

MANDIBULAR FRACTURES IN BAHRAIN - A 10 YEAR STUDY

Ghassan Dhaif, BDS, FFDRCSI*R Ramaraj,
A Magra, Ahmed Yasser, BDS**Nabeela Al-Sammak, BDS**

Objective: Determine the aetiology and pattern of mandibular fractures in Bahrain over a period of 10 years.

Design: Retrospective analysis of medical records of all of 325 patients who sustained mandibular fractures between 1984-1995.

Results: The total number of cases of mandibular fracture was 325 with male: female ratio of 6:1. The peak age of fracture incidence is in the 20-30 years age group. Road traffic accidents (RTA) are the most common aetiology of mandibular fractures in Bahrain accounting for 44.6 %. Falls is the second common cause accounting for 40 %. The treatment method employed remained static for the provision of intermaxillary fixation (IMF).

Conclusion: Road traffic accidents constitute the main cause of mandibular fractures in Bahrain and intermaxillary fixation was the standard treatment method employed. There is a great need for more open reduction and rigid internal fixation (ORIF) which would decrease the length of patient hospitalisation, increased patient safety, improved communication and easier nutrition.

Bahrain Med Bull 1996;18(3):

Mandibular fracture is the commonest facial bone injury and accounts for between 36 to 54 % of all maxillofacial fractures^{1,2}. The main causes of facial and particularly mandibular fractures are interpersonal violence (IPV), road traffic accidents (RTA), falls and sports injuries^{3,4}. Changes in the aetiology of mandibular fractures have been noted with IPV^{3,5} being now the commonest cause compared to RTA in the past^{4,6}. Left side mandibular fracture is considered to be common in the case of IPV due to a punch from a right-handed person². Condylar fracture is often caused by an indirect trauma such as in bicycle accidents⁷.

* Chief Resident

** Resident

Department of Oral & Maxillofacial Surgery
Salmaniya Medical Centre
State of Bahrain

The purpose of this study was to analyze the aetiology, distribution and treatment of the mandibular fractures treated at the Salmaniya Medical Centre, Bahrain during the period from 1984-1994.

METHODS

The case sheets of all 325 patients who sustained mandibular fracture in the period from 1984-1994 were analyzed retrospectively. The factors analyzed were age, sex, cause of the fracture, anatomical fracture site and treatment modality.

RESULTS

The 20-29 years age group is the commonest age to sustain mandibular fracture (Table 1).

Table 1. Age group of patients with mandibular fractures

Age group	No of patients	Percentage
0 - 10 years	54	16.6
10 - 19 years	41	12.6
20 - 29 years	180	55.4
30 - 39 years	39	12.0
> 40 years	11	3.4
Total	325	100.0

Road traffic accident is the principal cause of mandibular fracture in this study accounting for 44.6 % (145 patients), followed by falls 40 % (130 patients) (Table 2). Sports injuries accounted for 12.3 % (40 patients) and interpersonal violence accounted for 3.1 % (10 patients).

Table 2. Aetiology of fractures in 325 patients

Cause	No of patients	Percentage
RTA*	145	44.6
Falls	130	40.0
Sport	40	12.3
IPV**	10	3.1
Total	325	100.0

* RTA = Road traffic accidents

** IPV = Interpersonal violence

With respect to the anatomical site of these fractures the mandibular angle is the commonest site to sustain a fracture (Table 3).

Table 3. Site of fracture

Site	No of patients	Percentage
Angle	127	39.1
Body	67	20.6
Condyle	80	24.6
Parasymphysis	49	15.1
Ramus	2	0.6
Total	325	100.0

The treatment employed was intermaxillary fixation (IMF) with only three patients (0.92 %) undergoing open reduction and rigid internal fixation (ORIF).

DISCUSSION

In common with other countries the peak age group for sustaining mandibular fracture is the age group between 20 to 30 years^{2,8}, and the male : female ratio

of 6:1. Fracture mandible is usually caused by assault^{9,10}. Reports from various parts of the world quote frequencies of assault as a cause of mandibular fractures as high as 97 % in Greenland¹⁰ and 38.7 % in Ireland⁸. Road traffic accidents are the most frequent cause of these injuries in countries such as India and Jordan^{11,12}. In our study, the principal cause of mandibular fractures in Bahrain is RTA followed by falls. This is largely because the legislation of mandatory uses of seat belt, lower speed limits, increased road safety awareness, and improved vehicle safety features and road conditions. Falls are the second commonest cause because of lack of safety measures among the labours especially the Asian expatriates who usually sustain such injury. Therefore, we strongly recommend that safety measures for labours should be implemented to prevent such mishaps.

Interestingly, IPV constitutes the main cause of mandibular fractures in the British Isles and Europe^{8,9} which are often sustained under the influence of alcohol. In Bahrain, IPV is an uncommon cause not only because the Islamic law prohibits the abuse of alcohol but also because of the peaceful attitude of the Bahrain population.

In common with other countries, the mandibular angle is the commonest site of fracture^{1,2,10}.

One of the most striking finding in this study is the treatment modality employed for the provision of IMF compared to the other countries^{1,8}. The avoidance of IMF provides greater patient comfort, improve mandibular function, and make patient nutrition easier thus avoiding weight loss¹³. By leaving the jaws wired together, there is increased airway compromise postoperatively and a compromised pulmonary function¹⁴. The need for the application of rigid internal fixation will fasten patient recovery and minimise the hospital course. In experienced hands¹⁵ the current use of rigid internal fixation of mandibular fractures by monocortical miniplate osteosynthesis proffer's a number of advantages when compared with traditional methods using intermaxillary fixation.

CONCLUSION

The pattern of mandibular fractures in Bahrain correlates with its cultural habits, violence being the least common cause, traffic is the commonest and falls is the second.

REFERENCES

1. Allan BP, Daly CG. Fractures of the mandible. J Oral Maxillofac Surg 1990;19:268.
2. Hill CM, Crosher RF, Carroll MJ, et al. Facial fractures - the result of a prospective four year study. J Oral Maxillofac Surg 1984;12:267.
3. James RB, Fredrickson C, Kent JN. A prospective study of mandibular fractures. J Oral Surg 1981;39:275-81.
4. Olson RA, Fonseca RJ, Zeitler DL. Fractures of the mandible: A review of 580 cases. J Oral Maxillofac Surg 1982;40:23-7.
5. Voss R. The aetiology of jaw fractures in Norwegian patients. J Oral Maxillofac Surg 1982;10:146-8.
6. Huelke DF, Harger JH. Maxillofacial Injuries: their nature and mechanisms of production. J Oral Surg 1969;27:451-60.

7. Lindqvist C, Sorsa S, Hyrkas T, et al. Maxillofacial fractures sustained in bicycle accidents. J Oral Maxillofac Surg 1986;15:12.
8. Beirne JCB, Brady F, Ryan D, et al. Changing trends in mandibular fractures treated at the National Maxillofacial unit Dublin. J of Irish College of Surg and Phys 1995;24:177-8.
9. Shepherd JP. Surgical, socioeconomic and forensic aspect of assault. Br J Oral Maxillofac Surg 1989;27:89.
10. Thorn JJ, Mogeltoft M, Hansen PK. Incidence and aetiological pattern of jaw fractures in Greenland. J Oral Maxillofac Surg 1986;15:372.
11. Karyouti SM. Maxillofacial injuries at Jordan University Hospital. J Oral Maxillofac Surg 1987;16:62.
12. Sawheny CP, Ahuja RB. Faciomaxillary fractures in North India. A statistical analysis and review of management. Br J Oral Maxillofac Surg 1988;26:430.
13. Cawood JI. Small plate osteosynthesis of mandibular fractures. Br J Oral Maxillofac Surg 1985;23:77-91.
14. Williams JG, Cawood JI. Effect of intermaxillary fixation on pulmonary function. J Oral Maxillofac Surg 1990;19:76.
15. Brown JS, Grew N, Taylor C, et al. Intermaxillary fixation compared to miniplate osteosynthesis in the management of the fractured mandible: an audit. Br J Oral Maxillofac Surg 1991;29:308-11.