



## Original

# Epidemiological analysis of mandibular fractures treated in Sao Paulo, Brazil



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### ABSTRACT

**Objective:** To analyze the results of an epidemiological study of mandibular fractures treated in a population of the city of Sao Paulo, Brazil.

**Materials and Methods:** The population included patients treated by a Department of Oral and Maxillofacial Surgery and Traumatology from January 2008 to September 2010, diagnosed with mandibular fractures. The variables analyzed for the study were gender, age, etiology, clinical signs and symptoms, type of treatment, and postoperative condition.

**Results:** A total of 171 patients and a total of 269 mandible fractures were diagnosed, with the majority being the males (84.8%), between the 2nd and 3rd decade of life. The mandibular condyle was the most affected region (32.04%), followed by the mandibular angle (23.38%). The postoperative edema was the most evident clinical sign, and the treatment of choice was the reduction and internal fixation with titanium mini-plates in all cases.

**Conclusion:** The treatment of mandibular fractures should be aimed at restoring the occlusion and mastication function, with surgery being the most indicated treatment, using reduction and internal fixation with the use of a plates and screws system based on the experience of the authors. Knowledge of surgical techniques and methods of reduction and fixation of fractures, and periodic monitoring allow these patients to receive the appropriate treatment.

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### Análisis epidemiológico de fracturas mandibulares tratados en Sao Paulo Brasil

#### RESUMEN

**El Objetivo:** Analizar los resultados de un estudio epidemiológico de las fracturas mandibulares tratadas en una población de la ciudad de Sao Paulo, Brasil.

**Materiales y Métodos:** La población incluyó a pacientes tratados por un Departamento de Cirugía Oral y Maxilofacial y Traumatología desde enero 2008 hasta septiembre 2010, con diagnóstico de fracturas mandibulares. Las variables analizadas para el estudio fueron:

#### Palabras clave:

Traumatismos mandibulares

Fijación de fractura

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sexo, edad, etiología, signos clínicos y síntomas, el tipo de tratamiento y la condición postoperatoria.

**Resultados:** Un total de 171 pacientes fueron diagnosticados de fracturas mandibulares y un total de 269 fracturas, siendo los varones, el género más afectado (84,8%), entre la segunda y tercera década de la vida, el cóndilo mandibular fue la región más afectada (32,04%), seguido por el ángulo de la mandíbula (23,38%). El edema postoperatorio fue el signo clínico más evidente y el tratamiento de elección fue la reducción y fijación interna con miniplacas de titanio en todos los casos.

**Conclusión:** El tratamiento de fracturas mandibulares debe estar dirigida para restaurar la función de la oclusión y la masticación, siendo la cirugía el tratamiento más indicado, a través de la reducción y fijación interna con el uso de placas y tornillos de sistema basados en la experiencia de los autores. Conocimiento de las técnicas quirúrgicas y los métodos de reducción y fijación de fracturas y el seguimiento periódico de los pacientes permiten un tratamiento adecuado para estos pacientes.

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## Introduction

Maxillofacial trauma is one of the leading causes of admission of patients in the emergency department of most hospitals around the world. It is of great interest because of its high incidence, high rate of morbidity, disfigurement and the loss of function involved, and significant monetary cost represented by the need for hospitalization and treatment. Moreover, the possible concomitant fractures of other body parts should also be taken into consideration.<sup>1,2</sup>

The management of maxillofacial trauma can be very complex, for it includes the treatment of the fractured bones, dentoalveolar trauma and the soft tissue wounds.<sup>1</sup>

According to many studies and reports, maxillofacial trauma statistics are directly linked to geographic location and cultural aspects. Our goal in the present study is to determine the epidemiology of maxillofacial trauma in patients treated in the OMFST department - Santa Paula Hospital, during the 2008–2010 period of time.<sup>1,3</sup>

## Materials and methods

We conducted a retrospective study, through the analysis of hospital medical records of victims of mandibular fractures, assisted by the Department of Surgery and Maxillofacial Trauma headed by Dr Leandro Luiz Fernando Lobo, which serves a population that has medical private agreements, with coverage in the city of Sao Paulo, during the period January 2008–September 2010. Data were collected through a specific form, having analyzed the following variables: gender, age, etiology, signs and symptoms, location and fracture classification, associated fractures, type of treatment and postoperative complications in order to compare them with the literature. This study is approved by the Ethics Committee of the Santa Paula Hospital in Sao Paulo Brazil. Number: 1981–2010-V.

## Results

The total sample consisted of 171 patients. Males were more affected with 145 patients (84.8%) of mandibular fractures and a total of 26 female patients (15.2%) were included in this study.

The most affected age group among females was 31–40 years old; in males the most affected age group was between 21 and 30 years old (Table 1). The average age for women was 38.8 years old and for men was 30 years old.

The etiology of mandibular fractures in females was falling from own height in 50% of cases corresponding to 13 patients, and in males, motorcycle accidents with 39 cases (26.9%) (Fig. 1).

Mandible fractures resulted in a total of 269 fractures, 38 diagnosed in women and 231 in men. The condylar region was most affected in females with 20 fractures (53%), followed by the symphysis with 6 fractures (16%); and mandibular body also with 6 fractures (16%) (Fig. 2).

In males, the condyle was also the most affected region with 74 fractures (32.04%), followed by the angle with 54 fractures (23.38%); parasymphysis with 39 fractures (16.89%); and 33 fractures in the symphysis region (14.3%) (Fig. 3).

In our study, 47 fractures were associated with mandibular fractures, zygomatic complex affected with 25 fractures, followed by Le Fort I fractures with 4 cases; nose and orbit with 4 cases each, Le Fort II and III with 3 cases each; Langlelongue fractures with 2 cases; frontal bone and dental alveolar process with 1 case each and 1 case associated with femur and hip fracture. Clinical signs and symptoms of the patients were pain on movement; change in dental occlusion; opening and closing mouth difficulty; edema; ecchymosis; crepitus

**Table 1 – Distribution of fractures by genre/age group.**

Age group	Female	Male
0–10 years old	2	4
11–20 years old	4	21
21–30 years old	3	69 (47.6%) <sup>a</sup>
31–40 years old	7 (26.9%) <sup>a</sup>	24
41–50 years old	5	14
51–60 years old	1	11
61–70 years old	0	2
71–80 years old	1	0
81–90 years old	3	0

<sup>a</sup> Most affected populations for males and females.

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