.6% - 1.2%.<sup>6</sup> Nasal fracture are the commonest, whereas the mandibular fractures are the second most frequent fractures reported amongst pediatric subjects.<sup>7</sup> In pediatric subjects the treatment type varies upon the type of fracture and the stage of dentition development. The treatment types ranges between conservative through closed reduction and open reduction with internal fixation. In pediatric subjects, since the bone is elastic and cortex is thin and less denser than the adults, and the presence of developing tooth buds are factors favouring circum-mandibular wiring.<sup>8</sup> Scrapping of the periosteal cover of the mandible can result in an unpredictable effect on growth. Whenever reduction is needed, closed reduction is performed. Splinting of the fractured mandible using acrylic cap splint by circummandibular wiring is a simple and efficient procedure. In our study, there were 16 males and 12 females involved in the study. The male:female was 1.3:1. The mean age of male subjects was 7.26+/-2.32 years and the mean age of females was 8.25+/-2.30 years. Right side was involved in 75% of subjects (n=21) and left side was affected in 25% (n=7). There was a significant difference in the site of involvement, right side being more commonly affected than left. Majority of subjects met with an accident (42.8%). There were 32.1% subjects who sustained fracture because of fall and rest of the subjects had fracture due to collision (32.1%). Male predominance is seen amongst age groups. The causes of mandibular fractures are basically falls and sports injuries. Pediatric subjects present with challenge to the maxillofacial

surgeon due to the type and frequency of fractures present amongst the children are often varied from adults. Treatment of fractures amongst children is different from adults due to anatomic variation, quick healing, co-operation and the potential changes in the growth of mandible.<sup>9,10</sup> The closed reduction is generally achieved using acrylic splints, arch bar circum-mandibular wiring or gunning splints.<sup>11</sup> They provide good reduction with periosteal continuity and soft tissue maintenance. Thus, making an environment favourable for osteogenesis and remodeling and reducing the incidence of non – fibrous union.<sup>12</sup>

**CONCLUSION**

From the above study we can conclude that there is clearly male predominance amongst pediatric facial fractures. Accident is the most common source of injury. Management of these fractures present a challenge to the physician. The most common mode of treatment is closed reduction using circum mandibular wiring to prevent periosteal stripping.

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