

The Incidence of Traumatic Versus Non-Traumatic Deviated Nasal Septum, A Comparative Analysis of Clinical Presentation and Post-Septoplasty Complications Rate



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Abstract

Background: Deviated nasal septum (DNS) is a physical disorder of the nose, with displacement of the nasal septum. Some people are born with a deviated septum. Other people develop a deviated septum after injury or trauma to the nose. In 80% of people deviated nasal septum is minor and goes unnoticed. Many methods and guidelines have been scheduled to treat and manage the acute nasal trauma; however, re-establishment of anatomical deformities and function is still a challenge. Posttraumatic nasal deformity requiring subsequent Rhinoplasty or Septo-Rhinoplasty is required among nearly half of the cases.

Aim: To detect the incidence of deviated nasal septum patient that is caused by trauma and to compare between traumatic and non-traumatic patients regarding the clinical presentation and post-operative complications.

Methodology: A retrospective Electronic record-based study was conducted including all patients with clinically diagnosed DNS and underwent surgical intervention at Khamis Mushait General Hospital. Data extracted included patient's demographic, clinical signs and symptoms, history of trauma and post-operative recorded complications.

Results: The study included a total sample of 93 patients, 45 (48.4%) patients had traumatic nasal deviation and 48 (51.6%) had no history of trauma. Nasal obstruction was the most recorded complaint among patients with and without history of trauma. Post-operative nasal obstruction remains the most frequent complication among the two groups of cases.

Conclusions & recommendations: In conclusion, the study revealed that trauma related deviated nasal septum was positive among nearly half of the cases included in the study. Pre-operative clinical presentation and post-operative complications were nearly the same among the two groups.

Keywords: Nasal septum deviation; Deviated septum; Trauma; Signs; Symptoms; Surgery; Complications

Abbreviations: DNS: Deviated Nasal Septum; CSF: Cerebrospinal Fluid

Background

A deviated septum refers to a displacement of the Bony-cartilaginous wall within the nose that separates the nasal cavity [1]. The nasal passages are lined on either side with

mucous membranes. When the nasal septum is extremely tilted towards one side, it causes one nasal passage to be larger than the other [2,3]. Depending on the severity of this difference, nasal

blockage, reduced airflow, and breathing problems can occur. A misaligned septum can also interfere with nasal drainage, leading to an increased rate of infection and postnasal drip [4,5]. Lindahl, 1954 described nasal septal deviations as either developmental (usually smooth, “C-shaped” or “S-shaped” nasal septum with occurrence more often in the anterior septum) or traumatic (usually irregular, angulated, and sometimes dislocated) in origin [6]. Nasal fractures account for greater than 50% of all facial fractures in adults [7]. The most common mechanism of injury is blunt trauma to the mid-face [8]. The natural protuberance and the weakness of distal structures in the nose make it more liable for injury. The bones and cartilage of the nose provide both aesthetic and structural support for the mid-face and airway; therefore, proper evaluation and management is necessary to prevent nasal deformity and nasal airway compromise [9]. Generally, numerous methods and guidelines have been scheduled to treat and manage the acute nasal trauma; however, re-establishment of anatomical deformities and function still a challenge. Post-traumatic nasal deformity requiring subsequent rhinoplasty or septorhinoplasty was required among nearly half of the cases [10-12].

Methodology

A retrospective electronic record-based approach was used targeting all patients with clinically diagnosed DNS and underwent surgical intervention (septoplasty) at Khamis Mushait General Hospital during the period from January 2017 to end of May 2019. Patient were contacted to obtain verbal consent to participate in this study. We excluded those with incomplete electronic records if personal contact with the patient failed or patients did not consent to share information in the study or those who underwent rhinoplasty. All medical files were reviewed, and

clinical data was extracted using a structured questionnaire. Data extracted included patient’s demographics, trauma history, clinical signs and symptoms, post- septoplasty complications such as nasal obstruction, nasal deformity, loss of smell sensation, and others.

Data Analysis

After data was collected and coded; statistical software IBM SPSS version 22 was used to analyze it. All statistical analysis was done using two tailed tests and alpha error of 0.05. P value less than or equal to 0.05 was statistically significant. Frequency and percentages were used to describe variables including signs and symptoms and post-operative complications with history of trauma. Crosstabulation was used to show the clinical presentation and post-operative complications in relation to trauma using chi-square test.

Results

The study included a total sample of 93 out of 120 patients, 45 (48.4%) patients had traumatic nasal deviation and 48 (51.6%) had no history of trauma. Sixty-five (69.9%) of the patients aged less than 30 years and 60.2% were males Table 1 & Figure 1 illustrates that nasal obstruction was the most recorded clinical complaint among the patients in total (96.8%) followed by snoring (65.6%), frontal headache (51.6%), and nasal discharge (46.2%) while epistaxis was recorded among 23.7% of the cases. On relating the pre-operative clinical signs and symptoms to the history of trauma (Table 2), it was noted that nasal obstruction was the most recorded among patients with and without history of trauma (97.8% and 95.8%, respectively).

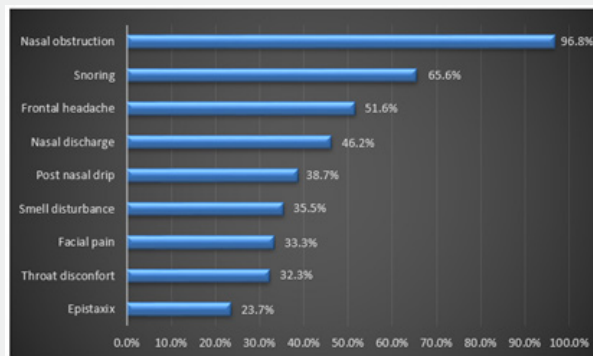


Figure 1: Pre-operative clinical data of patients with nasal septum deviation in Khamis Mushait hospital.

Table 1: Bio-demographic data of patients with nasal septum deviation.

Bio-Demographic Data	No	%
Age in years		
< 30 years	65	69.90%
> 30 years	28	30.10%

Gender		
Male	56	60.20%
Female	37	39.80%
History of nasal trauma		
No	48	51.60%
Yes	45	48.40%

Table 2: Pre-operative clinical data of patients with nasal septum deviation according to trauma history.

Pre-Operative Clinical Data	Nasal Trauma				P-Value
	No		Yes		
	No	%	No	%	
Nasal obstruction	46	95.80%	44	97.80%	0.596
Nasal discharge	25	52.10%	18	40.00%	0.243
Frontal headache	23	47.90%	25	55.60%	0.461
Epistaxis	12	25.00%	10	22.20%	0.753
Smell disturbance	20	41.70%	13	28.90%	0.198
Postnasal drip	18	37.50%	18	40.00%	0.805
Snoring	30	62.50%	31	68.90%	0.517
Facial pain	13	27.10%	18	40.00%	0.187
Throat discomfort	14	29.20%	16	35.60%	0.51

P: Pearson X² test

Snoring was recorded among 68.9% of the cases with history of trauma compared to 62.5% of others with no history of trauma. Frontal headache was recorded among 55.6% and 47.9%, respectively. Epistaxis was recorded among 22.2% of cases with history of trauma compared to 25% of those without. All recorded differences were statistically insignificant (P > 0.05). As for post-operative complications, nasal obstruction stills the most frequent among the two groups of cases (31.1% among trauma cases vs.

33.3% for non-trauma cases). External nasal deformity was recorded among 17.8% of the trauma cases compared to 16.7% of non-trauma cases with no statistical significance (P=.887). Post-surgical infection was recorded for 13.3% of the trauma cases compared to 6.3% of non-trauma cases while septal perforation was recorded among 8.9% of the trauma cases compared to 4.2% of non-trauma (Table 3).

Table 3: Post-operative complications for patients with nasal septum deviation according to trauma history

Post-Operative Complications	History of Nasal Trauma				P-Value
	No		Yes		
	No	%	No	%	
Nasal obstruction	16	33.30%	14	31.10%	0.819
Nasal bleeding needed visiting ER	1	2.10%	4	8.90%	0.146
Septal perforation	2	4.20%	4	8.90%	0.354
External nasal deformity	8	16.70%	8	17.80%	0.887
Infection	3	6.30%	6	13.30%	0.248
Smell disturbance	6	12.50%	4	8.90%	0.574
Watery nasal discharge (CSF)	1	2.10%	3	6.70%	0.276
Dental anaesthesia	3	6.30%	6	13.30%	0.248
Septal hematoma	0	0.00%	1	2.20%	0.299

P: Exact Probability Test.

Discussion

Road Traffic Accidents (RTA) are quite common in Saudi community leading to many injuries and patients ending up in emergency department for the same [13]. The nose is the most injured part of the body in any RTA and the injury ranges from simple to severe type, based on nasal fracture classification that affect the nasal and paranasal sinuses function as well as the pathological sequels [14]. These nasal injuries are common in all age groups of the community. Significant nasal trauma can cause nasal fractures with many injury and surgery related complications [15]. Posttraumatic nasal deformity requiring subsequent rhinoplasty or septo-rhinoplasty remains in as many as 50 percent of cases.

The nasal bones are the most fragile of the external facial bones with low tolerance to an impact force [16]. Most common nasal fractures are due to a lateral force [17,18]. The nasal septum plays a major role in absorbing the shock of the trauma. Based on the trauma force, the septum may rebound, dislocate or fracture [19]. These nasal fractures usually lead to nasal obstruction whereas the patients' perception of nasal obstruction is complex and may be affected from multiple physiologic and psychological factors. Operative technique, condition of vascular and nerve supplies and expectations of patients from surgery may affect perception of nasal obstruction and outcomes of surgery [20]. The coexistence of allergy or Sino-nasal disease with septal deviation is also statistically associated with higher rates of dissatisfaction after surgery [21].

The aim of our study was to find out the incidence of deviated nasal septum in traumatic and non-traumatic patients then compare two groups regarding the clinical presentation and post-operative complications which may add awareness to surgeon's anticipation of post-operative complications in post-traumatic v/s non-traumatic deviated nasal septum septoplasties. The study revealed that nearly half of the cases with nasal septum deviation had positive history of trauma. Regarding the clinical presentation, nasal obstruction and snoring are the most common presenting symptoms respectively while the least one is epistaxis in both targeted groups. The other pre-operative clinical presentations: Nasal discharge, Frontal headache, Smell disturbance, Postnasal drip, Facial pain & Throat discomfort are different regarding the incidence between traumatic and non-traumatic groups.

Postoperative nasal obstruction and external nasal deformity are the most common complications respectively and the least one is septal hematoma in both groups. The results show similarity of the incidence of the preoperative clinical presentation and postoperative complications in the targeted groups, so there is no obvious impact of trauma over the deviated nasal septum patients clinically and post-operatively as compared to non-trauma patients as concluded from our observation and study. Because of the advanced techniques in Septo-Rhinoplasty, it is also difficult to

find septoplasty only patients. Most of the patients with septum deviation deserve turbinate manipulation and/or nasal valve surgery with open Septo-Rhinoplasty which may be the cause of reduced number of patients included in our study and similar studies of this kind [5].

Conclusion

In conclusion, the study revealed that trauma related deviated nasal septum was positive among nearly half of the cases. Pre-operative clinical presentation and post-operative complications were nearly the same among traumatic and non-traumatic nasal septum deviation. A larger scale study including more cases with more clinical assessment is advised to be conducted to have more knowledge and explanations for the findings.

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