International Journal of Otorhinolaryngology and Head and Neck Surgery
Elfallah B. Int J Otorhinolaryngol Head Neck Surg. 2025 Jun;11(3):201-206
http://www.ijorl.com
pISSN 2454-5929 | eISSN 2454-5937
DOI: https://dx.doi.org/10.18203/issn.2454-5929.ijohns20251497

Original Research Article

The efficiency of septoplasty in improving nasal symptoms caused by deviated nasal septum in Benghazi, Libya

Balgeis Elfallah*

Department of Otorhinolaryngology, Faculty of Medicine, University of Benghazi, Libya

Received: 16 February 2025
Revised: 18 March 2025
Accepted: 19 March 2025

***Correspondence:**
Dr. Balgeis Elfallah,
E-mail: balgeis.elfallah@uob.edu.ly

ABSTRACT

Background: The deviated nasal septum is one of the most known causes of nasal obstruction, as well as many other symptoms.
Methods: This study employed the nasal obstruction symptom evaluation (NOSE) survey for 67 patients (female: 31 and male: 36) in Benghazi, Libya over the period from May 2024 to November 2024.
Results: Out of 100 points in the NOSE score, the mean of the total score before septoplasty was 71.791, indicating the presence of severe nasal obstruction symptoms. This mean declined to 11.716 after the surgery, which indicates the presence of only mild nasal obstruction symptoms. These results are supported by p values equal to 0.000. Moreover, before septoplasty, the mean of all answers regarding epistaxis (1.284 vs. 0.134), headache (1.328 vs. 0.119), recurrent sinusitis (0.896 vs. 0.075), and decreased sense of smell (0.925 vs. 0.118) was higher than its value after surgery. These findings are supported by significant p values (<0.05).
Conclusions: This study found that septoplasty is considered a successful treatment for symptomatic patients with deviated nasal septum.

Keywords: Septoplasty, Deviated nasal septum, NOSE Survey

INTRODUCTION

The nasal septum is an osseocartilaginous structure that separates the nose into two nasal pathways.[1] A deviated nasal septum (DNS) is a usual anatomical deformity and is one of the main reasons for nasal obstruction and related symptoms like breathing difficulty, recurrent sinusitis and stuffy nose among others.

A DNS can be either developmental, normally a smooth "C-shaped or S-shaped" malformation, or traumatic, which is usually more displaced and uneven.[2] This condition is mostly treated through surgery; septoplasty is the most common surgical intervention. Septoplasty is a corrective surgery to restore normal nasal airflow and decrease associated symptoms. The success of this procedure may be assessed using subjective patient-driven outcomes and objective measures like patency and airflow. Septoplasty has been proven as an effective procedure in many studies in reducing nasal symptoms. The nasal obstruction septoplasty effectiveness (NOSE) study was research done by Stewart et al, where they applied a validated questionnaire to monitor patient outcomes and found significant improvements in breathing and quality of life after surgery.[3] Septoplasty is an intervention known to relieve nasal obstruction, resulting in improved life quality for the patients, it also provides consistent evidence of improving nasal patency and reducing symptoms due to the deviated septum.[4]

There has been an increase in the literature evaluating both the clinical features of the patients with DNS and the effectiveness of septoplasty on these symptoms as well as the general quality of life. Yet, region specific studies

related to developing countries such as Libya, do not exist. Benghazi, which is a major city in Libya with distinct demographic and clinical features, represents an important context to analyze the results of septoplasty surgery. This study intends to address this deficiency by answering the question regarding the changes in nasal symptoms after septoplasty in patients from Benghazi. This will be accomplished using subjective direct patient outcome reporting. Accordingly, the main objective of the research is to assess whether septoplasty is a successful procedure for individuals suffering from symptoms caused by a deviated nasal septum in the second largest city in Libya, Benghazi.

METHODS

This prospective cohort research was conducted at the surgical specialty centre in Benghazi from May 2024 to November 2024. This centre specializes in ear, nose, and throat surgery and urology. In the ear, nose, and throat department, various types of operations are performed, including but not limited to adenotonsillectomy, tympanoplasty, cochlear implantation, septoplasty, and FESS.

The ethical approval of this study is obtained from the ENT department at the surgical specialty centre (Reference: 33-2024). Moreover, this study follows ethical criteria, including protecting confidentiality, assuring voluntary participation, and gaining informed approval from participants.

The septoplasty is performed at the centre for patients over 16 years old. The sample of this study reached 67 patients who agreed to conduct the survey. This study follows ethical criteria, including protecting confidentiality, assuring voluntary participation, and gaining informed approval from participants. Complete medical history was taken together with the history of the main complaint regarding nasal symptoms caused by DNS, also full ENT examination was performed to confirm the diagnosis.

Before the surgery and after documenting the age, gender and duration of the patient's symptoms, the researcher asked the patients to answer the nasal obstruction symptom evaluation (NOSE) survey. This survey is considered a useful tool for evaluating the nasal obstruction issue.[5] It consists of five questions and is designed to capture breathing symptoms. The range of answers is from 0 to 4, where 0 expresses no problems with nasal obstruction, while 4 expresses severe problems.

This survey is based on multiplying the total score by 5. Where the total NOSE score is between 0 and 100, the closer the result to 100, the extreme nasal obstruction severity, and vice versa if the result is closer to 0.6 In detail, if the result is between 5 and 25, this indicates the presence of mild nasal obstruction severity, between 30 and 50, this indicates the presence of moderate nasal obstruction severity, between 55 and 75, this indicates the presence of severe nasal obstruction severity, between 80 and 100, this indicates the presence of extreme nasal obstruction severity.

The same patients are asked again by telephone call after 6 months of the surgery to answer the same survey. Thus, it will be noted whether the patients have improvement in the symptoms after 6 months. The researcher computed the mean of the answers before and after the surgery as well as the total NOSE score (total score×5). Then calculate whether there is a significant mean difference in the results.

Furthermore, before the surgery and after 6 months, the researcher asked the 67 patients about four extra symptoms that can be caused by DNS. These symptoms are epistaxis, headache, recurrent sinusitis, and decreased sense of smell. Like the NOSE survey, the range of answers is from 0 to 4. The researcher computed the mean of the answers before and after the surgery as well as investigated the significance of the mean difference in the results. Noticing that the significant level in this research is at 0.05.

RESULTS

Figure 1 illustrates the patient characteristics of this study. The figure is separated into three charts, Charts (a) through (c), demonstrating the results of the patient's gender, the patient's age as well as the duration of symptoms.

Chart (a) shows that most of the patients are males, whereas out of 67 patients, 36 (54%) are males and 31 (46%) are females. Furthermore, according to chart (b), the majority of the patients 33 (49%) are between 27 and 36 years old, while the lowest percentage 7(11%) is for the age more than 37 years old. It is worth mentioning that no operation is conducted for patients under 16 years old in the centre.

Finally, when the duration of symptoms is considered, the results in chart (c) indicate that 31 (46%) of the patients suffer from the symptoms between 1 and 3 years. Not far from this previous patient's number, the number of patients suffering from symptoms over less than a year in this study reached 26(39%).

The results of the NOSE survey are presented in Table 1 below. The table shows the mean of each symptom in the survey pre-operatively and post-operatively, besides, the mean of the total score of the NOSE survey. The table also displays the significant differences in the results before and after the surgery.

It is evident from the results in Table 1 that septoplasty is considered a highly successful surgery for the patients who were involved in this study. For the five nasal

symptoms in the Nose survey, the mean answers were between 2.313 and 3.373 pre-operatively. Nonetheless, this mean has decreased significantly between 0.343 and 0.552 post-operatively. Furthermore, out of 100 points, the mean of the total score pre-operatively is 71.791, indicating the presence of severe nasal obstruction symptoms. However, this shows a decline in the mean to 11.716 post-operatively, which indicates the presence of mild nasal obstruction symptoms.

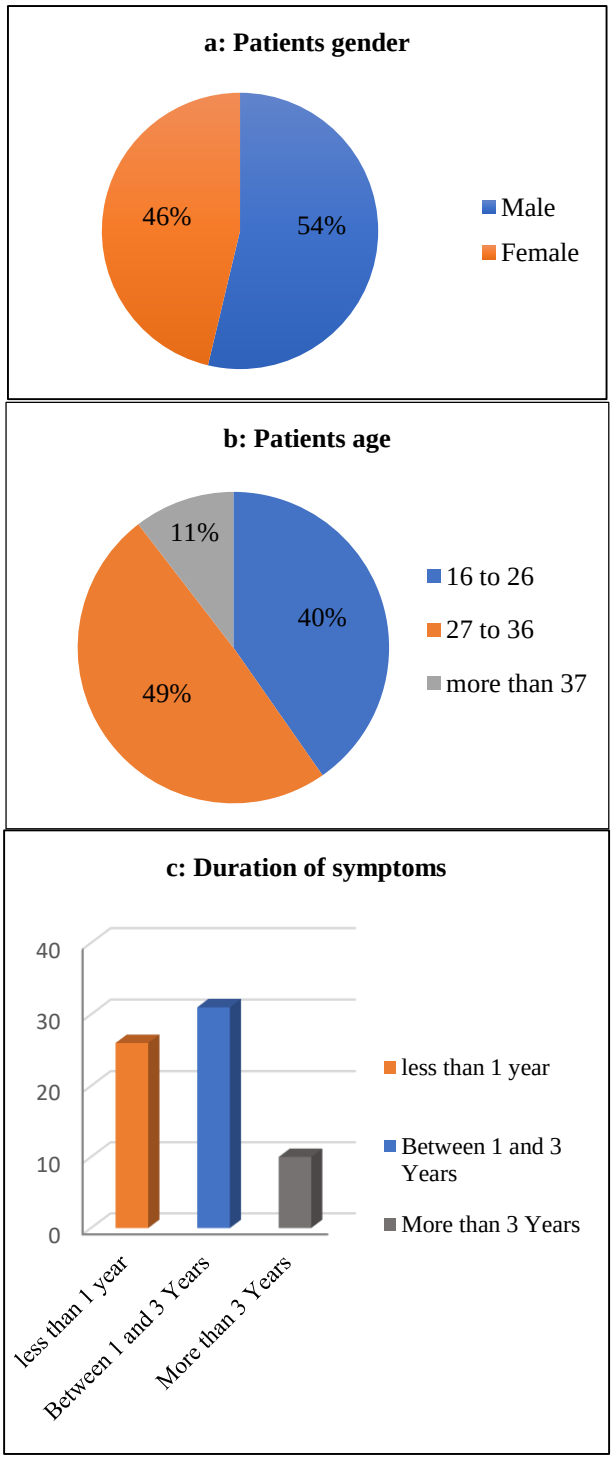

Figure 1 (a-c): Patient characteristics.

It is worth mentioning that the total score pre-operatively is between 45 and 100, with an average of 71.791, while the total score post-operatively is between 0 and 45, with an average of 11.716. Moreover, all the above results are supported by p-values equal to 0.000. Thus, septoplasty significantly improves symptoms caused by DNS.

As mentioned earlier, besides the NOSE survey, the researcher also asked the 67 patients of this study four additional symptoms (epistaxis, headache, recurrent sinusitis, decreased sense of smell) that can be caused by DNS pre-operatively and post-operatively. Table 2 below presents the answers to the four additional symptoms.

The results in Table 2 asserted that in terms of the epistaxis, it is noted that more than 50% of the patients (42) had mild to severe epistaxis before septoplasty. However, after septoplasty, this percentage decreased to 13% since only 9 patients still suffer from mild epistaxis.

Regarding the headaches, before septoplasty 53 patients out of 67 had between mild to severe headaches, yet, after surgery this number had decreased to only 6 patients, where 4 patients still have mild (before surgery were 27) and the other 2 patients have moderate headache (before surgery were 17).

On the other hand, only 16 patients had moderate to severe complaints of recurrent sinusitis, which has improved significantly to 0 patients postoperatively. As for decreased sense of smell, 47 patients had no or mild issues and 20 had moderate to severe smell loss with significant improvement after the surgery.

It can be also noted from the table that the number of patients before the operation who did not suffer from epistaxis, headache, recurrent sinusitis, and decreased sense of smell is 25, 14, 26, and 32, respectively. However, after the operation, these numbers increased to 58, 61, 62, and 61, respectively.

Table 3 below displays the mean answers of patients pre- and post-operatively regarding the additional four symptoms as well as the significant differences in the mean before and after the surgery.

It is evident from the results in the table that before septoplasty, the mean of all answers concerning epistaxis, headache, recurrent sinusitis, and decreased sense of smell is more than its value after the surgery.

The highest difference was found in the headache as the mean declined from 1.328 to 0.119. These results are accompanied by significant p values (less than 0.05).

Therefore, the findings of this table also give another strong indication that septoplasty is considered a successful surgery for patients suffering from these additional symptoms caused by DNS.

Table 1: NOSE survey results.

S. no	5-nose symptoms	Mean pre-operatively	Mean post-operatively	P value
1	Nasal congestion	2.313	0.343	0.000*
2	Nasal blockage	2.761	0.507	0.000*
3	Trouble breathing through the nose	3.030	0.522	0.000*
4	Trouble sleeping	2.881	0.418	0.000*
5	Unable to get enough air through the nose during exertion	3.373	0.552	0.000*
Mean of the total NOSE score (out of 100)		71.791	11.716	0.000*

*Significant at a 0.05 level.

Table 2: Four additional symptoms results.

Four additional symptoms	Pre-operative					Post-operative				
	0	**1**	**2**	**3**	**4**	**0**	**1**	**2**	**3**	**4**
	(Not a problem)				**(sever problem)**	**(not a problem)**				**(sever problem)**
Epistaxis	25	14	16	8	4	58	9	0	0	0
Headache	14	27	17	8	1	61	4	2	0	0
Recurrent sinusitis	26	25	13	3	0	62	5	0	0	0
Decrease sense of smell	32	15	14	5	1	61	4	2	0	0

Table 3: Mean results for the four additional symptoms.

S. no	Additional symptoms	Mean pre-operatively	Mean post-operatively	P value
1	Epistaxis	1.284	0.134	0.000
2	Headache	1.328	0.119	0.000
3	Recurrent sinusitis	0.896	0.075	0.000
4	Decrease sense of smell	0.925	0.118	0.000

*Significant at a 0.05 level

DISCUSSION

Septoplasty is a routinely done operation with the objective of correcting a DNS with the aim of improving nasal obstruction and the patient's overall well-being. Although the operation is often advised for patients with chronic nasal problems, the broader question of its usefulness relative to conservative treatment is still under debate in empirical medicine. The effectiveness of septoplasty in alleviating nasal symptoms has been examined in many studies.

A systematic review and meta-analysis focused on the effect of septoplasty on nasal obstruction and quality of life revealed that although patients subjectively felt they were breathing better through their noses, objective investigations such as nasal airflow and nasal resistance revealed contradictory outcomes in various patients.[4]

Another study was interested in assessing the status of clinical management for patients both after and before the surgery, as well as the effectiveness of septoplasty.

The analysis of obstructive nasal symptoms was self-reported, and it was revealed that after the procedure was performed better than before.[7] A recent meta-analysis emphasized the long-term effectiveness of septoplasty compared to patients who received only medical treatment.

Also supports that although the surgery had a higher cost, it gives long-term benefits in improving nasal airflow and the patient's quality of life.[8] In a study that included 378 participants, only 307 participants reported their outcomes after 6 months, where 152 underwent septoplasty, and 155 received only medical management, this concluded that septoplasty with or without turbinate reduction was found to be more beneficial than medical management.[9]

A study done in Norway that included 366 patients found that septoplasty or septoplasty with turbinoplasty was more effective at alleviating nasal obstruction than turbinoplasty alone.10 Another study that took place in Saudi Arabia reached similar results to this study in finding that septoplasty with or without turbinoplasty leads to improvements in disease-specific quality of life as assessed by NOSE scores and significantly improved nasal symptoms 3 months after surgery.[11]

Similarly, a study comparing nasal symptoms and quality of life before and after septoplasty in comparison to

healthy individuals, revealed a significant improvement in both after the surgery.[12] In the same vein, another study supported these findings using a Nasal obstruction symptom evaluation (NOSE) questionnaire.[13] Alam et al, support the results of this study concerning the effectiveness of septoplasty in relieving nasal obstructive symptoms in patients suffering from DNS.[14]

Septoplasty improved sinusoidal headaches and allergic symptoms in patients with septal deviation, this is aligned with the results of this research.[15] Another study found that removing contact points from patients with contact point headaches significantly improved their symptoms.[16]

These results from the study done in Benghazi are in concurrence with the literature as a whole and have shown better results concerning quality of life following septoplasty.

There might be local determinants such as pollution, healthcare access, and inherited traits that cause surgery in the region to have different results. For example, in Western countries where the entire system of health care and postoperative treatment is well developed, it may not be the same in Benghazi, where patients recover differently due to a lack of proper medical attention and instructions to follow after treatment.

The limitations of this study were that the study was conducted at only one medical centre, which may not reflect generalized results in a large city like Benghazi. The surgery was performed by different surgeons who may have different techniques for septoplasty. The sample size may be considered small. The study employed a self-reported questionnaire, which may give a memory-dependent bias.

CONCLUSION

This research affirms the benefits of septoplasty in nasal symptoms for patients with DNS in Benghazi, Libya. These results are similar to the results of previously performed studies which showed better results with surgical intervention than non-surgical intervention. However, there is a need for more work in the form of well-designed and well-conducted RCTs to draw strong recommendations regarding the effectiveness of septoplasty in different groups including Libya.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Teixeira J, Certal V, Chang ET, Camacho M. Nasal septal deviations: a systematic review of classification systems. Plas Surg Int. 2016;(1):45.
2. Srivastava P, Saxeana P. Assessment of cases of nasal septal deviations. European J Mol and Clin Med. 2022;9(3):403-7.
3. Stewart MG, Smith TL, Weaver EM, Witsell DL, Yueh B, Hannley MT, Johnson JT. Outcomes after nasal septoplasty: results from the nasal obstruction septoplasty effectiveness (NOSE) study. Otolaryngology–Head and Neck Surg. 2004;130(3):283-90.
4. Egmond MM, Rovers MM, Tillema AH, Heerbeek NV. Septoplasty for nasal obstruction due to a deviated nasal septum in adults: a systematic review. Rhinology.2018; 56(3): 195-208.
5. Stewart MG, Witsell D L, Smith TL, Weaver EM, Yueh B, Hannley MT. Development and validation of the Nasal Obstruction Symptom Evaluation (NOSE) scale. Otolaryngology-Head and Neck Surg. 2004;130(2):157-63.
6. Sundh C, Sunnergren O. Long-term symptom relief after septoplasty. European Arch Oto-Rhino-Laryngol. 2015;(272):2871-5.
7. Srinivasan DG, Hegde J, Ramasamy K, Raja K, Rajaa S, Ganesan S, et al. Comparison of the efficacy of septoplasty with nonsurgical management in improving nasal obstruction in patients with deviated nasal septum–a randomized clinical trial. Int Arch Otorhinolaryngol. 2022;26(02):226-32.
8. Taha HI, Elgendy MS, Ezz MR, Tolba K, El Safty, M, Azzawi MA, et al. Septoplasty versus non-surgical management for deviated nasal septum: a systematic review and meta-analysis of randomized controlled trials. Eur Arch of Oto-Rhino-Laryngol. 2024;(282);1-14.
9. Carrie S, Fouweather T, Homer T, O'Hara J, Rousseau N, Rooshenas L, et al. Effectiveness of septoplasty compared to medical management in adults with obstruction associated with a deviated nasal septum: the NAIROS RCT. Health Technology Assessment (Winchester, England). 2024;28(10):11.
10. Pedersen LA, Dölvik S, Holmberg K, Emanuelsson CA. Surgery to relieve nasal obstruction: outcome for 366 patients operated on by one senior surgeon. European Archives of Oto-Rhino-Laryngol. 2021;278:3867–75.
11. Alanazy S, AlQuniabut I, Alenezi MM, Almutairi H, Almutairi A, Altheyab F. Quality of life and symptoms before and after nasal septoplasty with or without turbinoplasty compared with control individuals in Saudi Arabia. J Craniofac Surg. 2023;34(3):922-5.
12. Bugten V, Nilsen AH, Thorstensen W M, Moxness M H S, Amundsen M F, Nordgård S. Quality of life and symptoms before and after nasal septoplasty compared with healthy individuals. BMC Ear, Nose and Throat Dis. 2016;16(13):1-7.
13. Bashir S, Sharma P. Assessment of effect of septoplasty in relieving nasal obstruction and on

quality of life. Int J Life Sci Biotechnol Pharma Res. 2023;12(2):193-5.
14. Alam M, Muhammad T, Usman M, Ahmad S. Effectiveness of septoplasty in relieving nasal obstruction in patients with deviated nasal septum. J Saidu Med Coll, Swat. 2022;12(2):71-4.
15. Feroz S, Dawood MH, Sohail S, Daniyal M, Zafar A, Shahid UB, Ahmed S. A longitudinal prospective study of septoplasty impact on headache and allergic rhinitis in patients with septal deviation. J Int Med Res. 2023;51(11):67-9.
16. Shahabaddin L, Emin A, Kasho H. Effect of Septoplasty On relieving contact point headache. Int Tinnit J. 2024;28(1):157-62.

Cite this article as: Elfallah B. The efficiency of septoplasty in improving nasal symptoms caused by deviated nasal septum in Benghazi, Libya. Int J Otorhinolaryngol Head Neck Surg 2025;11:201-6.