PATTERN OF FACIAL FRACTURES IN CHILDREN IN AL-GASSIM AREA

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أجريت إعادة لدراسة تسعة عشر حالة لكسور في عظام الوجه لأطفال أعمارهم دون سن الثانية عشر في منطقة القصيم، المملكة العربية السعودية. تم تحليل المعطيات ورتبت طبقا للعمر، الجنس، الأسباب، وموقع الكسر. وطريقة معالجة هذه الكسور أيضا أدخلت في التصنيف. لم يشاهد في هذه الدراسة أي مضاعفات تذكر.

A retrospective study of nineteen facial fractures in children under 12 years of age seen in Al Gassim region is reported. The data are analyzed and presented according to age, sex, etiology and location of fracture. The method of treatment of the fractures has also been included. There was no complications seen in this series

Introduction

In several parts of the world, especially in those areas where the number of motor vehicles have increased, the facial skeleton fractures had also increased. Most of these fractures are sustained by adults with the peak incidence among the 20-39 year age group, described as the most active period of life. Many authors, among them Rowe and Killey,1 Nwoku2, indicated that the jaws are involved in about 72% of road traffic accidents (RTA).

By comparison, fractures of the jaw in children are uncommon. However, when these fractures occur, they become rather important. The reason for this is obvious. The facial skeleton is made up of a number of bones, which are weakened by the paranasal sinuses. In addition, there are suture lines and foramina which are often not yet closed in children. Also, the jaws are further weakened by the presence of developing and erupting teeth. For instance, prior to the eruption of permanent dentition in children, the body of the mandible is almost entirely filled with teeth. This leaves the remaining bone weakened and unable to resist external forces. Problems peculiar to the treatment of maxillo- mandibular fractures in children are created by the necessity for continuing growth of the child, jaws filled with the teeth, and management difficulties including non-compliance. Complications in children can occur rapidly and frequently, the most common being ankylosis of the temporomandibular joints.[3]

Materials and Methods

This is a retrospective study from the data collected from King Fahad Specialist Hospital (KFSH) in Buraidah. We examined the case notes of all patients who were admitted to the hospital with diagnosis of facial trauma or fractures of the facial skeleton. The documentation by physical examination, investigations and X-rays were included in the study. Cases with questionable diagnosis, or where the radiographs did not confirm a fracture, were eliminated from the study. The total number of patients treated in this hospital in a 7-year-period, from February 1984 to May 1991, was 72 patients. Of these, 19 children were 12 years of age or younger.

Results

The 19 children treated for fractures of the facial skeleton comprised 27.8% of the total number of 72 patients with facial fractures seen in KFSH

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during the period under review. Of these, 13 were males and 6 were females. The average age of the patient was 7 years old, the youngest being 3 years and the oldest 12 years of age (Table 1).

Road traffic accident was the main cause of fractures in 16 cases. Fall from height accounted for fractures in 2 cases while 1 case was due to domestic accident (Table 2).

Table 3 shows the anatomic site of the fractures. Fractures of the body of the mandible accounted for 5 cases (26.3%); that of the condyle were 5 cases (26.3%); while bilateral mandibular fractures occurred in 3 cases (15.8%). Fractures of the maxilla were seen in 6 cases (31.6%).

Table 1. Age of patients

Age in years	No. of patients
1	0
2	0
3	2
4	4
5	1
6	0
7	4
8	3
9	1
10	0
11	2
12	2
Total	19

Table 2. Cause of the fractures

Cause	No.
RTAs	16
Falls from height	2
Domestic accident	1
Total	19

Table 3. Site of the fractures

Site of the fractures	No. of fractures	%
Mandibular body	5	26.3
Mandibular condyle	5	26.3
Bilateral mandible	3	15.8
Maxilla	6	31.6
Total	19	100

In 10 out of the 19 cases, there were associated injuries. Of these 10 cases with concomitant injuries, six had acute head injury; two sustained fractures of a long bone; one evidenced rupture of the spleen, while another suffered friction burn of the face in addition to jaw fractures (Table 4).

Treatment

The method of treatment in most of the cases was by closed reduction. The splints employed here were either eyelet wires or arch bars which were then utilized for intermaxillary fixation. There was no mention of acrylic or other types of splints in the case notes. Only in one case was it necessary to resort to open reduction. In 6 cases, no intermaxillary fixation was employed (Table 5). There was no record of complications either during operation or immediate postoperative period. There has been no documentation of long-term complications.

Table 4. Associated injuries.

Associated injuries	No. of Cases
Head injuries	6
Fracture of long bone	2
Rupture of spleen	1
Friction burns offace	1
Total	10

Table 5. Methods of treatment.

Method of treatment	No. of Cases
Eyelet/Arch bar fixation	12
No IMF	6
Open reduction	1
Total	19

Discussion

Road traffic accidents in this study were the cause in 16 out of 19 cases with facial fractures. This is a very high figure compared to published studies in other parts of the world. Amartunga[4] found in his series of 37 children that falls from height accounted for 48.6% of the fractures, and road traffic accidents 29.7%. Carroll et al[5] and Kaban et al[6] also found that the most common causative factor in their series was fall from height.

The reason for the high number of road traffic

accidents found in our series may be due to the high number of cars in Saudi Arabia, where most of the families have more than one car, and most importantly children do not use safety belts and usually sit or stand in the front seat. For instance, in Europe and the USA the use of seat belts is mandatory. These causes, coupled with the fact that there is no strict control of traffic and speed regulations as in Europe and the United States of America put the children, and indeed all road users, at greater risk.

There is also an increased ratio of associated injuries, being 10 cases out of 19. This may be due to the fact that these accidents occurred at high speed. It is known that accidents that occur at speed less than 100 km per hour are less hazardous. Whereas accidents that occur at higher speed are more serious.

In this series, boys (13) had more fractures than girls (6). This may be due to the fact that boys are more active than girls and more likely to occupy the front seat. This finding agrees with reports of other studies.[7-11]

Fractures were more common in the mandible. We found 13 fractures in the mandible and 6 in the maxilla. This is established in other studies and is consistent with our findings.[12-14] The ratio of fractures in children compared to adults according to our series is 26.4% (19 out of 72), this is a very high ratio if compared to other studies (5%).[1] This may be due to the high number of teenagers in Saudi Arabia who start to drive cars at an early age carrying with them their young sisters and brothers. Also the children sit or stand in the front seat without using safety belts.

Treatment of the fractures was undertaken as soon as possible if the general condition of the child allowed. In nearly all the cases closed reduction and intermaxillary fixation with the help of eyelet wires or arch bars as splints was the treatment of choice. Open reduction and transosseous wiring was used in specifically indicated cases. There was no report of severe complications such as ankylosis.

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