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Original Research Article

Violence in our country as a public health issue, prevalence of facial trauma at the hospital general de Mexico from 2020-2024

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ABSTRACT

Background: Facial trauma represents a significant pathology in emergency services. The facial skeleton is susceptible to injuries ranging from soft tissue wounds to complex fractures. The leading causes include motor vehicle accidents, assaults, and falls, with a higher incidence in men aged 20-30 years.
Methods: A retrospective, observational, and descriptive study was conducted at the department of plastic and reconstructive surgery of the hospital General de México. Medical records from January 2020 to December 2024 were reviewed to collect data on gender, age, injury mechanisms, affected anatomical structures, and treatments. Ethical guidelines were strictly followed.
Results: A total of 4218 cases of facial trauma were analyzed. Men constituted 87% of the patients, with a peak incidence in the third decade of life. Superficial soft tissue injuries accounted for 89.8% of cases, while 10.2% involved fractures. Mandibular fractures (14.7%) and orbital injuries (39.1%) were the most common. Assaults were the primary cause (62.2%), followed by motor vehicle accidents (14.7%) and blunt object impacts (9.8%). Open reduction and internal fixation were performed in 188 cases, while 226 cases were managed conservatively.
Conclusions: The study underscores the high incidence of facial trauma in urban populations, with violence being the leading cause. The findings emphasize the need for targeted prevention strategies and individualized treatment approaches based on injury severity and etiology.

Keywords: Facial trauma, Zygoma, Orbit, Facial injuries, Orbital fractures, Violence

INTRODUCTION

Patients suffering facial trauma constitute a significant group among those seeking care in emergency services.[1,2] The facial skeleton is vulnerable to a wide range of traumas depending on the mechanism of injury, affecting both superficial tissues and deep structures such as skin, subcutaneous tissue, muscle, and bone.[3]

The facial skeleton is divided into three main regions: the upper, middle, and lower thirds. The upper region is primarily composed of the frontal bone, supraorbital rim, and lateral orbital wall. The middle region includes the orbit in its medial, inferior, and inferolateral portions, as well as the nasal bones, zygoma, and maxilla. Finally, the lower region is represented by the mandible. Craniomaxillofacial fractures are common in the plastic surgery department, presenting a wide variety of patterns. These fractures can involve isolated facial bones, adjacent multiple bones, or even affect multiple facial levels from one third to panfacial fractures, comminuted fractures, or those involving bone loss.[4]

Most craniomaxillofacial fractures occur due to motor vehicle accidents, cycling, physical assaults, and falls. Regarding gender distribution, a higher incidence is observed in men at a 3:1 ratio, with a peak incidence between the ages of 20 and 30 for men and between 30 and 40 for women, with an average age of 28 years.[5] Facial trauma affects the population in four main age groups: children under 10 years, who are prone to injuries due to learning to walk, bicycle use, or dog bites; men aged 20-30, with trauma mainly from traffic accidents, fights, or sports; women aged 40-50, who often suffer injuries due to physical violence, traffic accidents, or falls; and women aged 80-90, whose primary cause of facial trauma is falls.[3,5]

This study, conducted by the plastic, aesthetic, and reconstructive surgery service at the hospital general de México Dr. Eduardo Liceaga, aims to report on the statistics of craniomaxillofacial fractures from 2020 to 2024, as well as the most common mechanisms of injury.

METHODS

This was a retrospective, observational, and descriptive study conducted at the department of plastic and reconstructive surgery of general hospital of Mexico "Dr. Eduardo Liceaga", in Mexico City. Data were collected from January 2020 to December 2024. Patients included were those treated for facial trauma during this period, as documented in the hospital's clinical archive.

Clinical records were reviewed to extract information on gender, age, injury mechanism, affected anatomical structures, and treatments provided. Ethical principles outlined were followed, and patient confidentiality was ensured by anonymizing data.

RESULTS

The study includes all facial fractures treated in the service, our study provides a perspective on the high incidence of facial trauma in large cities such as Mexico City, State of Mexico. A total of 4218 patients with facial injuries across the three thirds of the region were reported in our publication during the period from 2020 to 2024. Demographic data on gender and age distribution report that 87%, 3669 of the patients are men, and only 13%, 549 are women. 38.5%, 1624 of the patients are in the third decade of life, ranging from 26 to 39 years old, with an average of 30 years.

Demographic data on the mechanism of injury and associated anatomical predominance report that the main injuries treated in our service are superficial soft tissue wounds, accounting for 3789, 89.8% of all facial injuries. Facial fractures represent 10.2%, 429 of the total facial injuries treated in our service, with a predominance of 381 in men, corresponding to 88.8%, over 48 in women, corresponding to 11.2% (Figure 1). The age range of 26-39 years includes 196 patients, representing 45.7% (Figure 2).

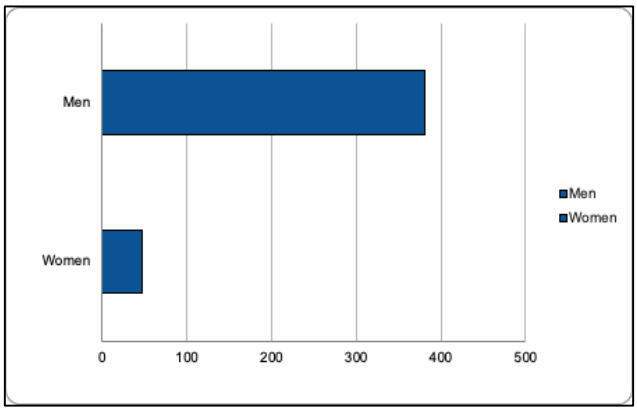

Figure 1: Prevalence by gender.

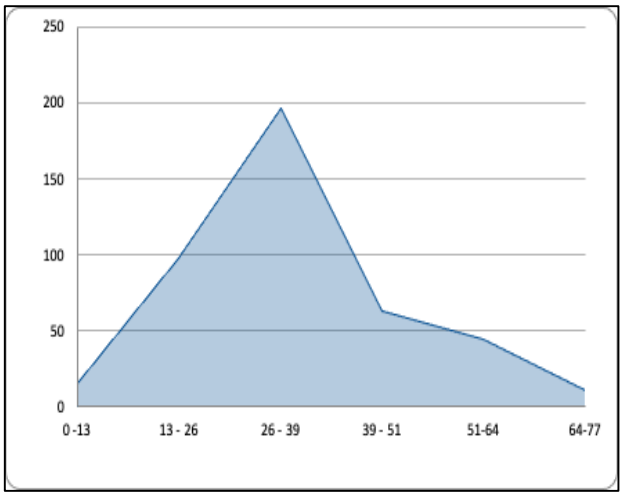

Figure 2: Prevalence by age.

Frontal bone fractures account for 6.3% of all bone injuries, being the least frequent, while mandibular fractures account for 14.7% of all facial fractures. Regarding the orbit, a total of 168 patients were reported, corresponding to 39.1%. There is no significant predominance in laterality, with the left side being slightly higher at 47.4% compared to the right side at 47.9%, and 4.7% presenting bilaterally. Maxillary bone injuries account for 51 of the 429 patients, representing 11.9% of the total; isolated zygomatic fractures account for 38, 9.4% of the total; zygomatic fractures associated with orbital bones represent 6.4% of the total; 33 patients presented nasal bone fractures, 8.1%; and only 23 patients, 5.4%, presented NOE fractures (Figure 3).

The main orbital injuries are concentrated in the isolated orbital floor, accounting for 64.9%; 21.1% for injuries in the orbital floor and medial wall; the medial wall accounts for 9.3% of the total injuries; and finally, 4.6% involve the orbital roof, these being the least frequent of all orbital fractures.

The main mechanism of injury is assault by third parties, accounting for 62.2% of all facial traumas, followed by motor vehicle accidents at 14.7%, blunt object impact at 9.8%, falls at 5.8%, unknown mechanism at 4.2%, and finally, fireworks representing the least common cause at 3.5% (Figure 4).

In terms of treatment, open reduction and internal fixation were performed on 188 of 429 patients with facial fractures, 226 patients were treated conservatively, and 15 patients did not receive treatment for various reasons (Figure 5).

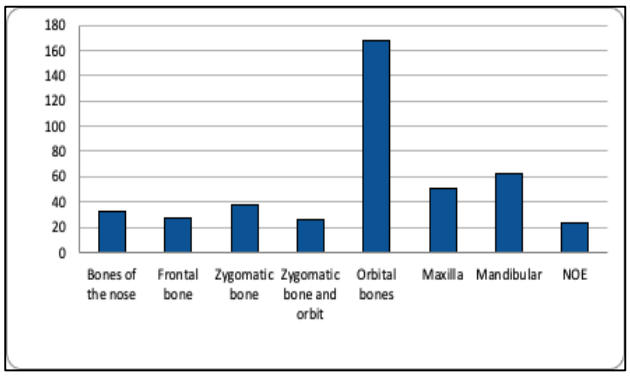

Figure 3: Prevalence by type of facial fracture.

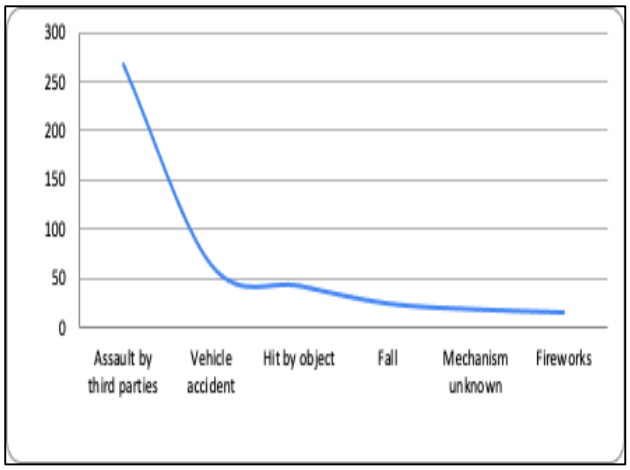

Figure 4: Mechanism of injury.

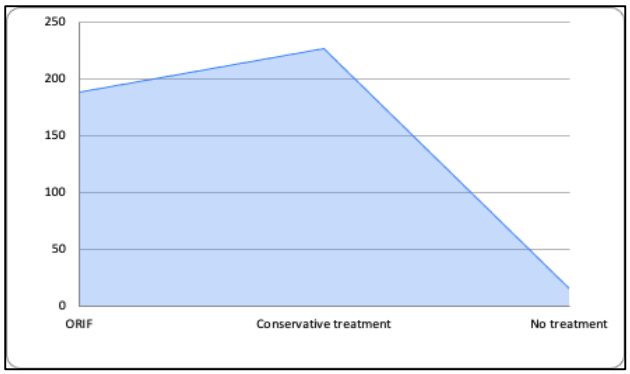

Figure 5: Prevalence of treatment.

DISCUSSION

The data presented confirm that the general hospital of Mexico is an important center for the care of patients with facial trauma. According to a global study conducted in 2017, 7,538,663 cases of facial fractures were reported, with an incidence of 98 per 100,000 people, making it a significant cause of comorbidity in the general population.[6]

The prevalence and causes of facial trauma vary according to age and gender. Men show a higher incidence compared to women, with a ratio of approximately 8:1, which is consistent with the available literature in our country.[7]

In Mexico, violence is the leading cause of facial injuries, accounting for 63.4% of all cases. These data contrast with the most common mechanism of injury in patients with facial trauma at a primary care center in the United States, where falls were identified as the most common mechanism, representing 43.6% of cases.[8] However, in a study conducted on statistics in Pakistan and India, traffic accidents predominated as the most common cause, representing 63.6% and 70% of cases, respectively.[9,10]

These data reflect how various local demographic factors, road infrastructure, and safety regulations depending on the region can influence the predominant mechanism of injury.

The proportion of patients receiving conservative or surgical treatment depends on the type of fracture and clinical context. In the medical literature, most facial fractures do not require surgery. A study at a level 1 trauma center in the United States found that 80.9% of patients with facial fractures did not require surgical intervention.[11] Another study at a metropolitan center reported that surgical treatment was necessary in 38% of cases.[12] In our center, 44% of patients required open reduction and internal fixation, suggesting that surgical treatment is performed based on specialists' criteria in each region.

It is important to highlight that only patients with facial trauma who were referred to the plastic surgery service at the general hospital of Mexico "Dr. Eduardo Liceaga" were included. These patients had a CT scan, which allowed the diagnosis to be supported both clinically and through imaging studies. The inclusion period was from January 2020 to December 2024, and the patients were also required to have an active file within the service.

CONCLUSION

This study highlights the high incidence of facial trauma in an urban population such as that treated at the general hospital of Mexico, with a significant predominance in young men. Violence is confirmed as the leading cause of facial trauma in Mexico, in contrast to other countries where vehicular accidents are the dominant etiology. The data also underscore that most cases require a conservative

approach, with surgical intervention needed in only a minority of patients, suggesting the importance of individualized evaluation for each case. These results not only provide a better understanding of the local epidemiology of facial trauma but also offer a basis for developing prevention and management strategies tailored to the specific characteristics of our population.

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Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Nguyen DC, Susarla SM, Sacks JM. Evaluation and management of the patient with craniomaxillofacial trauma. In: Cameron JL, Cameron AM, editors. Current Surgical Therapy. 13th ed. Philadelphia: Elsevier; 2023;1357-65.
2. Parsons MS, Policeni B, Juliano AF, Agarwal M, Benjamin ER, Burns J, et al. ACR Appropriateness Criteria® Imaging of Facial Trauma Following Primary Survey. J Am Coll Radiol. 2022;19(5):S67-86.
3. Pham Dang N, Barthélémy I. Secuelas de los traumatismos faciales en adultos. Tratado Med. 2021;25(4):1-10.
4. Susarla SM, Ettinger RE, Manson PN. Management of craniomaxillofacial fractures. In: Neligan PC, editor. Plastic Surgery. 5th ed. Philadelphia: Elsevier. 2024;1-28.
5. González-Martínez C, Pacheco-López RC, Vázquez-Morales HL, Hernández-Ordóñez R, Araiza-Gómez E, Ayala-Ugalde FA. Epidemiology and treatment outcomes of surgically treated mandibular condyle fractures. A five-year retrospective study. Cir Plast. 2022;32(1):5-11.
6. Lalloo R, Lucchesi LR, Bisignano C, Castle CD, Dingels ZV, Fox JT, et al. Epidemiology of facial fractures: incidence, prevalence and years lived with disability estimates from the Global Burden of Disease 2017 study. Inj Prev. 2020;26(1):i27-i35.
7. Wu J, Min A, Wang W, Su T. Trends in the incidence, prevalence and years lived with disability of facial fracture at global, regional and national levels from 1990 to 2017. PeerJ. 2021;9:e10693.
8. Long S, Spielman DB, Losenegger T, Obayemi AA, Neuner R, Cosiano MF, et al. Patterns of Facial Fractures in a Major Metropolitan Level 1 Trauma Center: A 10-year Experience. Laryngoscope. 2021;131(7):E2176-80.
9. Khan TU, Rahat S, Khan ZA, Shahid L, Banouri SS, Muhammad N. Etiology and pattern of maxillofacial trauma. PLoS One. 2022;17(9):e0275515.
10. Kanala S, Gudipalli S, Perumalla P, Jagalanki K, Polamarasetty PV, Guntaka S, et al. Aetiology, prevalence, fracture site and management of maxillofacial trauma. Ann R Coll Surg Engl. 2021;103(1):18-22.
11. Spinella MK, Jones JP, Sullivan MA, Amarista FJ, Ellis E 3rd. Most Facial Fractures Do Not Require Surgical Intervention. J Oral Maxillofac Surg. 2022;80(10):1628-32.
12. Long S, Spielman DB, Losenegger T, Obayemi AA, Neuner R, Cosiano MF, et al. Patterns of Facial Fractures in a Major Metropolitan Level 1 Trauma Center: A 10-year Experience. Laryngoscope. 2021;131(7):E2176-80.

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