



Epidemiological Study of Nasal Fractures Treated at the School of Dentistry Aracatuba from 2006 to 2011

Henrique Hadad*, Silva Medeiros JA, Teixeira Colombo L, Rangel Garcia I Jr, Avila Souza F and Marcondes Aranega A

Department of Surgery and Integrated Clinic, Sao Paulo State University (UNESP), Brazil

Abstract

The injuries to maxillo skeleton represent a large percentage in the emergency services. The nasal fractures have a higher incidence between the facial traumas ranging from 39% to 50%. By other side, the public policies for prevention of this trauma have been implemented by the government. The aim of this study is to realize conduct a epidemiological study of nasal fractures in the Aracatuba, SP- Brazil, between January of 2006 to December 2011, attended by the Oral & Maxillofacial Surgery service at the School of Dentistry Aracatuba (FOA/UNESP). In the period evaluated, 1245 facial traumas were attended, of which 490 (39.35%), representing nasal fractures. The highest frequency of this nasal fractures was observed in males (70%), of which physical aggression was the highest etiological agent (24.3%). In 2006, there were 144 cases of nasal fractures, in 2007 this number went down to 99 patients, in 2008 e 2009 this number varied between 77 and 115 patients with nasal fractures. In 2010, there was a reduction of 70% in relation to 2009, only 24 cases were treated and in 2011 only 31 patients. Therefore, the results obtained in this study allow us to conclude that there was a reduction in the nasal fractures frequency and this reduction is associated with a national public policy such as decrease consumption of alcoholic drink associated with driving and the public security.

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*Correspondence:

Henrique Hadad, Department of Surgery and Integrated Clinic, Sao Paulo State University (UNESP), School of Dentistry, Aracatuba, Rua Jose Bonifacio 1193, Vila Mendonca, 16015-050, Aracatuba, Sao Paulo, Brazil, Tel: +55 18 3636-2898;

E-mail: henriquehadad@gmail.com

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Keywords: Wounds and injuries; Traumatology; Nasal bone; Prevalence

Introduction

Facial trauma can be considered one of the most devastating aggressions due to the possibility of deformities, the emotional consequences and the economic impact it causes on the health system [1,2]. The causes of trauma vary according to the study population and can be altered according to some characteristics such as: age, sex, social, local, urban and residential classification [3,4]. The most frequent causes of facial trauma are interpersonal violence, sports accidents, falls, automobile accidents, non-fall-related impact, work-related accidents, and indefinite etiologies. The sex most affected by traumas is the male gender and the age group is between 20 years and 30 years of age [4-6].

The evaluation and treatment of patients with craniofacial trauma and/or multiple organs, regardless of etiologic factor, need to receive treatment as soon as possible to minimize morbidity and mortality [7].

The nose is susceptible to trauma due to its central position and anterior projection, making nasal fractures more common among facial fractures and one of the three most common fractures of the human skeleton [8,9]. Nasal fractures can correspond to up to 26.89% of a hospital service [10]. The nose is composed of a bony-cartilaginous structure. The bony part is called nasal bone. Internally to this structure is the bony septum of the nose. The middle nasal third is formed by a cartilaginous dome made up of the superior or triangular lateral cartilages and internally the cartilaginous septum is found, in the inferior continuity of the bony septum [11].

There is no standard protocol ideal for analysis of the diagnosis and the consequence of nasal trauma. The examination is usually done subjectively, through anamnesis and clinical examination. A history of epistaxis, nasal obstruction, change in nasal appearance and pain should be questioned. When present, these signs and symptoms may aid in confirming the diagnosis. The professional may also use imaging tests to complement the nasal fracture diagnosis [12,13].

There are different treatments for nasal fractures, depending on the preference of the surgeon, the hospital protocols, the surgical specialties and the practical reasons. Three important aspects

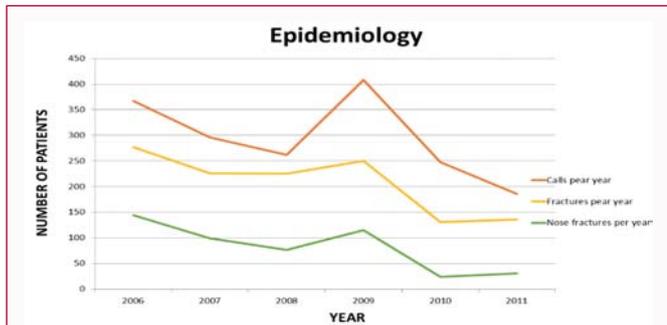


Figure 1: Representation of the number of facial fractures and nasal fractures, in relation to the total number of visits to the CTBM service in Aracatuba from 2006 to 2011.

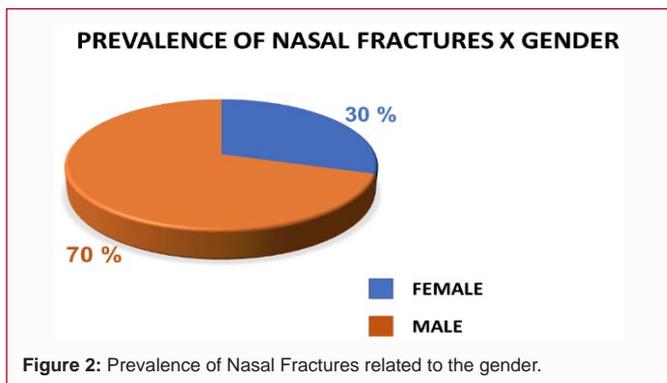


Figure 2: Prevalence of Nasal Fractures related to the gender.

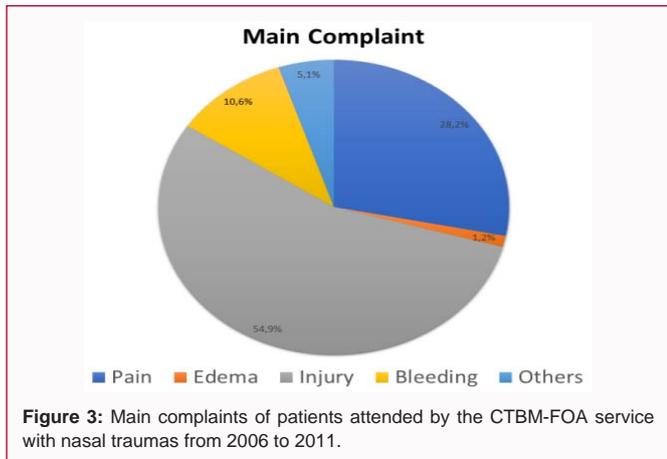


Figure 3: Main complaints of patients attended by the CTBM-FOA service with nasal traumas from 2006 to 2011.

should be checked to ensure the best treatment: treatment time, choice of appropriate local or general anesthesia, and surgical technique, with reduction open or closed. Regarding treatment, there are contradictory opinions about the most adequate time for it; however, it seems to be a matter of common sense that some types of injuries require immediate reduction, while others may undergo the later treatments [14-16].

There are some discussions about the limiting amount of days for intervention in adults or children, ranging from 10 days to 15 days in adults and approximately 7 days in children [9,17-19]. There may be complications due to nasal fractures, such as a severe deformation of the nose structure and even intranasal dysfunction, unless treated. Although, when not treated properly, may be complications, leading to greater morbidity than any other facial fracture [20,21].

Therefore, Oral & Maxillofacial Surgery service at the School of

Table 1: Etiology of patients with nasal fracture.

| Etiology | Number of cases | % |
|---------------------|-----------------|---------|
| Automobile accident | 38 | 7 %, 8% |
| Cycling accident | 47 | 9%, 6% |
| Animal accident | 19 | 3%, 9% |
| Work accident | 25 | 5%, 1% |
| Sports accident | 46 | 9%, 4% |
| Motorcycle accident | 31 | 6%, 3% |
| Physical Agression | 119 | 24%, 3% |
| Fall | 96 | 19%, 6% |
| Others | 64 | 13%, 1% |
| Noun information | 5 | 0.01% |

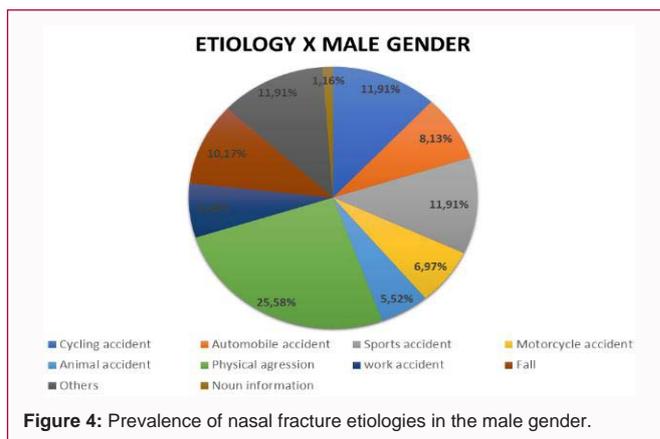


Figure 4: Prevalence of nasal fracture etiologies in the male gender.

Dentistry Aracatuba (FOA/UNESP) has been concerned with early diagnosis of the facial lesions of individuals, seeking to treat them, as well as establishing the prevalence of these fractures for a future development of a tool for the prevention of trauma of this nature.

Material and Methods

This project was approved by the ethical committee. A search about facial trauma articles was performed in the following database, Medline, Lilacs, Adolec, Capes and BBO, using the following key-words “wounds and injuries”, “Traumatology”, “Nasal Bone”, “Prevalence”.

Later, a data collect was performed to establish the prevalence of nasal fracture by analyzing the medical records of the Oral & Maxillofacial Surgery service at the School of Dentistry Aracatuba (FOA/UNESP). The medical records were obtained through an extension project, between 2006 and 2011.

Were included in the project patients who were attended by Oral & Maxillofacial Surgery service at the School of Dentistry Aracatuba (FOA/UNESP) at the Santa Casa de Misericordia of Aracatuba, School of Dentistry Aracatuba (FOA/UNESP) and Santa Casa de Misericordia de Birigui, SP- Brazil. Were excluded in the project patients who did not present facial trauma or medical records with incomplete data. For data processing were used 2 programs, Epi info. 3.5.2 and IBM SPSS 20.0 (IBM, Armonk, NY, USA) for statistical analysis.

Results

The analysis of the data analysis showed 1767 visits between 2006

to 2011, of which 1245 were diagnosed as facial fractures and were identified 490 cases of nasal fractures (39.35% of facial fractures). There was a considerable reduction in the number of fractures since 2006 until 2011, it's was possible to observe a reduction of 50% when compared to 2006 with 2011 (Figure 1).

There was a difference between the prevalence of nasal fracture according to gender, it was observed 70% of the case of nasal fractures in males and, in most of the case, the patients reported as the main complaint the nasal wounds (Figure 2 and 3). The data showed that 24% of nasal fractures were due to physical aggression, that's represent's 119 cases and it was possible to note that the prevalence in males was 3 times higher than in females (Table 1). The second most common cause is the fall of one's own height and was more common in the females when compared with males (Figure 4 and 5).

The mean age of patients with nasal fractures was 33.51 years. The most affected age group is between 21 years and 30 years old, that is, among young adults, and was more prevalent in men, almost four times higher than in women (Figure 6). About 70% of patients with nasal fractures did not present fractures with displacement (Figure 7). Regarding the types of treatment used in these patients, it was reported that most of the cases received conservative treatment, representing 341 patients (69.6%) while 149 (30.4%) of the cases received surgical treatment (Figure 8).

Over the years, there has been a large drop in the number of cases of nasal fractures recorded by the service. However, it has been observed that there has been a proportional increase in the type of treatment adopted in recent years, although conservative treatment is predominant (Figure 9).

Discussion

When we approach the face structures, the nose becomes more susceptible to trauma due to its central position and anterior projection, which make the nasal fractures more common among the facial fractures and one of three most common of the human skeleton [8,9].

The nasal fracture has a high prevalence and the most common cause are, the fall own height and physical aggression [8-10,22]. The data related with gender and age range shows major involvement of the male gender in an age group of 21 years to 30 years old agreeing with similar searches [22,23].

Although the female gender has been very active in the socio-cultural and economic spheres in recent years, the masculine gender

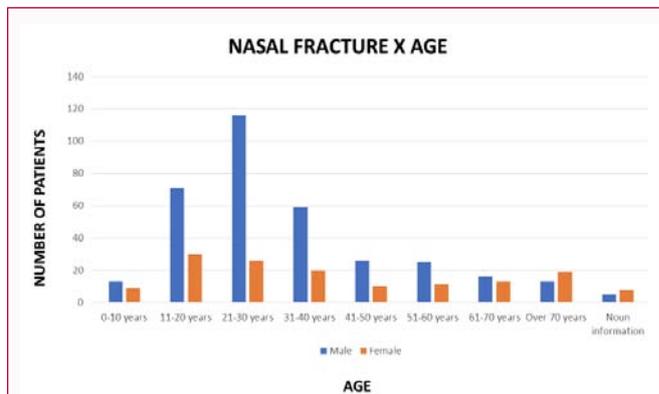


Figure 6: Representation of the prevalence of males and females in relation to the age group.

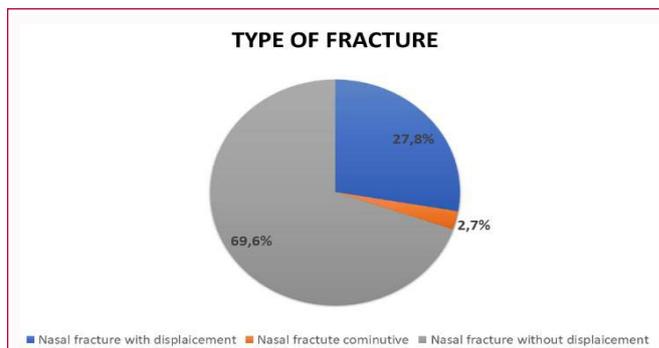


Figure 7: Diagnosis of patients attended by the CTBM-FOA service with nasal trauma between the years 2006 to 2011.

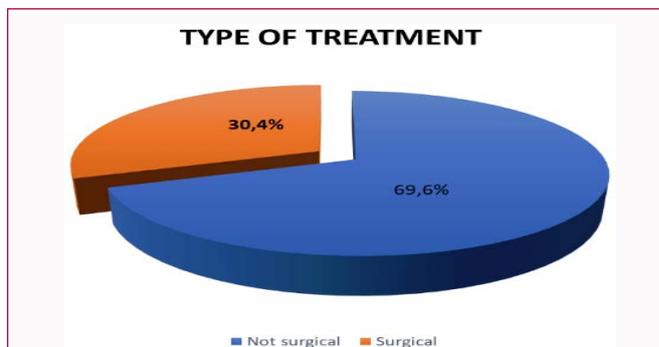


Figure 8: Prevalence on the type of treatment of patients with nasal fractures.

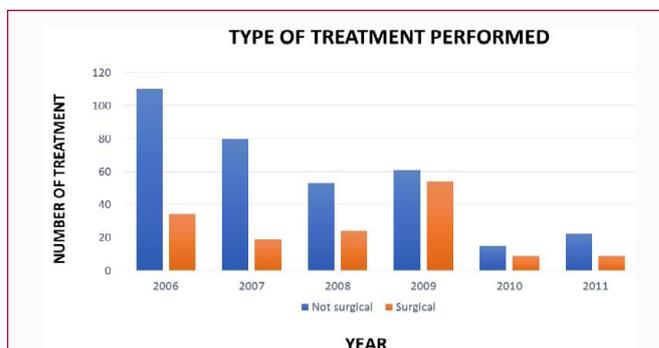


Figure 9: Type of treatment performed in the course of each year.

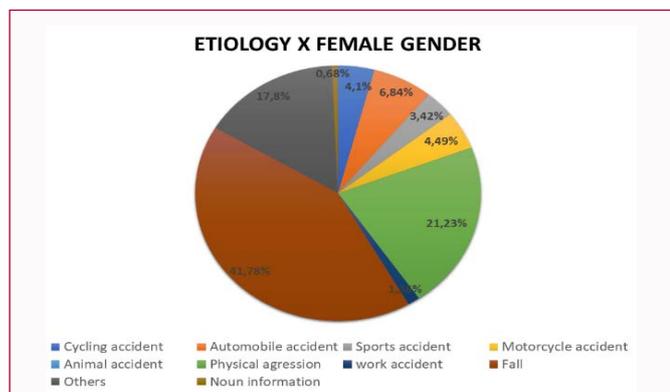


Figure 5: Prevalence of nasal fracture etiologies in the female gender.

is still the most active, being responsible for a greater occurrence in physical aggression and indiscriminate use of alcoholic beverages.

Among the etiological factors, the present study identified that, while the male gender had the greatest cause of physical aggression, with 25.58%, the female gender had a fall of 41.78%. However, when the etiologies of nasal fractures in both sexes were analyzed, similar results were found in the studies of Faverani et al., [10] where the greatest cause was physical aggression, with 24.3%, followed by the fall of the height itself, with 19.6%.

According to Fornazieri et al., [23] physical aggression has a prevalence of approximately 34%, suggesting that both etiological factors, physical aggression and the fall of the height itself, are responsible for milder traumas when compared to traumas triggered by etiologies of great dissipation of forces, as is the case of automobile accidents. This observation could justify the fact that 69.6% of the nasal fractures found within the present casuistic had no displacements, and these fractures could be treated with a conservative approach. Under the same reasoning, the fact that most of the diagnosed cases are due to trauma from small impacts, nasal fractures become commonly isolated.

During the years 2006 to 2011 it is noticed that there was a decrease in the incidence of patients with nasal fractures. Locally, it can occur that many cases of patients with nasal fractures, when treated only at the hospital level, do not return to the School of Dentistry of Aracatuba for due follow-up, which causes a new medical record of the faculty not to be generated and the attendance provided only at the hospital level, be recorded only in the medical records of the hospitals themselves. It is noteworthy that the charts opened by the Faculty of Dentistry of Aracatuba are generated when the patient is attended in his dependencies, with due postoperative documentation. Take advantage, then, to attach the patient records with details on the hospital-based care.

Despite the reduction of cases treated by the Oral & Maxillofacial Surgery service, there was a percentage increase in the type of surgical treatment adopted, which could extrapolate the idea that the cases that had a surgical approach were probably treated late, with periodic returns of patients, generating medical records in both hospitals, and at the School of Dentistry Aracatuba (FOA/UNESP).

This reduction in fractures may be associated with the fact that in Brazil there are several prevention campaigns aimed at avoiding facial trauma, such as campaigns for the prevention of traffic accidents, as well as constant campaigns to reduce the indiscriminate use of beverages associated with traffic or violence.

We also have projects such as CIRPAC, which holds lectures to raise awareness of the population and prevent buccomaxillofacial trauma in Aracatuba and the region. In addition, stricter traffic laws have been put in place, providing for the use of helmets and seat belts, which also tends to lead to a decrease in the number of accidents and, consequently, of facial trauma. Facial trauma represents a serious public health problem and must be studied to ensure that new preventive measures are developed and applied in society.

Conclusion

According to the results obtained, it was concluded that:

a) In relation to the population affected by nasal fracture, the most affected age group was between 21 years and 30 years and that 70% were male.

b) Regarding the etiologies of this type of fracture, more than

24% of the analyzed population had physical aggression as a cause, while almost 20% was due to the fall of the height itself.

c) In order to prevent this type of fracture, it would be interesting to carry out campaigns against violence, and the CIRPAC tool could be used for this purpose, applying it to a young adult audience, between the ages of 21 years and 30 years.

References

1. Sastry SM, Sastry CM, Paul BK, Bain L, Champion HR. Leading causes of facial trauma in the major trauma outcome study. *Plast Reconstr Surg.* 1995;95(1):196-7.
2. Larsen OD, Nielsen A. Mandibular fractures. I. An analysis of their etiology and location in 286 patients. *Scand J Plast Reconstr Surg.* 1976;10(3):213-8.
3. Lucht U. A prospective study of accidental falls and resulting injuries in the home among elderly people. *Acta Sociomed Scand.* 1971;3(2):105-20.
4. Voegels RL, Lessa MM, Butugan O, Bento RF, Miniti A, Goto EY, et al. *Conduas práticas em rinologia: Disciplina de Otorrinolaringologia da Faculdade de Medicina da Universidade de São Paulo.*
5. Wulkan M, Parreira JG Jr, Botter DA. Epidemiology of facial trauma. *Rev Assoc Med Bras (1992).* 2005;51(5):290-5.
6. Hwang K, Ki SJ, Ko SH. Etiology of Nasal Bone Fractures. *J Craniofac Surg.* 2017;28(3):785-8.
7. American College of Surgeons. *Advanced Trauma Life Support for Doctors.* American College of Surgeons. 2018.
8. Rhee SC, Kim YK, Cha JH, Kang SR, Park HS. Septal fracture in simple nasal bone fracture. *Plast Reconstr Surg.* 2004;113(1):45-52.
9. Rubinstein B, Strong EB. Management of nasal fractures. *Arch Fam Med.* 2000;9(8):738-42.
10. Faverani LP, Jardim ECG, Gulinelis JL, Queiroz TP, Panzarini SR, Garcia Júnior IR, et al. Traumas faciais: estudo retrospectivo de 1190 casos na região de Araçatuba. *Rev Bras Cir Cabeça Pescoço.* 2009;38(1):22-5.
11. Chan J, Most SP. Diagnosis and management of nasal fractures. *Oper Tech Otolaryngol Head Neck Surg.* 2008;19(4):263-6.
12. Leong SC, Abdelkader M, White PS. Changes in nasal aesthetics following nasal bone manipulation. *J Laryngol Otol.* 2008;122(1):38-41.
13. Chukwulebe S, Hogrefe C. The Diagnosis and Management of Facial Bone Fractures. *Emerg Med Clin North Am.* 2019;37(1):137-51.
14. Mondin V, Rinaldo A, Ferlito A. Management of nasal bone fractures. *Am J Otolaryngol.* 2005;26(3):181-5.
15. Khwaja S, Pahade AV, Luff D, Green MW, Green KM. Nasal fracture reduction: local versus general anaesthesia. *Rhinology.* 2007;45(1):83-8.
16. Das TA, Aslam AS, Mangalath U, Abida R, Nair RB, Soman S. Evaluation of Treatment Outcome Following Closed Reduction of Nasal Bone Fractures. *J Contemp Dent Pract.* 2018;19(10):1174-80.
17. Rohrich RJ, Adams WP Jr. Nasal fracture management: minimizing secondary nasal deformities. *Plast Reconstr Surg.* 2000;106(2):266-73.
18. Ridder GJ, Boedeker CC, Fradis M, Schipper J. Technique and timing for closed reduction of isolated nasal fractures: a retrospective study. *Ear Nose Throat J.* 2002;81(1):49-54.
19. Staffel JG. Optimizing treatment of nasal fractures. *Laryngoscope.* 2002;112(10):1709-19.
20. Schultz RC. One thousand consecutive cases of major facial injury. *Review Surg.* 1970;27(6):394-410.
21. Hwang K, Yeom SH, Hwang SH. Complications of Nasal Bone Fractures. *J Craniofac Surg.* 2017;28(3):803-5.

22. Paes JV, de Sá Paes FL, Valiati R, de Oliveira MG, Pagnoncelli RM. Retrospective study of prevalence of face fractures in southern Brazil. *Indian J Dent Res.* 2012;23(1):80-6.
23. Fornazieri MA, Yamaguti HY, Moreira JH, Navarro PL, Heshiki RE, Takemoto LE. Fracture of Nasal Bones: An Epidemiologic Analysis. *Int Arch Otorhinolaryngol.* 2008;12(4):498-501.