

A Clinical Study of Nasal Bone Fractures: A Retrospective Study

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Abstract

Background: As the most prominent position organ is the face, nose is the most affected location in this trauma and it is possible to compare the nasal trauma etiology separately with that of the facial trauma.

Materials and Methods: This hospital-based retrospective study was conducted in the Department of ENT, SMGS Hospital, Jammu, from August 2016 to September 2019. The records of patients with nasal fracture diagnosis were retrospectively evaluated. The diagnosis was based on the clinical history, physical examination, and nasal bones radiography. Clinical assessment of patient included inspection of the face, paying attention to the presence of any swelling, and/or deviation of the nasal axis. Then, nasal cavity is examined with anterior rhinoscopy for septal hematoma and/or fracture, and presence and/or location of epistaxis. Moreover, the nasal dorsum is palpated to detect any sign of crepitation. The presence of crepitation, radiologic findings, swelling, septal hematoma/fracture, and causes of trauma was all documented.

Results: The mean age was 23 ± 3 years. The male-to-female ratio was 2.12:1. The frequently affected age group was 21–30 years constituting 44% of total cases. The most common clinical finding was nasal crepitation seen in 100 (80%) patients, followed by epistaxis (76.8%), swelling of dorsum (70.4%), laceration of skin (32%), and septal hematoma (9.6%). The most common cause was aggression seen in 40 (32%) patients followed by road traffic accidents (28.8%). The correlation between nasal crepitus, swelling of nasal dorsum, and septal hematoma was found statistically significant ($P < 0.05$).

Conclusion: Men in the 2nd and 3rd decades are more affected by nasal bone fractures (NBFs). X-ray nasal bones along with findings such as nasal crepitations, swelling of nasal dorsum, and septal hematoma are strongly suggestive of NBFs.

Key words: Crepitation, Nasal bone fractures, Trauma

INTRODUCTION

The nasal fractures are one of the most frequent services performed by the otorhinolaryngologist.^[1] Like other facial traumas, they affect mostly the male sex and the mostly affected age is between 20 and 30 years of age.^[2,3]

Nasal bone fracture (NBF) is the most common type of facial fracture and the third most common fracture

of the human skeleton.^[4,5] Interpersonal violence and motor vehicle crashes are the main causes, and alcohol consumption is often another factor.^[6]

Identifying NBFs are dependent on a thorough history and physical examination.^[7] Patients usually present with some combination of epistaxis, edema, laceration, instability, crepitation, ecchymosis, and deformity; however, these physical findings may not always be present and are often fading.^[8] Untreated NBFs, delayed time to treatment, traumatic edema, and occult septal injury may cause functional and cosmetic defects. Therefore, timely accurate diagnosis and appropriate intervention are important steps for the management of NBFs.^[7]

There is no uniform protocol for this condition manipulation. There are several approaches reported

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such as manual reduction, manual approach associated to forceps, the one uniquely performed with forceps, the carrying out of associated septoplasty, and even rhinoseptoplasty. The nasal bones manipulation may be practiced without anesthesia, with local anesthesia, and general anesthesia.^[4]

The objective of this study is to verify the age, sex, and the most frequent causes of the nasal fractures treated in a tertiary hospital.

MATERIALS AND METHODS

This hospital-based retrospective study was conducted in the Department of ENT, SMGS Hospital, Jammu, from August 2016 to August 2019. The records of patients with nasal fracture diagnosis were retrospectively evaluated.

The diagnosis was based on clinical history, physical examination, and nasal bones radiography.

Clinical assessment of patient included inspection of the face, paying attention to the presence of any swelling, and/or deviation of the nasal axis.

Then, nasal cavity is examined with anterior rhinoscopy for septal hematoma and/or fracture, and presence and/or location of epistaxis. Moreover, the nasal dorsum is palpated to detect any sign of crepitation. The presence of crepitation, radiologic findings, swelling, deviation of the nasal axis, septal hematoma/fracture, and causes of trauma was all documented.

RESULTS AND OBSERVATION

A total of 125 patients were included in our study. The observation and results are as follows:

Age and Sex Distribution

The youngest patient was 9 years old and oldest was 66 years old. The mean age was 23 ± 3 years. Age-wise distribution is shown in Figure 1. There were 85 males and 40 females. The male-to-female ratio was 2.12:1. The frequently affected age group was 21–30 years constituting 44% of total cases followed by 11–20 years (24%).

Clinical Findings

The most common clinical finding was nasal crepitation seen in 100 (80%) patients, followed by epistaxis (76.8%), swelling of dorsum (70.4%), laceration of skin (32%), and septal hematoma (9.6%). Figure 2 shows the distribution of clinical findings in patients with NBFs.

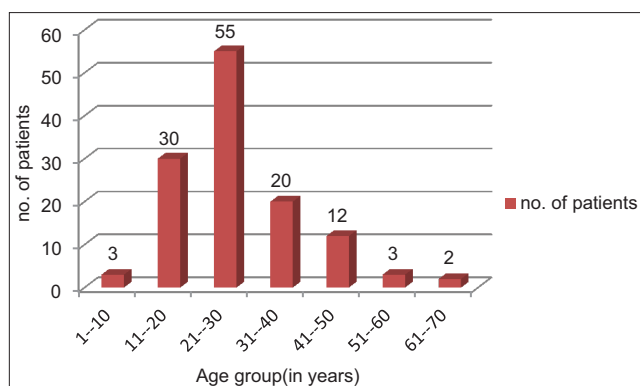


Figure 1: Age-wise distribution of patients

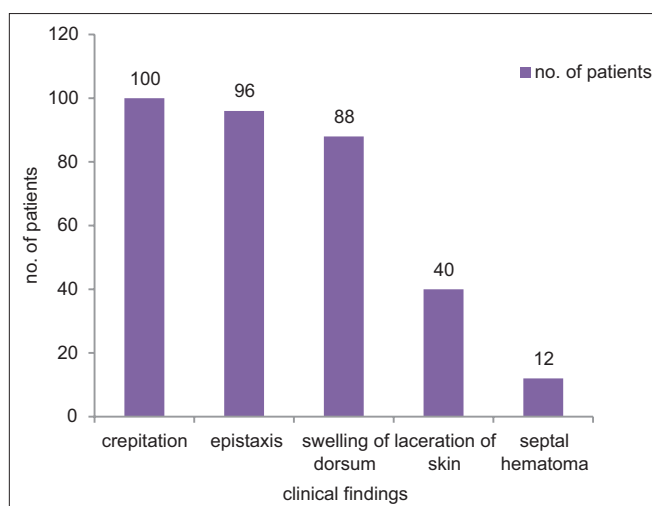


Figure 2: Distribution of clinical findings in patients with nasal bone fractures

Distribution of Patients According to the Cause of NBFs

Out of 125 cases of NBFs in the present study, the most common cause was aggression seen in 40 (32%) patients followed by road traffic accidents (28.8%), fall from one's own height (15.2%), sports injury (8%), fall from height (7.2%), fall from stairs (5.6%), and unspecified causes in 3.2% [Figure 3].

Accordance between Clinical and Radiological Findings of NBF

When we analyzed the correlation between positive clinical and radiological findings, crepitation was correlated with radiological findings in 98/100 cases (98%), epistaxis in 50/96 (52.08%), swelling of nasal dorsum in 75/88 (85.22%), laceration of skin in 22/40 (55%), and septal hematoma in 8/12 (75%).

The correlation between nasal crepitation, swelling of nasal dorsum, and septal hematoma was found statistically significant ($P < 0.05$) [Figure 4].

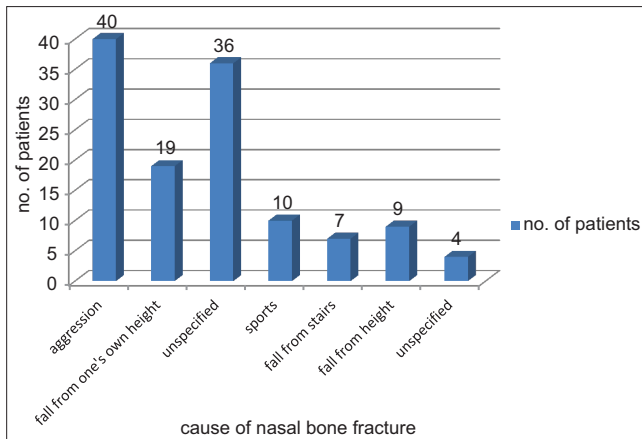


Figure 3: Distribution of patients according to the cause of nasal bone fracture

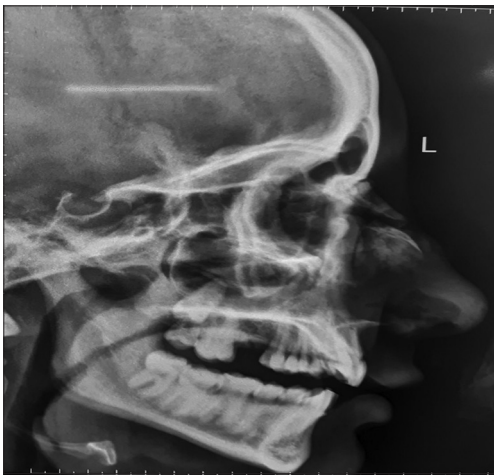


Figure 4: X-ray showing nasal bone fracture

DISCUSSION

As the most prominent position organ is the face, it is the most affected location in this trauma and it is possible to compare the nasal trauma etiology separately with that of the facial trauma. Diagnosis of NBF is primarily clinical. Highly suspicious signs of nasal fracture are crepitation, mucosal lacerations, septal fracture and/or dislocation, obvious concavity, and depressions of the nasal bone.^[9]

The male sex, as verified in other studies, was widely the most affected (80.2%). An information similar to that found by Bakardjiev and Pechalova^[10] who found a ratio of four men per one woman with facial trauma, and Wulkan *et al.*^[2] whose work analyzed 164 patients and 78% were men. The three most common causes of nasal fracture in our study were physical aggression, fall from their own height, and motorcycle accident.

In a casuistry of 9543 cases of facial trauma, the most frequent etiologies were respectively accident during daily

life activities, sports, aggression, and car crashes^[11] Rocchi^[12] observed that the most frequent facial trauma cause in the age range from 11 to 19 was the motorcycle accident (41% of the cases). In our study, in an analog age range, the most prominent cause was physical aggression (36%).

In our study, the peak age of NBFs was the 2nd and 3rd decades. In this age group, resultant fractures were frequently associated with bumping and violence, respectively. This result is in agreement with studies in literature.^[13,14] Radiographic assessment (plain X-ray) of nasal fracture is highly controversial for clinical decisions in the emergency department. Besides, the anatomy of the nose with cartilaginous and bony structures can cause confusion for the management of this injury. For instance, plain X-ray is usually not useful for the diagnosis of NBF in the pediatric population whose nasal bones are not ossified.^[15] There are some more limitations of X-ray imaging. It is not capable of detecting cartilaginous fracture, and there are several situations with false-positive results such as soft tissue swelling, previous fracture, the presence of suture lines, developmental defects, and vascular marking. Nevertheless, some studies suggest that radiography of the nose should be obtained for showing fractures and for medicolegal purposes.^[10]

CONCLUSION

On the basis of the present study, it can be concluded that males aged between 21 and 39 years and violence are the most common characteristics found in our service. Motorcycle accidents also play an important role in this affection. Furthermore, crepitation of nasal bone, swelling of nasal dorsum, and septal hematoma showed significant correlation with X-ray finding of NBF.

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