

ASSESSMENT OF THE TREATMENT RESULTS OF NASAL BONE FRACTURES AT 103 MILITARY HOSPITAL

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ABSTRACT

Objectives: Assessment of the results of reduction for patients with nasal bone fractures.

Subjects and methods: A prospective and case-by-case descriptive study with clinical intervention was undertaken. The study includes 51 patients with nasal bone fractures undergoing surgery at 103 Military Hospital from March 2022 to September 2023.

Results: Male patients account for a higher proportion of 66.7% while female patients account for that of 33.3%, and most are at the age of 16–30 (at 54.9%). Traffic accidents are the major causes with 58.8%. Concerning clinical symptoms: 100% of patients with pain, bruising, and swelling in the nose area; 78.4% of patients with post-traumatic epistaxis; 88.2% of patients with nose deformity; 78.4% of patients with a sharp pain nose fracture score and signs of bone crunching in the nasal bone; 52.9% of patients with combined other injuries, in which type II nasal bone fractures accounting for the highest proportion at 54.9%. Results after treatment: the qualified proportion after 1 month is 88.2%, and after 3 months is 96.1%.

Conclusion: Research results show that nasal bone fractures are common in males, mainly caused by traffic accidents. Common clinical symptoms are pain, epistaxis, and nasal pyramid deformity. Reduction of nasal bone fractures is a treatment method that allows the restoration of both aesthetic and physiological functions of the nose.

Keywords: Nasal bone fractures, nasal trauma, nasal surgery.

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1. INTRODUCTION

The nose is composed of both cartilage and bone, in which the nasal bone fixes the main structure of the nose. In addition to the function of ensuring breathing, the nose also has an aesthetic function. Nasal bone fractures have a negative impact on aesthetic effects as well as impaired respiratory function in the nose. To restore that form and function, some authors have suggested that treatment within 10 days after injury for adults and within 7 days for children brings better results [1], [2].

The nasal bone is located at the tip of the nose and supports the three-dimensional structure of the nose. Thus, the nasal bone is located in the front of the face and is easily damaged by external injuries. Fractures can occur due to many different causes, including traffic accidents, beatings, work accidents, sports, etc. Simplified nasal bone fractures are less dangerous, but severe injuries combined, such as traumatic brain injury, maxillofacial trauma, eye injury, etc., often cause serious complications and sequelae, which can lead to death [3]. Such fractures require early diagnosis and accurate initial treatment; otherwise, in addition to affecting the patient's life, they can lead to deformities that affect the aesthetics and function of the nose. That is why we conducted this study with two aims:

1. Describe some clinical and paraclinical characteristics

of nasal bone fractures.

2. Evaluate the reduction results of nasal bone fractures.

2. METHODS

2.1. Research design: A prospective and case-by-case descriptive study with clinical intervention.

2.2. Research location and time: The study was conducted at 103 Military Hospital from March 2022 to September 2023.

2.3. Research participants

Include 51 patients diagnosed with nasal bone fractures and treated at 103 Military Hospital.

- Inclusion criteria





- Patients were diagnosed with nasal bone fractures and underwent a closed reduction.
- Medical records are complete.
- Patients agreed to participate in the study.

- Exclusion criteria

- Patients with nasal bone fractures do not receive correction.
- Patients did not have a follow-up examination.

2.4. Classification of nasal bone fractures

Table 2.1. Classification of nasal bone fractures [4]

Type of fracture	Figure	
Type I		Type I: linear fracture without depression.
Type II		Type II: unilateral depression with or without septal fracture.
Type III		Type III: bilateral depression with or without septal fracture.
Type IV		Type IV: comminuted fracture.



2.5. Evaluation of treatment results

Patients were re-evaluated after 1 month and 3 months of treatment.

- Qualified
 - Nasal function (breathing and smelling) is normal.
 - Does not leave any complications or sequelae.
 - The shape of the nose is back to normal.
- Unqualified

- Leaving complications, sequelae, and affecting nasal function.
- The nose is still deformed.

2.6. Data processing and analysis methods

Data were processed using SPSS 22.0.

3. RESULTS

3.1. Age and gender

Table 3.1. Distribution of patients by age and gender (n=51)

Contents		n	Proportion (%)
Gender	Male	34	66,7
	Female	17	33,3
Age	≤ 15	3	5,9
	16-30	28	54,9
	31-50	16	31,4
	>50	4	7,8

General comment:

Male patients account for 66.7%, and female patients

account for 33.3%. Ages 16–30 are the most common (54.9%), followed by ages 31–50 at 31.4%.

Table 3.2. Distribution of patients according to occupation and causes (n=51)

Contents		Quantity	Proportion (%)
Occupation	Student	10	19,6
	Military	24	47,1
	Famer	7	13,7
	Freelance worker	10	19,6
Causes	Traffic accident	30	58,8
	Labor accident	6	11,8
	Being beaten	8	15,7
	Sports accident	4	7,8
	Daily life accident	3	5,9

The military accounts for the highest proportion (47,1%). Traffic accidents are still the main cause (58,8%).

3.2. Clinical symptoms

Table 3.3. Clinical symptoms (n=51)

Symptoms	n	(%)
Pain in the nose and around the nose	51	100,0
Epistaxis	40	78,4
Nasal congestion	20	39,2
Decreased, loss of smell	11	21,6
Bruising, swelling	51	100,0
Nose deformity	45	88,2
Nosal wounds	25	49
A sharp pain nose fracture score and signs of bone crunching in the nasal bone	40	78,4
Septal deformity	9	17,6
Tearing of the nasal mucosa	16	31,4
Combined injuries	17	33,3

100.0% of patients had pain in the nose and around the nose; epistaxis accounted for 78.4%; nasal congestion accounted for 39.2%; and decreased and lost smell accounted for 21.6%.

Bruises and swelling accounted for 100% of patients; 88.2% of patients had nose deformity; and 78.4% had a sharp pain nose fracture score and signs of bone crunching in the nasal bone.

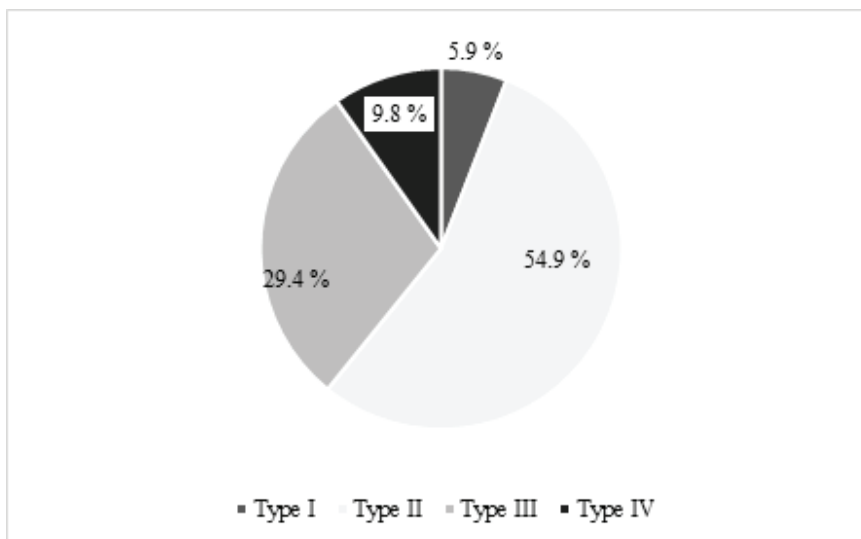
Table 3.4. Combined injuries (n=51)

Injuries	n	(%)
Traumatic brain injury	15	29,4
Maxillofacial trauma	25	49
Eye injury	4	7,8
Combined with other traumas	27	52,9

Patients had traumatic brain injuries (29.4%), maxillofacial (49%), eyes (7.8%), and combined with other traumas (52.9%).



Chart 3.1. Classification of nasal bone fractures (n=51)



Type II nasal bone fractures account for the highest proportion (54.9%), followed by type III (29.4%), type I (9.8%), and type IV (5.9%).

3.3. Evaluation of the treatment results

Table 3.5. The treatments

Types of surgery	n	%
Closed reduction	24	47,1
Reduction + Septoplasty	12	23,5
Reduction + Combined treatments	15	29,4

Patients received nasal closed reduction (47.1%), reduction + septoplasty (23.5%), and reduction + combined treatments with other specialties (29.4%).

Table 3.6. Evaluation of treatment results

Results	Post-operative 1 month		Post-operative 3 months	
	n	%	n	%
Qualified	45	88,2	49	96,1
Unqualified	6	11,8	2	3,9
Total	51	20,5	51	1,05

Post-operatively, 88.2% of patients were qualified at 1 month, and 96.1% of patients at 3 months.

4. DISCUSSION

4.1. Age and gender

In our study conducted on 51 patients, male patients accounted for 66.7% and female patients accounted for 33.3%. The most common age group was 16–30 years old (54.9%). This result is consistent with the study of Ta Phuong Thuy and colleagues [5]. Men at this age have many work-related and personal activities: participating more in traffic, general labor, sports, etc.

4.2. Distribution of patients by occupation and cause

The most common occupation for nasal bone fracture patients is the military (accounting for 47.1%); this result is different from the research of other authors, when patients are often found as freelance workers or students [5], [6]. This result is also unique for 103 Military Hospital because of mainly treats military subjects.

There are many causes of nasal bone fractures; the results of Table 3.2 show that the most common cause of nasal bone fractures is traffic accidents (58.8%). This result is similar to the research result of Ta Phuong Thuy (55.8%) [5], 69.4% lower than author Tran Thi Phuong [7]. The second cause is being beaten (accounting for 15.7%), much lower than the study by Li and colleagues, the main cause of nasal bone fractures is mainly due to attack (60.44%) [8]; and Hwang K. (30%) [9].

4.3. Clinical symptoms

- *Functional symptoms*

Pain is a common symptom when an injury occurs. For nasal bone fractures, it is usually only local pain. In our study, 100% of patients had local pain symptoms; this result is consistent with other authors [5], [6], and 47.22% higher than that of Tran Thi Phuong [7]. The authors all have a general opinion that if the patient comes to the hospital early on the first day, the pain symptoms will still be obvious.

The nasal mucosa has a rich vascular system, so trauma to the nasal location that damages the nasal mucosa often causes epistaxis. Our study results showed that 78.4% of patients had epistaxis; this result is similar to study by Ta Thuy Phuong (82.7%) [5]. In addition,

other functional symptoms such as a nasal congestion (39.2%) and a decrease in smell (21.6%) are similar to the research results of other authors [5], [6], [7].

- *Physical symptoms*

The most common physical symptoms are swelling, bruising (100.0%), nasal pyramid deformity (88.2%), a sharp pain nose fracture score and signs of bone crunching in the nasal bone (78.4%), and other injuries that are also consistent with the studies of other authors [5], [7].

- *Combined injuries*

Patients had traumatic brain injuries (29.4%), maxillofacial trauma (49%), eyes injuries (7.8%), and combined with other traumas (52.9%). Patients with nasal bone fractures due to traffic accidents or occupational accidents often have combined injuries. For these patients, treatment will be more complicated, and treatment must be combined with the same specialties. This result is also consistent with study of Kim K.S., which also showed that maxillofacial trauma was up to 44.6% [10].

- *Classification of bone fractures*

In this study, we classified bone fractures according to Kim 2013 [4], divided into 4 types. Among them, type II nasal bone fractures account for the highest proportion (54.9%), followed by type III (29.4%), type I (9.8%), and type IV (5.9%). The results of this study are different from the study by Ta Phuong Thuy and colleagues [5], which showed a type I fracture result of 59.6%. This result is different because in our study, the patients who were classified into the ENT department for treatment were patients who required a clinical intervention. This result is also consistent with the study by Kim K.S. and colleagues showing that type II and type III nasal bone fractures correspondingly account for 52.9% and 14.3% [10].

4.4. Evaluation of treatment results

- *The treatments*

The results of Table 3.5 show that patients received a closed reduction (47.1%), reduction + septoplasty (23.5%). These results are lower than study by Huynh Kim Khang with the result of closed reduction being



70.8%, combined with septoplasty 8.3% [6]. This difference is due to the larger number of patients with septal injuries in our study.

- Evaluation after treatment

After 1 month, 88.2% of patients are qualified, and after 3 months, there are 96.1%. This result is consistent with the study by Huynh Kim Khang, with 79.2% achieved after surgery, higher than that of Mahmut S.Y., with 72% qualified after reduction and 65% of patients being satisfied after treatment [11]. The higher margin proportion after 3 months is due to the fact that patients who had mucosal lesions, turbinate adhesions, and rhinosinusitis after 1 month of endoscopic examination were treated and re-evaluated for better results.

5. CONCLUSION

- Nasal bone fractures are common in traffic accidents and are often combined with other injuries.

- The most common clinical symptoms are pain, bruising, and nasal pyramid deformity.

- Reduction of nasal bone fractures gives high results in terms of both aesthetic and physiological functions of the nose.

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