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Original research

Clinical outcomes of Pediatric Maxillofacial Fractures Management in Three Hospital Series in Egypt

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ABSTRACT

Objectives: Pediatric maxillofacial fractures are less common as compared to adults, however, they may lead to serious complications.
Methods: The study aimed to retrospectively correlate demographic data, facial fractures characteristics, and patterns among pediatric patients who were managed at 3 of the governmental Egyptian Hospitals from 2008 to 2016, and discussing the treatment protocols. The study included 104 patients presented with maxillofacial traumas. Those with dentoalveolar and/or dental injuries were excluded. All the patients were treated by conservative approaches, except those in whom surgical interventions were mandatory.
Results: The mean age of 104 patients was 10.94 ± 3.92 years. The female/male ratio was 1:1.4. Females' fractures were mainly due to falls (17.31%). Road traffic accidents (RTAs) were the most common cause in males, followed by sports injuries (17.31.8%), then assault (10.58%). The most prevalent site of fractures was the mandible (67.31%) in particular condylar fractures. All the fractures were healed successfully, but restricted mouth openings were the most common sequela.
Conclusion: The RTAs were the main cause. Males and condylar fractures have the highest predominance. The conservative treatment is still the treatment of choice in pediatric fractures. Pediatric fractures must be followed longitudinally to avoid post-traumatic sequelae.

1. Introduction

Traumas are defined as bodily injuries that occur due to external forces and lead to health problems [1]. Maxillofacial trauma in young people are particularly challenging, because they may affect functions and esthetics. Thus, prompt diagnosis and management are mandatory to avoid disturbances of future growth and development [2].

The etiology and epidemiology of pediatric facial traumas have been reported in many series of literature. However, few of these reports review large sample size, and little is known about treatment protocols of fractures in children. Diagnosis and management of pediatric facial fractures may be difficult as compared to adults. In pediatrics, special attention is required to critical factors related to fracture patterns, anatomical, physiological and psychological development, as well as the complications of traumas. Thus, the techniques of management should be modified to address these special characteristics of pediatric facial fractures [3–6].

Thus, this study aimed to correlate the fracture patterns with age, gender, and etiology retrospectively. Furthermore, the outcomes of various treatment modalities were analyzed and discussed based on authors' experience in management of pediatric maxillofacial fractures at 3 different general hospitals series in Egypt.

2. Patients and methods

A 9 years' retrospective study evaluated a total number of 104 patients who were referred to Al Zahraa University Hospital, El-Fayoum, and Beni Suef General Hospital from 2008 to 2016 with acute maxillofacial injuries. Patients aged below 16 years who presented with both lower and middle-third facial fractures were only

☆ AsianAOMS: Asian Association of Oral and Maxillofacial Surgeons; ASOMP: Asian Society of Oral and Maxillofacial Pathology; JSOP: Japanese Society of Oral Pathology; JSOMS: Japanese Society of Oral and Maxillofacial Surgeons; JSOM: Japanese Society of Oral Medicine; JAMI: Japanese Academy of Maxillofacial Implants.

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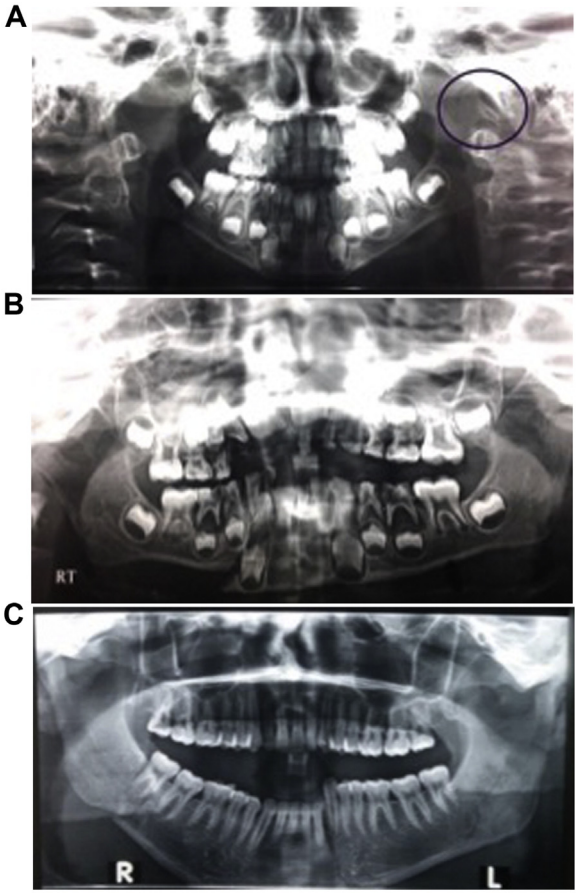

Fig. 1. Panoramic views showing: *A,* An isolated left condylar fracture. *B,* A right body fracture. *C,* Concomitant left condylar, parasymphyseal, and right angle fractures.

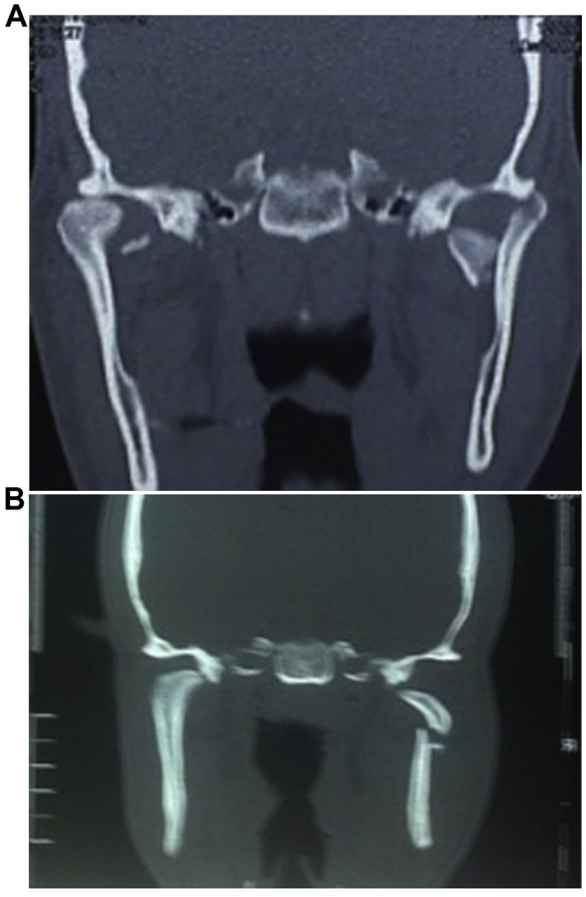

Fig. 2. Coronal CT scans representing condylar fractures.

included, while dentoalveolar fractures and other dental injuries were excluded. The local ethics review committees of the hospitals approved the identification and selection of patients who met the inclusion criteria from the hospital database.

The following data were recorded for each patient: age, gender, etiology, site and side of facial fractures, date of injury, timing of intervention, type of intervention, and length of hospital stay. The patients were categorized into 4 groups according to their ages: 1) less than 3 years, 2) 3–6 years, 3) 6 to less than 12 years, and 4)12 to less than 16 years.

Clinical and radiographic examinations (panoramic images and/or CT scans if needed) were performed for all patients (Figs. 1 and 2). All available radiographs were analyzed. The fractures are classified into mandibular and midface fractures. The mandibular fractures were subdivided according to Killey [7] into condyle, ramus, angle, body, symphyseal and para symphyseal. The midface fractures were also classified as Le Fort I, II, and III types, zygomatic complex, and naso-orbital-ethmoidal (NOE) fractures (Fig. 3).

All but 5 patients less than 12 years had mandibular fractures, with or without condylar fractures. They were treated according to mono-fixation principles by circummandibular wiring with lateral compression splints or Risdon wires under general anesthesia (Fig. 4). The other 5 patients were treated according to open treatment principles using internal rigid fixation with plates and screws (2.0 mm or 2.4 mm Stryker Leibinger® system, GmbH& Co.KG, Germany) via intraoral approaches. When the mono-fixation devices are unable to fix angle fractures or lost segments, the isolated condylar fractures were managed by functional therapy, where no active treatment was performed and the frac-

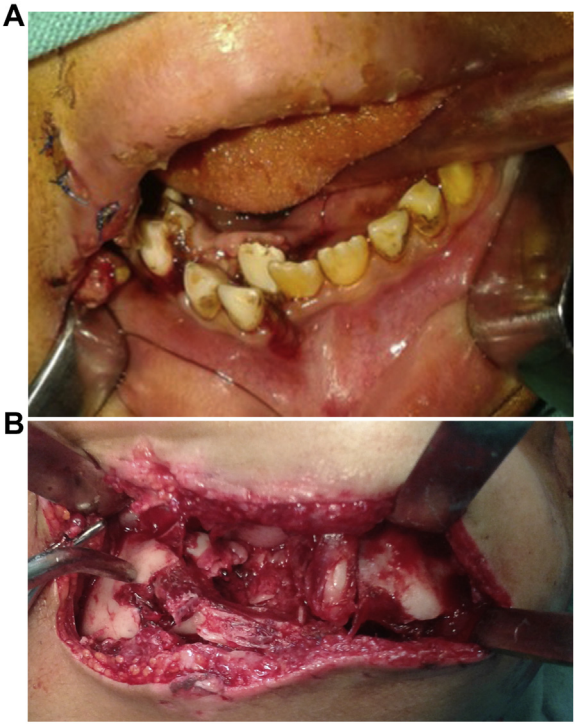

Fig. 3. Photographs showing: *A,* 6 years old patients with right parasymphyseal fracture. *B,* 7 years' child with lost right mandibular body.

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