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RETROSPECTIVE STUDY OF MANDIBULAR FRACTURES AT THE THIRD GRADE MEDICAL CARE CENTER

RETROSPEKTIVNA STUDIJA PRELOMA MANDIBULE U CENTRU TERCIJARNE ZDRAVSTVENE ZAŠTITE

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STATEMENT

We, the undersigned authors of this article: "Retrospective Study of Mandibular Fractures at the Third Grade Medical Care Center", declare that this material was not previously published as an article or part of a book, nor was presented as oral presentation or a poster at congress.

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mandibular fractures, aetiology, incidence.

Ključne reči
prelom mandibule, etiologija, učestalost

Abstract

A retrospective study on injuries of the mandible was conducted. Data regarding age, gender, aetiology and localisations of the fractures were reviewed. During a 19 year period (1993-2012) we treated 5240 patients with maxillofacial injuries at the University Hospital Insular. Out of those, 2330 were isolated mandibular fractures, which represented 44.47% of all maxillofacial injuries or 71.12% of all fractures of maxillofacial skeleton.

The aethiology of maxillofacial injuries has been changing over the last few decades and has intention to continue doing so. Today's studies of these injuries reveal that traffic accidents are the most frequent cause of mandibular fractures in developed countries, whereas assaults, labour, sports injuries and falling down are the cause of mandibular fractures in less developed regions [2, 4, 10, 17, 18]. In the United States and Western Europe traffic accidents remain main cause of injuries, although these have been significantly reduced upon the latest legislative measures [17]. However, in Scotland it has been reported that a significant number of facial injuries were caused by assaults and falling down [3].

The causes of mandibular fractures vary widely from one to another region due to social, economic, cultural, racial and environmental factors [3, 5, 9, 11, 15, 18, 20]. Very small number of publications on maxillofacial injuries at Canary Islands have been presented until now. The objective of this study was to shed more light on data related to the mandibular fractures of this region and to help in their evaluation, prevention and treatment.

REVIEW OF CLINICAL MATERIAL

The study on maxillofacial injuries, with spotlight on mandibular injuries, was done for the period from 1993 to the year 2012. The records from medical histories and radiographs of the patients treated in the

University Hospital Insular of Las Palmas were reviewed retrospectively. All data regarding age, gender, aetiology, localisation, proceedings and destiny of patients were obtained. From all injured, the highlight was on mandibular fracture whether the patients were first treated here or previously treated elswhere.

University Hospital Insular is a third grade (highest) care centre in Canary Islands. The population along with tourists is more than 1.000.000. In eighties there was a boom of tourism, thus changing the socioeconomic and cultural level of the population and among many things it has changed the aetiology of traumatism in the island population.

During the last 19 years, from 1993 to 2012 we have treated 2330 patients with mandibular fracture. These fractures represent 44.47% of all injured patients in the maxillofacial region and 71.12% of all fractures of the facial skeleton (*Table 1*). Fractures, other than those of the lower jaw, were of the middle third of the face, and were much more frequent than those of zygoma, nose and other regions (*Table 2*). Males have a higher incidence of mandibular fractures than females, with a ratio of 82.5% : 17.5% (*Table 3*). Most of our patients suffered only one fracture (1261 of them), 705 had double fracture, 235 triple and finally there were 129 patients with multiples fractures (*Table 4*). Major number of the patients treated in our service suffered assault (780 of them), followed by traffic accidents, falling down, labour, sports injuries and domestic animal attacks. Finally in 130 cases we could not determine the cause of fracture (*Table 5*). In our review, the most common fracture site was the body of the mandible - 41.1%. After that, the most common were those of the neck, angle, symphisis, alveolar process, ramus and coronoid process (*Table 6*). The age of the patients who suffered mandibular fracture was between 5.5 and 74.5 with average of 34.7 years. We divided them in seven groups (by decades) and the most affected was the age group between 21 and 30 years (36.4%), followed by neighbouring groups, while the groups of extreme ages were less affected (*Table 7*).

DISCUSSION
(Comparision with other Clinical Studies)

The results of epidemiological studies about incidence and aetiology of mandibular fractures differ a lot regarding geographic zones, socio-economic status, religion, culture and area [5, 6, 7, 8, 17]. In our survey mandibular fractures represent relatively high incidence of maxillofacial regions (71.1 %). Other studies report incidences between 77.6 to 84% [12, 13, 18] or 56% – 66% [10, 15]. Some authors report a high percentage (70%) of a single mandibular fracture, whilst we had 54.1% respectively. Previous studies have also shown a lower incidence of mandibular fractures with male to female ratio from 5.2 : 1 to 5.4 : 1 [10, 12, 13, 15]. In this study the ratio was 4.3 to 1.7 indicating that the women on Canary Islands are more likely to sustain fractures than women in many other regions. In most previous surveys [1, 4, 12, 15, 18, 21], traffic accidents were the most common cause of the mandibular fractures, however in this study the assaults have major incidence of 33.5%, followed by traffic accidents. In Great Britain it has been reported that the introduction of the compulsory use of seat belts have a significant effect on prevention of mandibular injuries [14, 16]. As the implication of seat belts vary in the surveys from various regions, the relationship between its use and incidence of mandibular injuries requires further analysis [6].

There is a general indication that the assaults and aggression are the main aetiology factor of mandibular fractures in developed regions and the traffic accidents are the main cause of these in developing countries [6, 9, 20]. This may be related to the poor conditions of road safety and driving skills in some regions. In Great Britain and Norway particularly, a high predominance of assaults was reported as main cause of mandibular fractures [17, 20]. In Scotland that incidence is 55% [3]. This finding may be related to some social customs, especially alcohol intake. Some less developed countries have prohibited alcohol intake and this may be the explanation of lower incidence of interpersonal violence [6].

Generally, younger people suffer maxillofacial injuries more frequently and consequently mandibular fracture [6, 13, 15, 21]. Thus the young male at the age between 20-29 is most predominant group with mandibular fractures [3, 6, 12, 13, 18]. Our study confirms that finding with incidence of 36.4%.

It could also be considered as general that most frequent is the fracture of body of mandible (32%), followed by neck (25%), angle (21%), symphisis (17%), ramus (4%) and muscular process (1%) [6, 13, 15, 18]. Our epidemiological survey shows the same order of fracture site but percentages changed a bit slightly (Table 7).

CONCLUSIONS

The fractures of mandible are not infrequent in Canary Islands, but they are seldom severe. The above findings support the view that both incidence and aetiology of mandibular fractures vary from one region to another.

ANNEX

INJURIES OF THE MAXILLO-FACIAL REGION	5240
fracture of the maxillofacial skeleton n° % of injured	 3276 65,52
fractures of the mandible n° % of injured % of fractures	 2330 44,47 71,12

TABLE 1: Review of maxillofacial injuries and fractures of face and lower jaw.

SITES OF FRACTURES	n°	%
zygoma	594	43,4
nose	71	5,2
upper jaw	213	15,5
middle third of the face	236	17,2
middle third of the face and mandible	256	18,7
total	1370	100

TABLE 2: Sites of fractures of maxillofacial skeleton other than isolated mandibular fractures.

GENDER	n°	%
female	407	17,5
male	1923	82,5
total	2330	100

TABLE 3: Gender distribution of mandibular fractures

NUMBER OF FRACTURES	n	%
one	1261	54,1
two	705	30,3
three	235	10,1
multiple	129	5,5
total	2330	100

TABLE 4: Number of the mandibular fractures per injured.

AETIOLOGY OF FRACTURES	n	%
aggression	780	33,5
traffic accident	699	30,0
falls	461	19,8
sports Injuries	146	6,3
labour Injuries	62	2,6
domestic animals	52	2,2
other	130	5,6
total	2330	100

TABLE 5: Aetiology of mandibular fractures

FRACTURE SITE	n	%
body	935	41,1
condilar neck	697	29,9
angle	320	13,7
symphisis	190	8,2
alveolar process	93	4,0
ramus	77	3,3
coronoid process	18	0,8
total	2330	100

TABLE 6: Sites of mandibular fractures

AGE (YEARS)	n	%
0-10	92	3,9
11-20	323	13,9
21-30	848	36,4
31-40	457	19,6
41-50	251	10,8
51-60	185	7,9
over 60	174	7,5
total	2330	100

TABLE 7: Age distribution of mandibular fractures patients

Apstrakt

U radu je prikazana retrospektivna studija preloma mandibule. Analizirani su podaci koji se odnose na godište, pol, etiologiju i lokalizaciju povreda. Tokom 19 godina (u periodu 1993 – 2012) u University Hospital Insular je lečeno 5240 pacijenata sa povredama u maksilofacijalnoj regiji, od toga 2330 sa izolovanim prelomom mandibule, što predstavlja 44,47% svih povreda u maksilofacijalnoj regiji i 71,12% svih preloma skeleta u maksilofacijalnoj regiji.

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