



Contents lists available at ScienceDirect

Journal of Oral and Maxillofacial Surgery, Medicine, and Pathology

journal homepage: www.elsevier.com/locate/jomsmmp

Original research

Comparative analysis of trends in the treatment of mandibular fractures

David Ongodia^a, Zhi Li^{a,b}, Hai-Hua Zhou^{a,b}, Zu-Bing Li^{a,b,*}^a Department of Oral and Maxillofacial Surgery, College and Hospital of Stomatology, Wuhan University, Wuhan, Hubei, People's Republic of China^b The State Key Laboratory Breeding Base of Basic Science of Stomatology (Hubei-MOST) & Key Laboratory of Oral Biomedicine Ministry of Education, School & Hospital of Stomatology, Wuhan University, People's Republic of China

ARTICLE INFO

Article history:

Received 11 November 2012

Received in revised form 10 January 2013

Accepted 15 January 2013

Available online 1 March 2013

Keywords:

Mandibular fractures

Treatment

Comparative analysis

ABSTRACT

The purpose of this study was to comparatively analyze trends in the treatment of mandibular fractures. A retrospective review of records of patients treated for mandibular fractures at our department over a 5-year period (2007–2011) was done. Data collected included age, gender, etiology, anatomical site of fracture and treatment method used. There were 406 mandibular fractures in 335 patients. Males constituted 73.7% ($n=247$) and females 26.3% ($n=88$); male:female ratio of 2.8:1. Age range was 1–72 years, with mean age of 28.5. Patients of 21–30 years of age sustained the most mandibular fractures. Road traffic accidents (43.6%) were the most common cause of fractures, followed by falls (40.0%). The most common site of mandibular fracture was the condyle (36.2%), followed by symphysis/parasymphysis (23.9%). Majority (92.5%) of the fractures were treated by open approach. However, comparative data with other studies worldwide revealed that some centers treated majority of their patients by closed approach. The choice of either closed or open approach methods of treatment of mandibular fractures depended mainly on availability of resources and the socioeconomic situations in different countries.

Crown Copyright © 2013 Asian AOMS, ASOMP, JSOP, JSOMS, JSOM, and JAMI. Published by Elsevier Ltd. All rights reserved.☆

1. Introduction

Studies on the incidence of maxillofacial fractures in different countries are continuously being done and reported. The mandible is the second most commonly fractured part of the maxillofacial skeleton because of its position and prominence [1]. Because of the obvious esthetic and functional changes associated with mandibular fractures, they constitute most of the traumatic maxillofacial injuries treated by oral and maxillofacial surgeons. The most frequent causes vary from country to country; their treatment too seems to vary [1–24]. The purpose of this study is to comparatively analyze the trends in the treatment of mandibular fractures.

2. Patients and methods

The records of 335 patients treated for mandibular fractures at our department over a 5-year period (2007–2011) were retrospectively studied. Data collected included age, gender, etiology,

anatomical site of fracture and treatment method used. Records of patients who sustained only mandibular fractures, without any other maxillofacial fractures, were retrieved for this study. Records with incomplete information about the data of interest were not included. Microsoft Excel 2007 was used to calculate percentages and means; descriptive analysis was done.

The anatomical sites of fracture were classified as condyle, symphysis/parasymphysis, body, angle, dentoalveolar region, ramus and coronoid process. Etiology was classified as road traffic accidents, falls, assault, work-related accidents, and others. Treatment method was classified as open reduction and closed reduction.

3. Results

There were 335 patients, having sustained a total of 406 mandibular fractures. Males constituted 73.7% ($n=247$) and females 26.3% ($n=88$); male:female ratio (M:F) of 2.8:1. Age range was 1–72 years, with mean age of 28.5. Patients of 21–30 years of age sustained majority of the fractures (Table 1). The distribution of fractures according to etiology was as follows: road traffic accidents ($n=146$), falls ($n=134$), assault ($n=34$), work-related accidents ($n=15$), others ($n=6$) (Table 2). The latter were 3 patients who iatrogenically sustained mandibular fractures during extraction of impacted molar teeth; whereas 3 patients presented with pathological fractures secondary to pre-existing mandibular lesions.

The most common fractured anatomical site was the condyle 36.2% ($n=147$), followed by symphysis/parasymphysis 23.9%

☆ 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.

* Corresponding author at: Department of Oral and Maxillofacial Surgery, College and Hospital of Stomatology, Wuhan University, 237 Luoyu Road, Wuhan 430079, People's Republic of China. Tel.: +86 27 87686215; fax: +86 27 87873260.

E-mail addresses: ongo2david@yahoo.com (D. Ongodia), newzhilizhi@163.com (Z. Li), huazizhou8@163.com (H.-H. Zhou), lizubing0827@163.com (Z.-B. Li).

Table 1
Distribution of patients according to age.

Age (years)	Number of patients
0–10	37
11–20	77
21–30	83
31–40	63
41–50	44
51–60	23
61–70	6
71–80	2
Total	335

Table 2
Distribution of patients according to etiology of fracture.

Etiology	Number of patients	Percentage (%)
Road traffic accidents	146	43.6
Fall	134	40.0
Assault	34	10.1
Work-related accidents	15	4.5
Others	6	1.8
Total	335	100.0

Table 3
Distribution of fractures according to anatomical site.

Site	Number of fractures	Percentage (%)
Condyle	147	36.2
Symphysis/parasymphysis	97	23.9
Body	84	20.7
Angle	54	13.3
Dentoalveolar	14	3.4
Ramus	8	2.0
Coronoid	2	0.5
Total	406	100.0

($n=97$), body 20.7% ($n=84$), angle 13.3% ($n=54$), dentoalveolar region 3.4% ($n=14$), ramus 2.0% ($n=8$), and coronoid process 0.5% ($n=2$) respectively (Table 3).

Regarding method of treatment, majority (92.5%) of patients were treated by open approach and 7.5% were treated by closed approach with maxillo-mandibular fixation (MMF) (Table 4). Undisplaced subcondylar fractures with satisfactory occlusion were mainly managed by closed approach.

4. Discussion

Mandibular fractures, as a component of maxillofacial injuries, present on a day-to-day practice of oral and maxillofacial surgeons [1]. It is therefore important to monitor trends in their management in order to understand and appreciate how different centers, under different levels of clinical setup/resources, cope and manage their patients amidst the different socioeconomic, resource situations [14].

In this study, the incidence of mandibular fractures in males was higher than in females, with M:F ratio of 2.8:1. This finding was consistent with other studies in Turkey, Tanzania, Germany [4,19,21]. However, some studies have reported much higher ratios; Ogun-dare et al. [1] (Washington DC, USA), Ellis et al. [5] (Texas, USA),

Table 4
Distribution of patients according to treatment method.

Method	Number of patients	Percentage (%)
Open reduction	310	92.5
Titanium plates and screws ($n=217$)		
Resorbable plates and screws ($n=60$)		
Screws only ($n=33$)		
Closed reduction	25	7.5
Total	335	100.0

Adriane et al. [6] (Uganda), and Elgehani and Orafi [9] (Libya) reported M:F of 6:1, 5.8:1, 7.7:1 and 7.1:1 respectively. The explanation for the high incidence in male gender is the fact that males are versatile; they are more involved in activities such as driving, construction, physical fights, and dangerous sports. A study in Israel by Glazer et al. [8] specifically on mandibular fractures in children demonstrated M:F ratio of 2:1; they explained that boys are more associated with dangerous physical activities.

Regarding age distribution, the incidence of mandibular fractures was higher in the 21–30 years age group (Table 1). Our finding was in agreement with a number of other reported studies [2,6,9,10,12,19,20]. A study by Simsek et al. [14] in Turkey showed a higher incidence of mandibular fractures in the 30–39 years age group.

In the literature, data on the etiology of maxillofacial trauma, mandibular fractures in this particular case, show variations in the leading causes. In this study, the most common cause was road traffic accidents (RTA), 43.6% ($n=146$) (Table 2). This was consistent with other studies [2,3,6,8–10,13,15,17,20,21,23,24]; falls ranked second, 40.0%. However, our results differed from studies by Ogun-dare et al. [1], Simsek et al. [14], Deogratius et al. [19]; which all reported assault as the leading cause of mandibular fractures. In fact, the latter study ranked road traffic accidents in the third position. Atilgan et al. [4] in their comparative analysis of mandibular fractures between young and adult patients in the Southeast region of Turkey tried to draw a line between causative agents in the two groups. They reported that falls were the leading etiological factor in the young Turkish patients, whereas road traffic accidents were the leading cause in adult patients.

Studies have reported that in developing countries, as the population's socioeconomic level improves, the rate of acquisition of automobiles increases. However, road traffic legislation/law enforcement, status of roads, driving skills level, and vehicle maintenance are not at the same pace in some situations [6,9]. This has resulted in an increased incidence of road traffic accidents.

The population from whom data of this study were collected is one of a country equally experiencing rapid development and industrialization, and is therefore experiencing the scenario above of increased traffic with resultant increase in the number of road traffic accidents.

As the high income class massively acquires cars, there is equally a large portion of the population acquiring electric motorbikes. The latter are relatively affordable to majority households, as well as evade fuel whose price is most often dependent on global oil prices. Much as these modes of transport have made transportation easy, they have also come along with high incidence of road traffic accidents.

The highest number of fractures occurred in the condyle (36.2%), followed by symphysis/parasymphysis (23.9%) (Table 3). This pattern is in agreement with a study in Germany [21], which reported condylar fractures constituting 42% and symphysis/parasymphysis 21%. In the literature, the most fractured site of the mandible shows variation; some studies have reported mandibular angle [1,10,17]; body [3,5,12,13]; symphysis/parasymphysis [2,4,6,9,23]. It is worthwhile to note that a number of studies are in agreement that the ramus and coronoid are the least fractured regions of the mandible [2,5,6,10,21,23]. In fact, in one study [6], they did not record any fracture of the coronoid process. However, we think this was probably due to the short period (6 months) of their prospective study.

Treatment of maxillofacial injuries as a broad entity, and specifically mandibular fractures as is the purpose of this study, has continued to show variations according to worldwide studies; with persistent debates. As earlier mentioned, mandibular fractures result in functional and esthetic disturbances to the patient; therefore, intervention in terms of treatment is paramount.

Download English Version:

<https://daneshyari.com/en/article/3159996>

Download Persian Version:

<https://daneshyari.com/article/3159996>

[Daneshyari.com](https://daneshyari.com)