MAXILLO-FACIAL FRACTURES – A RETROSPECTIVE ANALYSIS OF 285 CASES

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SUMMARY

A retrospective analysis of 285 patients who had sustained maxillo-facial fractures over a period of a decade was undertaken. The commonest cause of injury was motor vehicle accidents (71.9%). The mandibular body was the most common site fractured. 80% of the patients were males and almost 50% were Chinese. Practically all types of fixation were employed. The results obtained were satisfactory.

INTRODUCTION

Fractures of the facial bones are sustained as a result of direct or indirect injury. The prevalence of maxillo-facial fractures in a fast-developing region of Petaling Jaya has increased proportionately with the increasing migration to Petaling Jaya. The aim of this is to give a retrospective analysis of the different types of facial bone fractures seen in the Faculty of Dentistry since the inception of its clinical Department of Oral Surgery in March 1974 to April 1983 and to compare the results of this study with similar studies done in other countries.

MATERIALS AND METHODS

Three hundred and sixty-five patients were treated for maxillo-facial injuries in the Department of Oral Surgery from March 1974 to April 1983. The case notes of thirteen patients were incomplete. Another sixty-seven patients sustained injuries to the soft tissues and the dentition only. These were excluded from the study. The remaining two hundred and eighty-five patients were utilized in this study. Patients with isolated nasal and frontal bones fractures were not referred to the Department of Oral Surgery. Those who died on admission from profused haemorrhage were also not included in this study.

The data was collected by going through the case notes and radiographs of the patients. The analysis was done with respect to the aetiology of injury, sites of facial fractures, treatment instituted, race, age and sex distribution.

RESULTS

Etiology of Maxillo-facial fractures

The most common cause of maxillo-facial fractures was motor vehicle accidents (Table I) which comprised lorries, motorcars and motorcycles accidents (71.9%). Frequency of fractures of the maxillo-facial bones due to falls (13.7%) and fights (9.1%) were almost equal but far less often than motor vehicle accidents. The others were caused at work, sport, as a result of a pathological fracture and one patient was shot at.

TABLE I
ETIOLOGY OF FRACTURES OF THE MAXILLO-FACIAL SKELETON

Etiology	No. of cases	%
Motor vehicle accidents	205	71.9
Falls	39	13.7
Fights	26	9.1
Industrial hazard	6	2.1
Sports	7	2.5
Gunshot	1	0.4
Pathological	1	0.4

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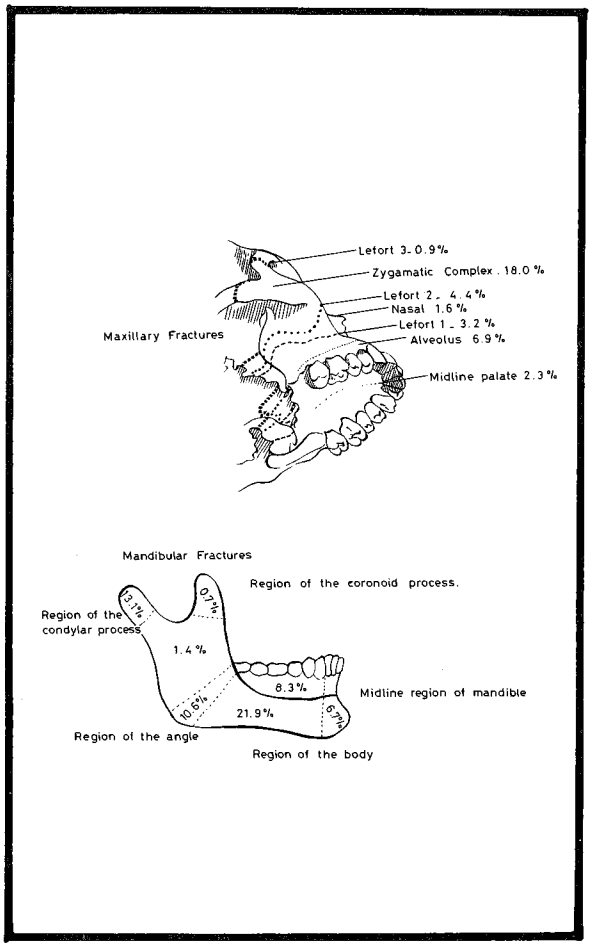

Fig. 1 Distribution of maxillo-facial fractures according to sites.

Sites of Maxillo-facial fractures

Fractures of the mandibular body (Fig. 1) was the most common site of maxillo-facial fractures (21.9%) followed by zygomatic-complex fractures (18.0%), condylar fractures (13.1%) and angle of the mandible (10.6%). The least affected regions were the coronoid process (0.7%) and the mandibular ramus (1.4%).

Method of Treatment Employed

All types of treatment except the use of traction hook to elevate depressed zygomatic complex fractures and compression plates to fix mandibular fractures were employed (Table II). The most frequently used methods were by arch bars fixation and interosseus wiring. In most cases more than one method were used in each patient.

TABLE II
METHODS OF FIXATION EMPLOYED

Types of Fixation	No. of times employed
Arch bars (Erich)	165
Cap splints silver	2
Acrylic	2
Hirschfield wiring	2
Direct dental wiring	2
Eyelet wiring	16
Interosseus wiring	44
Suspension – Halo frame	1
Levant's frame	11
Plaster of Paris headgear	1
Internal Wiring	23
Gillies approach	38
Antral pack	1
Nasal pack	4
Silastic	2
Circum-mandibular wiring	2
Observation	43

Sex Distribution

80% of the total number of 285 patients who sustained maxillo-facial fractures were male in contrast to only 20% females (Fig. 2).

Race Distribution

The Chinese made up almost 50% of the patients. The Malays and Indians made up the other 50% (Fig. 3). Only one Caucacian was treated for maxillo-facial fractures over this period.

Age Distribution

The youngest patient was 5-years-old and the oldest was 75 years. Fractures of the maxillo-facial region occurred predominantly between 20 – 29 years (51.2%) (Fig. 4). The next frequent age group was between 10 – 19 years (21.4%) followed by those between 30 – 39 years (15.1%).

DISCUSSION

Fractures of the maxillo-facial region if left untreated can result in gross facial deformity and deranged occlusion. The timing in instituting treatment is important to achieve good results, minimise problems of treatment and avoid complications. For patients with associated head injuries, treatment for fractures of the maxillo-facial bones should commence only when

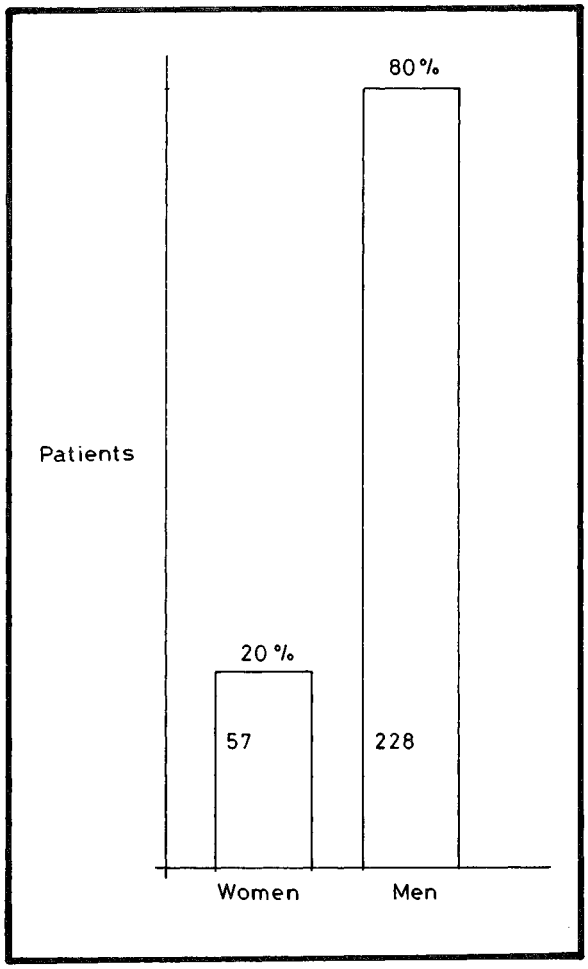

Fig. 2 Distribution of maxillo-facial injuries according to sex of patients.

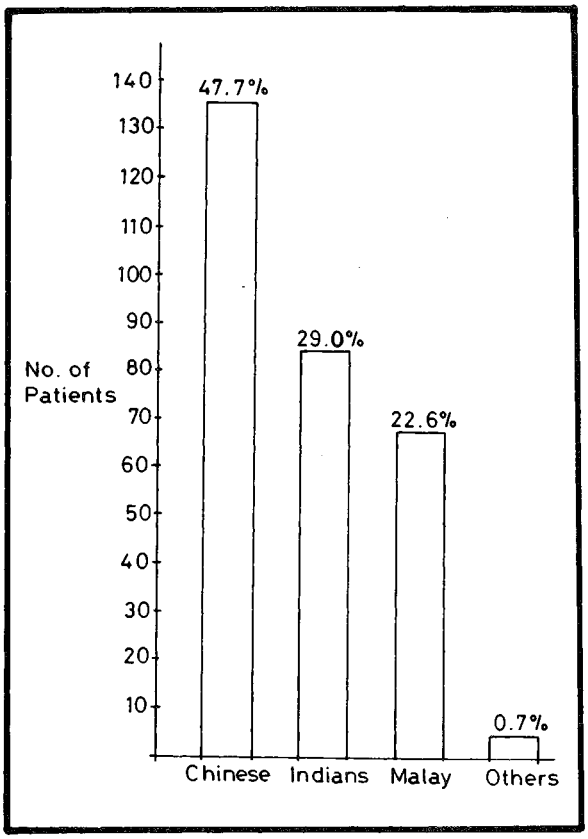

Fig. 3 Distribution of maxillo-facial fractures according to race of patients.

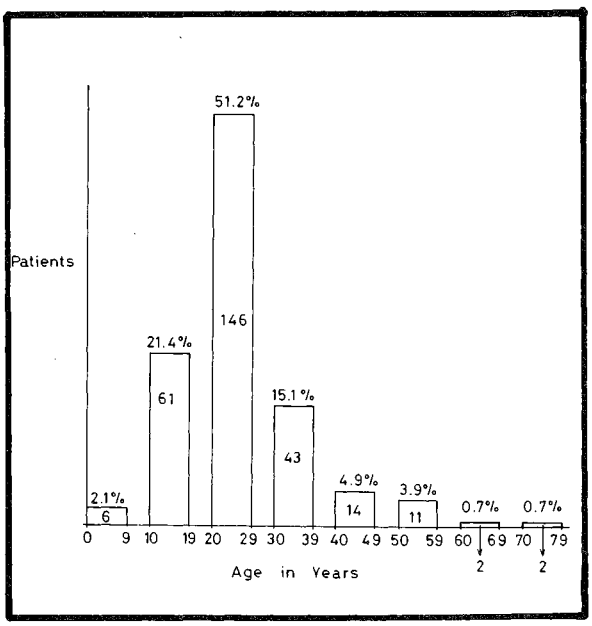

Fig. 4 Distribution of patients according to age of patients.

neurological signs are stabilised. In this unit, immediate definitive treatment of the maxillo-facial fractures were sometimes done simultaneously with other emergency treatment at the time of admission. Geh [1] found 24.2% of the patients had associated head injuries in the 62 cases he studied. In a series of 567 hospitalised patients with facial fractures, Gwyn *et al* [2] found 51.6% had sustained other severe injuries as well.

The etiology of maxillo-facial fractures is strongly influenced by geographical regions and the socio-economic conditions. The most common cause of maxillo-facial fractures in this study was due to motor vehicle accidents. Turvey [3] in Dallas found road traffic accidents to be the most common cause of maxillo-facial fractures. According to Nakamura and Gross [4] intended violence was the

most common cause of maxillo-facial fractures. Of the 285 cases of maxillo-facial fractures, only 26 were due to assault. It is interesting to note that of this small number 17 were Indians, 7 were Chinese and 2 were Malays. Khalil and Shaladi [5] attributed the low incidence of maxillo-facial fractures due to assault in Eastern Libya to the religious practice of that region. Injury due to occupational hazard was extremely low (2.1%)

The youngest patient seen was 5-years-old and the oldest was 75-years-old. Those between 20 - 29 years sustained the most fractures followed by patients of age group 10 - 19 years and those from 30 - 40 years group. Motorcycle riders are found predominantly within these age groups. Furthermore people of these ages are the most mobile and active outdoors.

The race distribution histogram showed the Chinese made up 47.7% of the patients. The Indians and Malays made up the other half. Those involved in these injuries were predominantly males (80%). This finding lent credence to the impression that the Chinese and males are the most mobile and active people. It also reflected the more home orientated roles of the female in the Malaysian society.

Most workers observed that fractures of the maxillo-facial skeleton were located at the weak bony regions of the maxilla and mandible. Rowe and Killey [6] found the mandibular condyle the most common site fractured and Dingman and Natvig [7] the subcondylar region. In this study the most common site fractured was the mandibular body where teeth were present. Halazonetis [8] did not consider the mandibular body a weak region. The second most common site fractured was the zygomatic complex region followed by the condylar region. Fractures of the condylar neck region were usually unilateral, bilateral or associated with fractures of the midline of the mandible. Middle third fractures made up only 8.5% of the number of fractures.

Erich arch bars was the commonest method employed to fix maxillo-facial fractures. This method is the most convenient method to the oral surgeons. In many patients when open reduction could be avoided, treatment was completed with intravenous diazepam premedication combined with local anaesthesia. It is an efficient functional method of fixing many maxillo-facial fractures without involving dental technicians and anaesthetists.

Of the 78 zygomatic complex fractures, 38 patients were treated by the technique advocated. [9] In addition to raising the flattened zygomatic complex, interosseus wiring was sometimes used for stabilization of the reduced fractures. In one patient, the antral approach was used and an antral pack inserted to stabilize the fracture. Open reduction and interosseus wiring were undertaken in some cases that could not be reduced by the "blind" method.

For middle third fractures of the facial skeleton, internal suspension wires and external fixation were employed. Of the external fixation utilized, fixation via supra-orbital pins with the frame designed [10] was relatively simple to use, comfortable to the patients and holds the middle third of the face rigidly forward. Results obtained were good.

Compression bone plates were not used at all for treating mandibular fractures.

Post operatively no serious complications like threatened blindness, gross occlusal derangement or osteomyelitis were encountered.

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