



## Otorhinolaryngology

## ASSESSMENT OF POST- SURGICAL OUTCOME OF NASAL BONE FRACTURE REDUCTION

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**ABSTRACT** **INTRODUCTION:** Nose is most commonly injured structure in facial fractures. Depending on its mode of injury, it can be of comminuted or non-communited fracture. Most of the non communited fractures require closed reduction.

**AIM:** To determine post-surgical outcome of closed reduction of nasal bone fracture, based on cosmetic and functional results.

**STUDY DESIGN:** Prospective analytical study

**MATERIALS AND METHODS:** A Prospective study in patients with nasal bone fracture, who underwent closed surgical reduction between June 2017 to December 2019. Patients were followed for a period of 2 months to assess the outcome of cosmetic and functional aspects.

**RESULTS:** Out of 42 patients, 41 were satisfied in terms of cosmetic aspect, 41 were satisfied in term with functional aspects.

**CONCLUSION:** Patients treated with closed surgical reduction had highly satisfactory functional and cosmetic outcome

**KEYWORDS :** Nasal trauma . non communited fracture . closed reduction

**INTRODUCTION:**

Nasal bone fracture is the most common fracture and accounts for greater than 50% of all facial fractures in adults. Nasal bone fracture constitutes 39 % of all facial fractures<sup>(1,2)</sup>. The features of fracture are nasal deformity, bone instability, crepitus and patients present with any of the features such as nasal bleed, swelling over nose, pain, nasal obstruction. The nasal fractures can be manipulated through “open” or “closed” surgical procedures. The closed reduction is indicated in cases of unilateral and bilateral fractures with deviation less than half of the depth of the nasal tip<sup>(3)</sup>.

**PATTERNS OF NASAL FRACTURES:**

**Class 1:** Depressed fracture of nasal bone

**Class 2:** They are severe forms of fracture nasal bone either from frontal or lateral impact.

**Class3:** They are most severe form caused by high velocity trauma. These are called naso-orbital or naso-ethmoidal fracture.

Class 1 and 2 are treated by closed reduction, while class 3 requires open reduction and fixation. Timing of surgical intervention is also a deciding factor in prognosis which is usually 7-10 days<sup>(4)</sup>.

**CLASSIFICATION OF NASAL BONE FRACTURE Murray and Maran (1986)<sup>(5)</sup>**

GRADE 1	Straight nasal bone
GRADE 2	Nasal bone deviation less than half width of dorsum
GRADE 3	Nasal bone deviation half to full width of dorsum of nose
GRADE 4	Nasal bone deviation greater than full width of dorsum of nose
GRADE 5	Nasal bone in contact with cheeks

**AIM:**

To determine post-surgical outcome of nasal bone fractures in both cosmetic and functional basis of patients, underwent closed reduction.

**MATERIALS AND METHODS:**

A Prospective study in patients, with nasal bone fracture, who underwent closed reduction between June 2017 to December 2019. The study was conducted upon 42 patients, who met with inclusion and exclusion criteria.

**INCLUSION CRITERIA:**

- Age >14 years
- Patients with external nasal deformity.
- Patients with functional disturbances like anosmia, nasal obstruction.

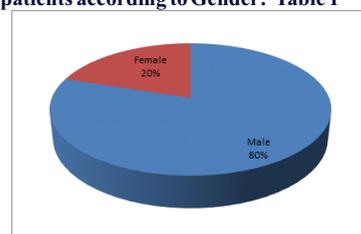
**EXCLUSION CRITERIA:**

- Patients with head injury
- Sharp bony fragments of bone penetrating the skin
- Previous history of surgery
- Presented late for surgery.

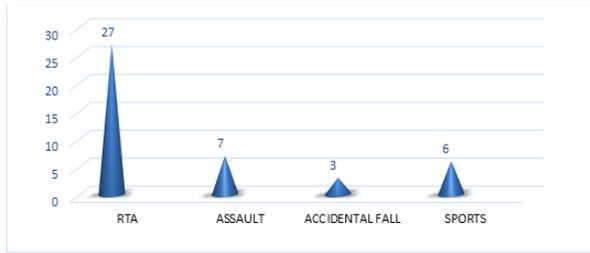
After detailed clinical and radiological assessment like X-ray both nasal bones and /or CT to ascertain the nasal bone fracture before the patients underwent surgery (Fig 1,2), closed reduction under general anaesthesia, done using Aschs and Walshams forceps, done by out fracturing and reducing it manually, assessed postsurgical cosmetic and functional results followed till 2 months (Fig 3,4,5,6).

**RESULTS:**

All the patients under study were had pre op assessment , at the time of fracture like severity of external nasal deformity and nasal airway patency tests evaluation by doctor and patient himself. There were 28 males (80%) and 12 females (20%) (Table 1). The most common cause for nasal bone fracture was road traffic accident 27 cases, followed by assault in 7 cases (Table 2). Postoperative outcome were compared with preoperative status as per both doctor's and patients outcomes. Out of 42 patients, 41 patients who had severe nasal deformity were found to have good cosmetic results, 41 patients with functional disturbances were improved after surgery were satisfied with the outcomes of the surgery. Only one patient showed less improvement in functional outcome as well as cosmetic outcome. As a result, postsurgical closed reduction of nasal bone fractures using instrumentation had highly satisfactory cosmetic and functional outcomes. In doctors' perspective, out of 42 patients, 86%, 12% & 2% were well satisfied, averagely satisfied and unsatisfied respectively in cosmetic aspects. At the same perspective 93%, 5% & 2% were well satisfied, averagely satisfied and unsatisfied respectively in functional aspects. On the other hand, in patients' perspective, out of 42 patients, 79%, 19% & 2% were well satisfied, averagely satisfied & unsatisfied respectively in cosmetic aspects; and 91%, 7% & 2% were well satisfied, averagely satisfied & unsatisfied respectively in functional aspects. Only 1 case (2%) was unsatisfied by both doctor as well as patient perspective (Table 3, 4).

**Pie chart of patients according to Gender: Table 1**

**Causes of nasal bone fracture: Table 2**



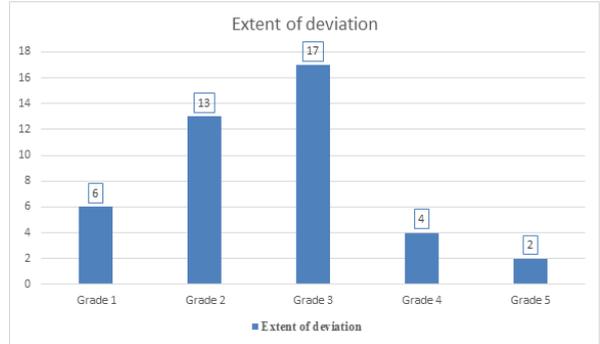
CAUSES OF NASAL BONE FRACTURE	NUMBER
ROAD TRAFFIC ACCIDENT	27
ASSAULT	7
ACCIDENTAL FALL	3
SPORTS	6
TOTAL	42

**Doctors Perspective: Table 3**

	COSMETIC OUTCOME		FUNCTIONAL OUTCOME	
	Numbers	Percentage	Numbers	Percentage
WELL SATISFIED	36	86%	39	93%
AVERAGELY SATISFIED	5	12%	2	5%
UNSATISFIED	1	2%	1	2%

**Patients Perspective: Table 4**

	COSMETIC OUTCOME		FUNCTIONAL OUTCOME	
	Numbers	Percentage	Numbers	Percentage
WELL SATISFIED	33	79%	38	91%
AVERAGELY SATISFIED	8	19%	3	7%
UNSATISFIED	1	2%	1	2%



**DISCUSSION:**

Nasal bone is the most common bone to be fractured in the facial trauma due to its natural projection and fragility of the structures distal to it. Male to female ratio in our study is 4:1; while in study by Dingman was 2.55:1<sup>(6)</sup>. Mean age of patient in our study was 31.5 years. Similar to the other studies the most common cause for nasal bone fracture is road traffic accident, followed by sports injury, assault<sup>(7,8,9)</sup>. In our study the second most common cause was assault, followed by sports injury a difference of 1 case probably due to the low number of cases. Grade 3 was the most common defect we had in our study according to Murray and Maran classification (Table 5). Closed reduction of nasal bone has a satisfaction rate of 60 to 90% in different studies as in this study, all these cases come under simple, noncommunitated fracture, underwent closed reduction had good satisfactory results<sup>(10)</sup>.

**CONCLUSION:**

Functional and aesthetic outcomes of closed reduction of nasal bone fractures under general anesthesia are highly satisfactory in our set up. We need more prospective study to assess the functional and cosmetic appearance in the long term.

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**Fig 1**



**Fig 2**



**Fig 3**



**Fig 4**



**Fig 5**



**Fig 6**



**Distribution by extent of deviation of nasal pyramid: Table 5**

Sl.No	Extent of deviation	Numbers	Percentage
1	Grade 1	6	14%
2	Grade 2	13	31%
3	Grade 3	17	41%
4	Grade 4	4	10%
5	Grade 5	2	4%