

Original Research Article

Incidence, evaluation and management of nasal bone fracture: study of 60 cases

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ABSTRACT

Background: It was retrospective and prospective study of 60 nasal bone fracture patients we treated at our hospital. We analyzed them for their age and sex incidence, side prevalence, presentation and their treatment option.

Methods: Through history was taken and examination was done and these cases were investigated with CT scan or X-ray than treated period.

Results: Most common involved patients were males (73%) than the females (27%). In our study, most common cause of nasal bone fracture was the road traffic accident (59%) and less common cause of nasal bone fracture was assaulted trauma. Most commonly done about 60% radiological investigation were only X-ray bilateral nasal bone. In this study fracture bone reduction was done under local anesthesia or sedation in 87% of patients and general anesthesia in 13% of patients. Most commonly affected patients of nasal bone fracture had lateral impact injury (70%) than the frontal impact injury. We treated 77% patients of nasal bone fracture by closed reduction and the patients with linear non-displaced nasal bone fracture by medication.

Conclusions: Male were more affected than the female and common age group was 11 to 30 years. Most common cause of nasal bone fracture was the road traffic accident. In nasal bone fracture the lateral impact injury was more common, in treatment of nasal bone fracture simple nasal X-ray were useful tool for management of nasal bone fracture. Closed nasal bone fracture reduction did under local anesthesia in most of patients.

Keywords: Fracture nasal bones, Closed reduction, Frontal and lateral impact injury

INTRODUCTION

Treatment of nasal fractures was first recorded 5000 years ago during the early pharonic period in ancient Egypt. The Edwin Smith papyrus described repositioning of deviated nasal bones with the fingers or elevators, the insertion of splints and the application of external dressings.¹ Just as then, nasal fractures are still very common. Isolated fractures of nasal pyramid accounts about 40% of all facial fractures. Furthermore, fractures of the nasal bones often sustained along with other fractures of the facial skeleton, delays in management can result in significant cosmetic and functional deformity that often a cause for subsequent medico-legal action. The management of fractures of the nose is an important part of everyday ENT practice.

Relatively little force is required to fracture the nasal bones, as little 25-75 lb/in². It is perhaps not surprising that young men are twice as likely to sustain a fractured nose as women. Subsequent refracture rates of 5% have been reported.³ The peak incidence is in the 15-30 years age group when assaults, contact sports and adventurous leisure activities are more common. In childhood accidental prone toddlers not infrequently fracture their noses as well and these are often of a greenstick nature. Compound and comminute fractures are more common in the elderly who prone to falls.

Nasal fractures have been classified in a number of ways, for example, by the nature of injury, the extent of deformity and the pattern of the fracture. Nasal bone

fracture is the most common occurring facial bone fracture, and secondary deformity can be easily noticeable if the fracture is inappropriately treated because the nose is positioned on the center of the face and is significantly anteriorly protruded compared to other facial structure. In many cases, especially those where it is considered a minor injury, nasal bone fracture can be treated simply and within short time through the closed reduction (CR) technique. If surgeons establish a proper surgical plan and apply appropriate surgical skills, they may obtain the best results in terms of the time and cost of the surgery, and post-operative patient satisfaction. As the CR technique has limitations compared to open reduction (OR) technique in terms of the capability for sophisticated manipulations, it is necessary to select the optimal helpful operating technique for individuals depending on their nasal fracture pattern. To achieve a reliable diagnosis and consistency of the surgical results, it is important to classify nasal bone fracture systemically, and treat it appropriately by employing the proper therapeutic algorithm.

METHODS

The proposed study is combination of retrospective and prospective study done at G. G. hospital, Jamnagar, Gujarat during last 2 years and upcoming one year (2017-2020).

Methods of collection of data

Sample size

Patients data collected for this study were patients treated at our institution for nasal bone fracture in last 3 years, which were total 60 patients. Ethical approval did by pharmacy department. Data were collected from hospital case records and from outdoor patient case papers at G.G. hospital, Jamnagar, data will be collected with regular follow up with 1 week, 1 month and 3 months after nasal bone fracture reduction. Data were analyzed for qualitative and quantitative variables and descriptive statistics were calculated.

Exclusion criteria

Patients who had- (a) fracture nasal bone with other facial bone fracture not included in this study; (b) fracture nasal bone patient with positive head injury not involved in this; (c) fracture nasal bone patient came after 21 days of trauma or injury not include as this patient require septorhinoplasty for deformity correction; and (d) open fracture of nasal bone with or without other structure involvement.

RESULTS

In our study, most common involved patients were males (73%) than the females (27%) because male were more likely to involve in sports and road traffic accident (Table 1). In our study, most common age group presenting with

nasal bone fracture was found to 21 to 30 years age group, least common age group was child below 10 years and old age above 50 years (Table 2). In our study, most common cause of nasal bone fracture was the road traffic accident (59%) and less common cause of nasal bone fracture was assaulted trauma (Table 3). Most commonly done about 60% radiological investigation was only X-ray bilateral nasal bone do confirm diagnosis in suspect case of other facial bone injury CT scan was done to rule out other facial bone fracture (Table 5).

In this study fracture bone reduction was done under local anesthesia or sedation in 87% of patients and general anesthesia in 13% of patients who were child or not cooperative in local anesthesia or not willing for local anesthesia. Most commonly affected patients of nasal bone fracture had lateral impact injury (70%) than the frontal impact injury (Table 4) (Figure 1). In our study we treated 77% patients of nasal bone fracture by closed reduction (Figure 2) and the patients with linear non-displaced nasal bone fracture by medication (Table 6 and 7).

Table 1: Gender distribution in nasal bone fracture.

Gender	No. of patients (60)	Percentage (%)
Male	44	73
Female	16	27

Table 2: Age distribution in patients of nasal bone fracture.

Age (years)	No. of patients (60)	Percentage (%)
0-10	2	3
11-20	16	27
21-30	19	32
31-40	14	23
41-50	8	13
51-60	0	0
61-70	1	2
71-80	0	0

Table 3: Causes of nasal bone fractures.

Causes of nasal bone fracture	No. of patients	Percentage (%)
Road traffic accident	35	59
Sports injury	14	23
Assaulted trauma	11	18

Table 4: Impact of the injury in nasal bone fracture patients.

Types of impact	No. of patients	Percentage (%)
Lateral impact	42	70
Frontal impact	18	30

Table 5: Diagnosis by radiological investigation.

Parameters	No. of patients	Percentage (%)
CT scan	14	23
X-ray	36	60
CT scan+ X-ray	10	17

Table 6: Treatment given.

Treatments	No. of patients	Percentage (%)
Closed nasal bone fracture reduction	46	77
Medical treatment or conservative treatment	14	23

Table 7: Closed reduction under anesthesia.

Closed reduction under	No. of patients	Percentage (%)
General anesthesia	6	13
Local anesthesia	40	87



Figure 1: 24 years old male patient with nasal bone fracture lateral impact treated with closed reduction, post-operative photo after 10 days.



Figure 2: 26 years old male patient with accidental nasal bone fracture frontal impact treated with closed reduction post-operative photo after 7 days.

DISCUSSION

In the retrospective study of closed reduction of nasal bone fracture conducted by Park et al at Pusan national university concluded the patients in their 20s, particularly male patients, account for highest proportion.⁴ This result was similar to that of study conducted by Small et al, which reported a male female ratio 4:1.⁵ In study of analysis of nasal bone fracture; a six year study of 503 patients reported that assaults accounted for 38%, falls accounted for 31%, and accidentally during exercise accounted for 17% of nasal bone fracture.⁶ Turvey reported that traffic accident accounted for the highest proportion of causes of fracture.⁷

In study by Park et al, male was more affected about 85% with nasal bone fracture than the female, sleep down was most common cause of nasal bone fracture.⁴ Most common age group was 20 to 29 years old.

Unlike other fractures, nasal X-ray are not required to make the diagnosis or aid subsequent reduction. In a prospective study undertaken by Logan et al, it was concluded that X-ray were not cost effective.⁶ Their only possible utility is proof of injury in subsequent litigation. If there is clinical evidence of more serious facial injury CT scan should be acquired.

In the study of nasal fracture reduction: local verses general anesthesia reported that a satisfactory result was obtained in terms of stability or complication in reduction under sedation.⁸ Khwaja et al conducted a study on the effectiveness of reduction under sedation, but Cook et al reported that a successful closed reduction could be achieved under general anesthesia.^{9,10}

CONCLUSION

If proper treatment is not given in timely interval, nasal bone fracture may cause functional and aesthetic deformity, this study was conducted on the outpatients and emergency patients who visited the department of ent, head and neck surgery in tertiary care hospital for past 3 years.

In this study the male were more presented with nasal bone fracture trauma than the female. The most affected age group was 11 to 30 years age group because adolescent children and young adults more involved in sports adventurous activity and outdoor performance. Most common cause of nasal bone fracture was the road traffic accident and the lateral impact injury was more common. Classification of nasal bone fracture with CT scan and analysis was only necessary for documentation but in treatment of nasal bone fracture simple classification with clinical presentation and nasal X-ray were useful tool for management of nasal bone fracture. Closed nasal bone fracture reduction can be done under local anesthesia in most of patients. Nasal fractures can be treated with good

outcomes in the majority of the patients with closed reduction.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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