



ORIGINAL RESEARCH PAPER

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NASAL FRACTURE: INCIDENCE, EVALUATION AND MANAGEMENT.

KEY WORDS: Fracture nasal bones, Fracture reduction, Anesthesia, Lateral impact injury

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ABSTRACT

Aim And Objective: To study the incidence, evaluation and management of nasal fracture in our tertiary care hospital. **Methods:** The present prospective observational study, after the approval by Institutional Ethical Committee, was conducted in the department of ENT, GMC Jammu from October 2020 to June 2022 on 265 patients presenting with fracture nasal bone. All 265 patients were asked relevant history. General physical, local ENT examination along with required radiology and pathology investigations were done. Informed consent was taken. Nasal bone fracture was reduced in local or general anesthesia as per need and patients were followed at an interval of 1week, 1month and 3 months. **Results:** Out of 265 patients, 180 had class 1/ Chevallet fracture (67.9%), 80 had class 2/ Jarjaway fracture (30.1%) and 5 had class 3/ naso-orbito-ethmoid fracture. Incidence of fracture nasal bones was more in males (74.7%), most common age group involved was 21- 30 years (32.4%). Most common cause of fracture was RTA (58.4%). 188 patients presented with nasal bone fracture due to lateral impact injury (70.9%). In 203 patients (76.6%), closed reduction of fracture was done, and in 5 patients with class 3 fractures, open reduction of fractures was done (1.88%) rest were managed conservatively. 166 patients were operated under local anesthesia (79.8%) and 42 patients under general anesthesia (15.8%). On follow up, 239 showed complete reduction of fracture (90.1%) and 26 showed incomplete reduction (9.8%). **Conclusion:** In our study, it was concluded that class 1 nasal fracture was most commonly encountered, males were more commonly affected and most common age group affected was 21 -30 years. Most common cause was RTA. Lateral impact injury was more common. Closed reduction under local anesthesia was done in most of the patients and on follow up maximum patients had complete reduction of fracture.

INTRODUCTION

Management of nasal fractures first was recorded five thousand years ago, during the early Pharonic period in ancient Egypt. The Edwin Smith papyrus describes 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 account for 40% of all facial fractures. Nasal bone fractures are often sustained along with other fractures of facial skeleton. Significant cosmetic and functional deformity can result due to delay in management that is often a cause for subsequent medicolegal action.

Relatively little force is required to fracture the nasal bones, as little as 25-75 lb/in. square. (2)

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 - 30year age group when assaults, contact sports, and adventurous leisure activities are more common. (4)

In childhood, accident prone toddlers not infrequently fracture their noses as well and are often of greenstick nature. Compound and comminuted fractures are more common in elderly.

Most fractures result from laterally applied forces (> 66%). Greater force is required to fracture the nose with a blow directed from front as the nasal cartilages behave like shock absorbers.

Fracture nasal bones is the most common occurring facial bones fracture, and secondary deformity can be easily noticeable if fracture is not treated appropriately because of central positioning of nose on the face and is significantly

anteriorly protruded as compared to other facial structures.

A five- point grading system has been developed for the extent of lateral deviation of nasal pyramid:

- Grade 0: bones perfectly straight
- Grade 1: bones deviated less than half of the width of the bridge of the nose.
- Grade 2: bones deviated half to one full width of the bridge of the nose
- Grade 3: bones deviated greater than one full width of the bridge of the nose
- Grade 4: bones almost touching the cheek

Nasal fractures can also be subdivided into three broad categories that characterize the patterns of damage sustained with increasing force.

Class 1 fractures (Chevallet fracture)

- result of low moderate degree force.
- Simplest form is depressed nasal bone. Fractured segment usually remains in position due to inferior attachment to upper lateral cartilage.
- In severe variant, both nasal bones and septum are fractured. The fracture line runs parallel to nasomaxillary suture ipsilateral to side of the applied force to a point approximately two-thirds along the length of nasal bone, where the bone becomes much thicker.

Class 2 fracture (Jarjaway fracture)

- In addition to nasal bones, the frontal process of maxilla and septum are also involved.
- Frontal impact tends to comminute the nasal bones and cause gross flattening and widening of the dorsum.
- A lateral impact produces a high deviation of the nasal skeleton.
- As a rule of thumb, if the nasal dorsum is deviated laterally greater than half the width of the nose, then a septal fracture must also be present.

Class 3 fracture (Naso-orbito-ethmoid fractures)

- Most severe nasal injuries and usually result from high velocity trauma.
- Often have associated fracture of maxillae.
- The external buttresses of nose give way and the ethmoid labyrinth collapses on itself.
- This cause perpendicular plate of ethmoid to rotate and quadrilateral cartilage to fall backwards.
- These movements cause a classic “pig like appearance” to the patient.

MATERIALS AND METHODS

The present prospective observational study, after approval by Institutional Ethics Committee, was conducted in in Department of ENT & HNS SMGS Hospital, GMC Jammu from September 2020 to August 2022, on 265 patients who presented to the ENT emergency in SMGS hospital as well as GMC Jammu.

All the patients presenting to emergency with fracture nasal bones were included in the study except for following:

- Fracture nasal bone with other facial bone fractures
- Fracture nasal bone patient with head injury
- Fracture nasal bone patient reporting after 21 days of trauma
- Open nasal bone fracture with or without other structure involvement

Fracture reduction was done and patients were followed up at an interval of 1 week, 1 month and 3 months.

RESULTS

Out of total 265 patients, with fracture nasal bone, presenting to the department of ENT during August 2020 to June 2022, 74.7% were males and 25.2% were females.

Table 1: Gender Distribution In Nasal Bone Fracture

GENDER	NO. OF PATIENTS	PERCENTAGE
Male	198	74.7%
Female	67	25.2%

In our study most common age group presenting with nasal bone fracture was 21 -30 years and least common was >70 years.

Table 2: Age Distribution In Patients Of Nasal Bone Fracture

AGE (YEARS)	NO. OF PATIENTS	PERCENTAGE
0-10	05	1.88%
11-20	69	26.03%
21-30	86	32.4%
31-40	77	29.05%
41-50	19	7.16%
51-60	05	1.88%
61-70	04	1.50%
71 above	00	0

Most common cause of nasal bone fracture was road traffic accident (RTA) in our study. (58.4%)

Table 3: Causes Of Nasal Bone Fracture

CAUSE OF FRACTURE	NO. OF PATIENTS	PERCENTAGE
Road traffic accident	155	58.4%
Sports injury	62	23.3%
Assault	48	18.11%

Table 4: Type Of Fracture

TYPE OF FRACTURE	NO. OF PATIENTS	PERCENTAGE
Class 1 (chevallet)	180	67.5%
Class 2 (Jarjaway)	80	30.1%
Class3 (nasofrontoethmoid)	05	1.88%

In our study 76.6 % of patients with nasal bone fracture were treated by closed reduction and patients with non-displaced

linear fractures were treated conservatively (21.5%) and 1.88% of patients with class 3 fractures were treated with open reduction.

Table 5: Treatment Received By Patient

TREATMENT RECEIVED	NO. OF PATIENTS	PERCENTAGE
Open reduction	05	1.88%
Closed reduction	203	76.6%
Conservative	57	21.5%

In this study fracture nasal bone reduction was done under local anesthesia in 79.8 % of the cases and under general anesthesia was done in 15.8% of the cases, which included children, non-cooperative patients and patients not willing to undergo procedure under local anesthesia.

Table 6: Anesthesia

ANESTHESIA	NO. OF PATIENTS	PERCENTAGE
General anesthesia	42	15.8%
Local anesthesia	166	79.8%

DISCUSSION

Acute nasal fractures requiring medical attention are extremely common. Nose occupies the central portion of the face, and sustains fractures more commonly than any other bone in the body. Nasal injuries produce aesthetic as well as functional impairment. Fractures of the nose often are isolated, but may be seen with other facial fractures. A general head and neck examination is indicated in cases of nasal injuries. Clinically directed radiographic evaluation to ascertain associated suspected facial bone fractures is recommended in cases resulting from severe trauma.

In our study the most common age group presenting with fracture nasal bone was 21-30 years which is similar to retrospective study of closed reduction of nasal bone fracture conducted by Park et al., and study conducted by Tota S m et al.,

In our study male preponderance was seen which was also seen in study conducted by Park et al., Tota S M et al., and Small et al., who reported a male female ratio 4:1.

Khwaja et al., conducted a study on effectiveness of reduction under sedation, but Cook et al., reported that a successful closed reduction could be achieved under general anesthesia.

In our study, the most common cause of fracture was road traffic accident, which is similar to the study conducted by Turvey et al.,

In a prospective study undertaken by Logan et al., it was concluded that X-ray were not cost effective. If there is clinical evidence of more serious facial injury CT scan should be avoided.

CONCLUSION

Fracture nasal bones is commonly encountered in our setting and if proper and timely treatment is not provided, it can result in significant functional and cosmetic deformity. This study was conducted on the patients reporting to outpatient and emergency department of SMGS hospital, GMC Jammu. Timely detection and management can significantly prevent the complications and deformity.

Conflict Of Interest: Nil

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