



Final Acceptance


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Dear Dr. Arfaj

Your manuscript entitled : **Patient Satisfaction Following Closed Reduction of Nasal Bone Fracture** has been accepted for publication. It will appear in Vol.17 No.2 of the journal (January 2015).

Sincerely yours,


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Patient Satisfaction Following Closed Reduction of
Nasal Bone Fracture

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ABSTRACT

Objective:

To present the clinical profile of patients subjected to closed reduction of fractured nasal bone and review the outcome of the procedure from the patient's perspective.

Methods:

Patients with nasal bone fracture treated with closed reduction in King Abdulaziz University Hospital, Riyadh between 1 January 2008 and 31 December 2013 were included. The essential data consisting of personal details, history, examination, details of surgical corrections were charted. Patients were followed-up by a telephonic interview to obtain their level of satisfaction of the outcome.

Results:

Of the 163 patients who were studied, 147 patients could be successfully contacted and interviewed, and 16 patients could not be contacted. Of the 147 patients, 65 (44%) patients expressed full satisfaction with the functional and aesthetic outcome; 42 (29%) patients were partially satisfied but would not consider revision surgery; 39 (27%) patients were not satisfied and would consider revision surgery.

Conclusion:

Despite a relatively high patient satisfaction rate with the functional and aesthetic outcome of closed reduction of nasal fracture, a significant number of patients (27%) are unsatisfied. A thorough pre-operative evaluation of the nasal deformity including presence of pre-existing deformities and meticulous surgical correction might reduce the rate of the unsatisfactory outcome of the primary surgical procedure.

INTRODUCTION

Fracture nasal bone is a common condition generally treated by closed reduction. It is a simple maneuver carried out under local or general anesthesia and in many occasions performed by junior surgeons. Few studies have evaluated the functional and the cosmetic outcome of the procedure. The reported success rates ranged between 62 and 80 %.¹⁻⁴ The purpose of this study is to present the age, sex, the causes and the treatment outcome of fracture nasal bone cases treated in King Abdulaziz Hospital, Riyadh over a 6 years period.

MATERIALS & METHODS

A review of the Health Information System (HIS) was done to pull out all the files of patients who were diagnosed as fracture of nasal bone in King Abdul Aziz University Hospital, King Saud University from 1 January 2008 to 31 December 2013.

Of all the 190 cases, 163 had undergone closed reduction. After approval from the IRB committee the files were retrieved and all these patients were called on the telephone. The author was able to review 147 patients, and the remaining 16 patients could not be contacted. The caller would introduce himself and explain the study and take verbal consent for their participation in the study. He would then ask a fixed format of questions about the outcome and enter it in the datasheet. Those datasheets would then be completed from information gathered from the file including type of trauma, date of presentation post trauma, presenting complaints etc. All the data was statistically analyzed using SPSS Software, Version 16.2008.

RESULTS

The total number of patients with nasal trauma enrolled in this study was 147; the mean age (3-39 years) was 17.5 years. The male group was 77.6% (N=114) while the female group was 22.4% (N=33). The cause of the trauma is shown in table 1. Football was the most common cause of nasal trauma in the male group (31.6%) while fall was the most common cause in female patients (48.5%). Patients presented to otolaryngology clinic more than 1 week after trauma were 72 patients (49%). The presenting features of the patients are shown in Table 2. The number of patient who complained of preoperative nasal deformity was 141 (96%). Depressed fracture was diagnosed in 62 patients (42.2%). The number of patients who had nasal obstruction due to trauma were 30 patients (20.4%). The number of the patients who had radiological study was 117 (79.6%). The surgical procedure was done by residents with consultant supervision in 136 cases (92.5%). One hundred and thirty patients (88.4%) had no packing post surgery; while 16 patients (10.9%) had post-operative packing. The overall satisfaction rate is shown in table 3.

Of the patient who had nasal obstruction, about 40% (12) of the patients expressed total satisfaction and 30% (N=9) were partially satisfied but not seeking other surgery; while 30%(N=9) were totally unsatisfied and were looking for further treatment.

DISCUSSION

The central position of the nose and its anterior projection on the face make it susceptible to injury, and therefore fractures of the nasal bones are the most common facial fractures and the third most common of the human skeleton⁵. The main etiologies of nasal fractures worldwide are falls, violence, traffic accidents, and sport injuries.⁶ The number of cases of nasal bone fracture has been increasing with the increase in the number of injuries or car accidents.⁷

Most cases of nasal bone fracture can be diagnosed clinically by a routine nasal examination especially in the presence of crepitus and tenderness in palpation. However, radiological investigation plays an important part in the diagnosis and evaluation of nasal bone fractures. Most nasal bone fractures can be diagnosed with plain X ray and/or with computed tomography (CT). Radiography is also required for accurate treatment and postoperative evaluation.⁸ Although many authors have described classification systems for nasal fractures, there is no uniform system has been universally advocated or applied. Stranc⁹ described a classification system that is often cited in the literature. There is an increasing necessity for a satisfactory classification systems for nasal fractures.

There are several methods used for treating fractures of nasal bone including closed reduction, open reduction and septo-rhinoplasty. Closed reduction is the most common

procedure used; that involves manipulation of nasal bones without incisions and performed either under local or anesthesia.

This retrospective study is carried out on 147 patients treated by closed reduction done under general anesthesia over a 6 years period. The male group were more involved in nasal trauma than females; by ratio of 3.4:1. This ratio is within the range described in the literature, which varied between 6:1 and 11.8:1.^{10,11,12} This high vulnerability of male to most types of trauma may be associated with the fact that male have more outdoor activities and are involved in high risk jobs, thus being more vulnerable to accidents.

Many etiological factors have been associated with nasal bone fracture. In this study fall was the most common overall cause while football injury is the most common cause in the male group.

Analysis of the treatment results showed that about 44.2% of patients in this study were satisfied with closed reduction. Another 28.6% of the patients had some postoperative deformity but were not seeking further surgery. On the other hand, 26.5% of patients were totally unsatisfied and were looking for rhinoplasty procedure. The findings are comparable with 80% reported by Wild et al³, 71% reported by Watson et al⁴ and by 65% by Yilmaz¹ in adults and 62% in children.² Similarly, in a study by Hung, 29% of patients were dissatisfied with closed reduction¹³. These rather disappointing postoperative results indicate the need for improvement of our approach in the

management of this common problem. Beekhuis advised to proceed for septorhinoplasty with osteotomy which have high percentage of straight nose then closed reduction.¹⁴ The optimal timing of closed reduction is not clear and varies throughout the literature.^{15,16} Generally, reduction should be done as soon as possible. The presence of edema might delay the reduction few days. In this study, patients presented later than 7 days for closed reduction have a high satisfaction rate than patient presented early for intervention. This could be due to the fact that presence of edema may adversely affect the outcome.

CONCLUSION

Closed reduction of fractured nose is a common procedure. However, the functional and the cosmetic results may not be satisfactory to a large section of the patients. A more thorough technique is required in order to achieve better outcome.

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Table 1: The causes of nasal trauma

	Fall Down	Fight	Football	Hard Object	RTA	Total
Male	26	24	36	5	23	114
Female	16	4	0	4	9	33
Total	42	28	36	9	32	147

Table 2: The presenting symptoms

	Nasal Deformity		Bleeding		Obstruction	
	Number	Percentage	Number	Percentage	Number	Percentage
No	6	4.1	45	30.6	117	79.6
Yes	141	95.9	102	69.4	30	20.4
Total	147	100.0	147	100.0	147	100.0

Table 3: The overall satisfaction rate

	Number of patients	Percentage
Fully satisfaction	65	44.2
Partial satisfaction	42	28.6
Unsatisfaction	39	26.5
Total	147	100.0