

AN AUDIT OF 120 CASES OF SIMPLE NASAL BONE FRACTURE

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ABSTRACT

Background: Nasal bone fractures are the commonest type of the bony facial injuries seen in emergency department. The objectives of the present study were to determine the age and gender distribution, etiology, symptoms, signs and complications of simple nasal bone fractures and complications of their closed reduction.

Material & Methods: This cross-sectional study was conducted at Departments of ENT, Mardan Medical Complex, Mardan & MMM Teaching Hospital, D.I.Khan, Pakistan from July 2012 to Jun 2013. All patients with simple nasal bone fracture of any age and gender were included. All patients were treated by closed reduction. Data regarding gender, age in years, age grouping, etiology, symptoms, signs and complications were analyzed as frequency and percentage.

Results: A total of 120 patients with simple nasal bone fractures were included in the study. Males 90 (75%) out-numbered females 30 (25%) with a ratio of 3:1. The mean age of the patients was 20.66 ± 14.86 (2-60) with a range of 58 years. The most frequent etiology, symptom, sign and complication was road traffic accident in 65 (54.15%), epistaxis in 85 (70.80%), external nasal deformity in 92 (76.65%) and septal hematoma in 24 (20%) cases respectively. Persistent postoperative nasal deviation was a complication in seven (5.80%) patients with closed reduction.

Conclusion: Road traffic accident is the most common cause of nasal trauma. Closed reduction for simple nasal bone fracture generally produces acceptable cosmetic results. By knowing the etiology of nasal trauma, the risk of nasal injuries can be reduced by taking safety measures and precautions.

Key words: Traffic Accidents; Epistaxis; Nasal Obstruction; Etiology.

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INTRODUCTION

Being the most prominent and projected in position, nose is frequently injured facial structure, accounting for approximately 39 % of all bony injuries in facial trauma¹ and the third most frequent of all body fractures.^{1,2} Road traffic accidents, sports injuries, interpersonal violence, falls and blast injuries all contribute to nasal trauma.³

Nasal trauma commonly presents with epistaxis, external nasal deformity, periorbital ecchymosis, nasal obstruction and pain.⁴ It can involve all age groups from pediatrics to adults. Adults are predominantly affected with male to female ratio of 2:1.^{1,5} In pediatric age group intrauterine forces, forceps delivery, breech presentation all contribute to nasal trauma. The low face to head volume ratio

and protected environment, parental supervision are responsible for less nasal trauma in this group.⁵

Male adults being more involved in occupational trauma, violence, road traffic accidents, falls and sports injuries, receive more nasal trauma.⁶ Nasal bone fractures may occur as simple nasal fracture or associated with other facial injuries like maxillary, zygomatic and other mid-face comminuted fractures.⁷

Simple nasal bone fractures can be diagnosed easily with history and clinical examination, however certain radiological studies like x-ray nasal bone lateral view, CT of nose and sinuses can help to assess the type and severity of injury, and other associated fractures.⁶

Simple nasal bone fractures can be treated by two methods. One is closed reduction of fragments with digital manipulation or use of Walsham and Asch forceps. The other method is open reduction.⁸

The objectives of the present study were to determine the age and gender distribution, etiology, symptoms, signs and complications of simple nasal

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bone fractures and complications of closed reduction for simple nasal bone fractures.

MATERIAL AND METHODS

This cross-sectional study was conducted at the Departments of ENT, Mardan Medical Complex, Mardan and Mufti Mehmood Memorial Teaching Hospital, D.I.Khan, Pakistan from July 2012 to Jun 2013.

An approval from the Ethical Committee of the Hospital was obtained. A written informed consent containing terms about the inclusion in study, benefits and risks involved, was obtained from each patient.

All patients with simple nasal bone fracture (not associated with fractures of other facial bones) were included. Patients with associated head and neck injuries were excluded. Patients already treated at other centers and referred for further treatment were also excluded from the study. Patients were admitted in ENT ward through emergency or outpatient departments. A thorough history was taken and detailed oto-rhinological as well as general physical examination was carried out. Digital x-ray nose lateral view was done in all cases. Relevant investigations for general anaesthesia were carried out. All findings were recorded on a designed proforma.

All patients were treated by closed reduction using Walsham and Ache's forceps under general anaesthesia. After manipulating the fractured fragments, Plaster of Paris was applied over the nose for stabilization of the nasal skeleton for 7 days in every case. Internal fixation was done by placing anterior nasal packing for 72 hours and plastic splints for one week. Those patients having swelling of the nose at the time of presentation, reduction was deferred till the edema got subsided. Postoperatively patients were followed for 6 weeks to see for any persistent deviation of the nose. Those patients who continued to suffer from significant nasal deviation were offered septo-rhinoplasty after 6 months in adult patients and pediatric cases were advised to do it later by the age of 18 years.

Gender, age (numerical data) in years and age grouping were demographic variables. Etiology, symptoms, signs and complications of simple nasal bone fracture, and complications of closed reduction were research variables. All variables except age were categorical data. The categorical data was analyzed as frequencies and percentages while numerical data (age in years) was analyzed as mean, SD, minimum, maximum and range. As per protocol of the study no further analysis of data and no test of significance were required. Age grouping was as; 02-10, 11-20, 21-30, 31-40, 41-50, more than 50 years.

RESULTS

A total of 120 patients with simple nasal bone fracture were included in the study. Males 90 (75%) out-numbered females 30 (25%) with a ratio of 3:1. The mean age of the patients was 20.66 ± 14.86 (2-60) with a range of 58 years. The age grouping of the patients is given in Table 1.

Table 1: Age grouping of patients with simple nasal bone fractures (n=120)

S.No.	Age grouping	Frequency	Percentage
1	02 – 10 years	30	25.00 %
2	11 – 20 years	45	37.50 %
3	21 – 30 years	14	11.65 %
4	31 – 40 years	16	13.35 %
5	41 – 50 years	09	07.50 %
6	More than 50 years	06	05.00 %
	Total	120	100.00 %

Road traffic accidents was the most common etiology with 65 (54.15%) cases, followed by sports injuries with 24 (20%) patients, violence in 22 (18.35%) patients and blast injuries in nine (7.50%) patients.

The symptoms were epistaxis in 85 (70.80%), nasal obstruction in 45 (37.50%) and headache in 30 (25%) cases. The signs were external nasal deformity with periorbital ecchymosis in 92 (76.65%), feeling of crepitus between bone fragments in 88 (73.30%) and swollen nasal bridge in 65 (54.15%) cases. Septal hematoma in 24 (20%) and septal abscess in six (5%) were complications of simple nasal bone fractures. Persistent postoperative nasal deviation was a complication in seven (5.80%) patients with closed reduction for simple nasal bone fractures.

DISCUSSION

Nose is located prominently in the face and it is its prominent location that it suffers trauma on many occasions. Several different causes have been reported in literature like road traffic accidents, interpersonal violence, sports injuries, and falls. Much controversy exists as to the ideal treatment to properly address acute nasal fractures. A successful management algorithm should provide each patient with an aesthetically and functionally acceptable nose.

Majority of the patients in the present study were in the second decade of their life. Almost similar results were also reported in a local study by Afshin in which age of the patients ranged between 10-70 years.^{1,12} In another study by Cannon CR¹⁴,

the commonest age group affected was 11-20 years. Contrary to these reports, in another study¹³ the age group mostly involved was 21-40 years. While results of Yilmiz¹⁷ showed that the maximum number of patients (68.75 %) was in pediatric age group.

Males receive more nasal trauma as compared to females, probably due to more involvement in physical activities. In our series males were more affected i.e in 90 cases as compared to females in 30 cases with a ratio of 3:1. This is in accordance with other studies.^{11,15} Sang HK⁵ also reported a male preponderance over females with a ratio of 5.7:1 in his series of 741 patients. Yakup C¹³ reported a male to female ratio of 4:1. Javad Rashid⁶ found 31 males with 9 females in his series of 40 patients. In Afshin Muhammad¹ study the male to female ratio was 2:1. Nardis¹⁵ reported male to female ratio of 1.8:1.

Road traffic accident was the most frequent cause of nasal trauma in our study. This may be due to young drivers with over speeding, no licensing and not observance of traffic rules. Smith H⁴ reported motor vehicle crash as the most common cause for nasal trauma in 47% of patients. Interpersonal violence was the next common reason for nasal trauma in our study which is probably due to lack of tolerance, anxiety and other psychological reasons in the terrorism affected area. Sang HK⁵ found interpersonal violence in 38% of his series followed by fallings in 31% and sports injuries in 17% of cases. Yakup C¹³ also reported violence as the most frequent cause of nasal trauma in his series in 60% cases, fallings in 30% cases, accidents in 4.5% cases and sports injuries in 4.5% cases in his study on pure nasal fractures.

The symptoms in descending order of frequency were nasal obstruction, epistaxis and headache in patients with simple nasal bone fractures as supported by findings of the other studies.^{15,16} Nasal obstruction was probably due to edema and associated complication like septal hematoma.

Septal hematoma was the most common complication of nasal trauma in our study, as also reported in literature.^{7,9,11} The picture of septal hematoma is emerged when a patient with nasal hematoma develops bilateral nasal obstruction and open mouth breathing during sleep especially in children.

In our study all patients were treated by closed reduction. Tremendous satisfaction with closed reduction has been reported in literature with this mode of treatment for simple nasal bone fractures.^{17,18} In our series, 5.8% of the patients complained of persistent nasal deviation. Contrary to our results, the post-reduction incidence of nasal deformities have been shown to be as high as 40% to 62%, independent of the surgeon's experience, when simple closed manipulation was employed.^{19,20} Our better results

could be due to either more adequate reduction of the fracture or complete management of a component of the fracture at the time of the treatment.

Family physicians, as well as public at large, should be made aware of the seriousness of nasal trauma as this accounts for a high rate of morbidity in our country. Our study is limited by a rather small sample size.

CONCLUSIONS

Road traffic accident is the most common cause of nasal trauma. Closed reduction for simple nasal bone fracture generally produces acceptable cosmetic results. By knowing the etiology of nasal trauma, the risk of nasal injuries can be reduced by taking safety measures and precautions.

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CONFLICT OF INTEREST Authors declare no conflict of interest. GRANT SUPPORT AND FINANCIAL DISCLOSURE None declared.
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