ORIGINAL ARTICLE

Epidemiological Analysis of Fracture Nasal Bone Experience at a Tertiary Care Hospital

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ABSTRACT

Aim: To describe the demographic features, pattern, time of consultation & etiological factors of different types of nasal bone fractures.
Study design: Descriptive case series
Setting: Department of ENT at Sheikh Zayed Medical College & Hospital Rahim Yar Khan.
Duration of study: The study was completed in one year from 01.01.2015 to 01.01.2016.
Methods: Sampling technique was purposive non probability sampling. Hundred cases of fracture nasal bones both males and females up to fifty years of age were included, detail history, clinical examination and investigations like x-ray nasal bones AP & lateral views were carried out in patients admitted from emergency and OPD. All those cases with history of chronic pathology, old deformity and already operated were not included.
Results: Type II fracture was most frequent, observed in 57 patients (57%) followed by Type I fracture in 35 patients (35%) and Type III fracture in 8 patients (8%). Male were 72 patients (72%) and female were 28(28%). The most common etiology was RTA (62%) followed by falls (19%), assaults (15%) and sports injuries (2%).time of consultation was within two weeks of trauma, mean age was 15 to 30 yrs.
Conclusion: Type II fracture is most frequent and road traffic accidents is most common cause of fracture nasal bones predominantly seen in male patients. Mostly young male's using motor bike without driving license were encountered with road traffic accidents which needs attention and implementation of road traffic rules.
Keywords: Nasal bones, fractures, maxillofacial injuries, and facial injuries.

INTRODUCTION

Nasal fractures account for greater than 50% of all facial fractures in adults[1].However; they are often unrecognized and untreated at the time of injury. Its central position and anterior projection on the face predisposes the nose to traumatic injury. The most common mechanism of injury is blunt trauma to the midface, usually the result of automobile accidents, sports-related injury, or physical assault. The bones and cartilage of the nose provide both aesthetic and structural support for the midface and airway; therefore, proper evaluation and management is necessary to prevent nasal deformity and nasal airway compromise.

Second aspect of nasal bone injuries are medico legal practice. The importance lies in the frequency of injuries, diverse approaches to diagnosis, treatment and findings of injuries used in legal proceedings in court[2].

Patients with nasal bones fracture usually presents with some external deformity, tenderness, hemorrhage, edema, ecchymosis, instability, and crepitation; however, these features may not be present or may be transient. To further complicate the situation, edema can mask underlying nasal deformity, crepitation, and instability; thus, many physicians and patients fail to pursue further diagnosis and appropriate treatment. If untreated, nasal bones fracture can result both in unfavorable appearance and in unfavorable function, especially when the underlying structural integrity of bone and cartilage is lost.

The nasal bones fracture can be diagnosed by plain x-rays of nasal bones AP & lateral views. Early diagnosis is confirmed by CT scan using the simple classification system described[3]. Accurate preoperative understanding of the fracture type and postoperative evaluation by x-ray and CT are necessary to obtain good results and to decrease secondary deformity caused by poor primary reduction[4].

The complications of nasal bones fracture are sagging, depression and instability of nasal bones[5]. The degree of septal displacement and presence of nasal tip deviation were associated with persistent nasal deformity following nasal fracture reduction. For nasal fracture presenting saddle nose deformity[6]. Septal heamatoma after nasal trauma is a complication that can lead to septal abscess if

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unrecognized or early intervention is not performed. It can cause compression and thereby necrosis that evolve to a septal abscess[7].

In world as well as in Pakistan the nasal bones fracture is mostly managed by closed reduction (CR) with accurate, firm stabilization of the fractured nasal bones by using external cast[8]. Nasoorbitoethmoid (NOE) fractures are complex and often challenging to repair[9]. Open reduction and internal fixation of the central fragment and the nasoethmoid complex was used[10]. Identifying the extent and type of fracture pattern and associated injuries determines the exposure and method of fixation needed[11]. Open reduction (OR), septorhinoplasty usually reserved for late arrival cases. The chosen surgical technique depends upon type of fracture and requirement of patient i.e., the correction of cosmetic deformity or management of epistaxis, nasal obstruction, crusting of exposed part of septum[12, 13.]

Untreated nasal fractures account for the high percentage of rhinoplasty and septoplasty procedures performed months to years after the initial trauma occurs. Thus appropriate treatment is best advised in a timely manner, before scarring and soft tissue changes occur. As always, thorough history taking and physical examination should precede radiographic evaluation. If radiographic evaluation is required, it is best used when other facial fractures are suspected in combination with a nasal fracture, because isolated nasal fractures are treated on the basis of the physical examination alone. The fact that patients may have displaced nasal fractures and normal appearing plain radiographic findings should be emphasized.

Patterns of fracture are known to vary with the momentum of the striking object and the density of the underlying bone. As with other facial bones, younger patients tends to have larger nasoseptal fracture segments, whereas older patients are more likely to present with more-comminuted fracture patterns.

A large force in any direction can cause comminution of the nasal bones with an associated C-shaped deformity of the nasal septum. The C-shaped deformity usually begins under the dorsum of the nose and extends posteriorly and inferiorly through the perpendicular plate of the ethmoid and ends with an anterior curve in the cartilaginous septum approximately 1cm above the maxillary crest.

Lateral impact injuries are the most common type of nasal injury leading to fracture. Lateral injury produces a depression of the ipsilateral nasal bone that usually involves the lower one half of the bone, the nasal process of the maxilla, and a variable portion of the pyriform margin. Nasal fracture and displacement without septal fracture usually occur with weaker applied forces; however, with increased force, displacement of the bilateral nasal bones can be noted, and the septum is usually dislocated and fractured as well.

Other injuries that are commonly associated with nasal fractures include midface injuries involving the frontal, ethmoid, and lacrimal bones; naso orbito ethmoid fractures; orbital wall fractures; cribriform plate fractures; frontal sinus fractures; and maxillary Le Fort I, II, and III fractures.

The morbidity of nasal fractures includes nasal airway obstruction due to dorsal nasal collapse, septal deviation, valvular collapse, epistaxis, or a poor cosmetic outcome. Perhaps the worst morbidity results from septal hematoma, leading to septal perforation and necrosis, which causes severe nasal collapse and deformation.

Our society is progressively becoming more and more violent and impatient so the frequency of patients reporting in emergency with nasal bones fracture is increasing and I wanted to determine this frequency and etiology of different types of nasal bones fracture so that problem can be properly addressed regarding frequency, management and prevention.

MATERIAL AND METHODS

This descriptive cases series was conducted in the Department of ENT at Sheikh Zayed Hospital & Medical College Rahim Yar Khan, for a period of one year from 01.01.2015 to 01.01.2016. Hundred cases of nasal bones fracture were included after taking detail history and clinical examination coming to emergency and OPD were registered. All cases of both genders with nasal bones fracture up to 50 years were included in the study. All those cases with history of chronic pathology, old deformity and already operated were not included. Sampling technique was purposive non probability sampling.

An informed consent was obtained from them for using their data in my research Performa (in case of children consent was obtained from their parents).The demographic information was recorded including name, age, sex, address etc. The history of their current problem was obtained regarding symptoms, severity and duration. They were examined for positive signs, types and severity. Routine investigations like CBC, X-ray nasal bones AP and lateral views were carried out. Special investigations like CT scan was carried out where necessary or where medico legal required. Type of nasal bones fracture was determined i.e. Type I (Simple without displacement) Type II (Simple with displacement/without telescoping) Type III (Comminuted with telescoping or depression) [14].

The confounding effects of age, sex, injury description of patient and examiners experience were removed by stratification. All data was collected and entered in SPSS version 16.0 and analyzed through it. The variables of demography were presented as frequency and proportion. The age, duration being quantitative was given as mean and standard deviation. The variables of current clinical history were presented as types of symptoms, their frequency and proportion. The variables of examination were listed as types of signs, their frequency and proportion. The outcome of routine investigations was presented as either negative or positive in proportion. Special investigations like CT scan was advised where associated head injury and other fractures of facial bone were suspected.

RESULTS

Table 1: Distribution of cases according to age and sex (n=100)

Age in years	Male	Female	%age
1-10	06	05	11
11-20	23	03	26
21-30	26	13	39
31-40	12	03	15
41-50	05	04	09

Table 2: Distribution of cases according to mode of admission (n=100)

Mode of admission	Male	Female
OPD	15	09
Accident Emergency	64	12

Table 3: Distribution of cases according to frequency of different types of NBF (n=100)

Type of fracture	Male	Female	n
Type I	30	5	**35**
Type II	45	12	57
Type III	5	3	08

Table 4: Etiological factors of NBF (n=100)

Etiological factors	Type I	Type II	Type III
Road traffic accidents	20(20%)	35(35%)	7(7%)
Falls	10(10%)	9(9%)	0
Assaults	5(5%)	9(9%)	1(1%)
Sports injuries	0	2(2%)	0
Occupational injuries	0	2(2%)	0

DISCUSSION

Nasal bone fracture is a common problem in E.N.T[15]. In a study of 164 patients most of the injuries were in nasal region (50%) and NBF was the commonest (26%)[16]. The incidence of nasal bone fracture is higher in males than in females. In a study male predominance was observed, 78% in males and 22% in females[17]. In present study also male predominance was observed 72% in males and 28% in females. In a study peak age of nasal bone fracture was between 29 and 39 years[17]. In present study peak age was between 15-20 years. Time of consultation was observed in our case series which was within two weeks of trauma in most of cases.

A common condition due mainly to road accidents, sport injuries, and physical confrontations[18], in most developing countries RTAs are the leading cause of maxillofacial injuries[19]. Road traffic accidents, assaults, fights, fall and sports injuries are the major causes of nasal bone fracture.

In a study of 164 patients NBF comprise 11.6%. Major causes were interpersonal violence (48.1%), falls (26.2%), run-over (6.4%), sports (5.4%), car accidents (4.2%) motorcycle accidents (3.1%) non-fall impacts (2.4%), occupational injuries (1.8%), gunshot wound (1.2%), unspecific (1.2%)[17].In present study major causes were RTA 62%, falls19%, assaults 15%, sports injuries 2%,occupational injuries 2%.which reflects very poor condition of traffic laws implementations as well as no road sense of peoples.

The common presentation was swelling and tenderness in all patients followed by deformity (30.5%) nasal obstruction (40%) and deviated nasal septum (15%)[20]. In present study, common presentation was swelling (78%); tenderness and epistaxis (28%) followed by deformity, nasal obstruction and deviated nasal septum.

The nasal bone fracture can be diagnosed by plain x-rays of nasal bones lateral views, CT scans with high-resolution. In present study most cases were diagnosed by clinical examination and plain x-rays of nasal bones AP and lateral views. The complications of NBF are sagging, depression and instability of nasal bones[21] for nasal fractures presenting saddle nose deformity[6]. In present study the above-mentioned complications observed in patients who presented late especially about two to four weeks after trauma.

In world as well in Pakistan the NBF is treated by close reduction, open reduction, septorhinoplasty and close reduction with accurate, firm stabilization of the fractured nasal bones by using external pins[8]. Treatment of the acutely fractured nose involving an individually tailored protocol of close reduction, septoplasty, osteotomies, release of upper lateral cartilage fracture of the anterior extensions of the perpendicular plate of ethmoid and camouflaging cartilage graft yields straighter noses then treatment by closed reduction alone[22]. The chosen surgical technique depends upon type of fracture and

requirement of patient i.e. correction of cosmetic deformity or management of epistaxis, nasal obstruction, crusting of exposed part of septum[23]. In present study, most patients were treated by close reduction.

Our society is progressively becoming more and more violent and impatient so the frequency of patient reporting in emergency with NBF is increasing. In the present study the frequency and etiology of different types of NBF in sheikh Zayed hospital Rahim Yar khan was determined so that problem can be properly addressed and proper steps can be taken to prevent the problem and if problem occurs it can be managed properly.

CONCLUSION

Among all types of fracture nasal bones Type II is the most common type and among all causes of fracture nasal bones road traffic accidents is the most common etiology of fracture nasal bone. Proper legislation and implementation of traffic rules can prevent road traffic accidents and decrease the incidence of fracture nasal bones. Early diagnoses and treatment can prevent complications like sagging, depression and instability of Nasal bones.

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