

Comparison of Conventional Septoplasty and Endoscopic Septoplasty in Treating Deviated Nasal Septum: A Quasi Experimental Study

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ABSTRACT

Objective: To compare postoperative symptom relief and complication rate among patients undergoing endoscopic and conventional septoplasty.

Study Design: Quasi experimental study.

Place and Duration of Study: Department of Ear Nose and Throat, Combined Military Hospital, Rawalpindi Pakistan, from Apr to Sep 2025.

Methodology: This study enrolled 150 participants via consecutive sampling over a period of 6 months. Patients were assigned by sealed envelope technique to either Group-A (endoscopic septoplasty) or Group-B (conventional septoplasty). Subjective evaluation was performed using the NOSE questionnaire, while objective assessment was conducted through nasal endoscopy; once before the procedure and then one month later.

Results: Out of 150 participants, 119(79.3%) were male and 31(20.7%) were female. Mean age was 32.41 ± 8.23 years. In Group-A, the mean total NOSE score declined from 86.87 ± 4.70 prior to surgery to 17.53 ± 6.39 following the procedure ($p < 0.001$), indicating a significant improvement that exceeded the results observed in Group-B participants. A higher percentage (62.7%) of patients in Group-A had no postoperative complications, while residual deviation was more common in Group-B (38.7%), indicating better surgical outcomes and fewer complications in Group-A.

Conclusion: Patients treated with endoscopic septoplasty had greater improvements in postoperative NOSE scores and better clinical outcomes. In addition, the endoscopic group had a lower complication rate.

Keywords: Conventional Septoplasty, Endoscopic Septoplasty, Nasal Septum.

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INTRODUCTION

Nasal obstruction is of the most widely encountered symptom. It can occur due to several causes like allergic rhinitis, nasal polyps and deviated nasal septum (DNS). DNS is the most frequently encountered pathology in patients presenting with nasal obstruction. Other symptoms experienced by patients with DNS include recurrent sinusitis due faulty aeration of sinuses, hyposmia, epistaxis and headaches.¹ It can severely compromise patient's quality of life. In one study, incidence rate of anxiety was 27.358 per 1000 person-years in patients with deviated nasal septum.² DNS can be diagnosed clinically and by investigations like CT scan, MRI, acoustic rhinometry and nasal airflow studies. The prevalence estimates of DNS range widely from 20 to 97% in different populations and is also effected by the diagnostic criteria used.³ A study conducted by Taghiloo and Halimi, in Iran, using CT imaging

showed a prevalence of DNS to be 75%.⁴ Prevalence of clinically significant DNS is somewhat lower (53%) as indicated by a cross sectional study conducted in Nepal.⁵

Deviated nasal septum can be corrected by septoplasty which involves surgical resection of only deviated part of cartilaginous or bony septum while preserving rest of osseocartilaginous framework. Septoplasty techniques have evolved over past few decades ranging from radical submucosal resection (SMR) to conservative septoplasty with minimal resection using speculum. Due to limited visualization and poor illumination in conventional septoplasty, exact pathology of deviated septum and degree of nasal obstruction cannot be fully assessed. Introduction of endoscopes in the field of rhinology has revolutionized surgical techniques. The technique of endoscopic septoplasty of deviated nasal septum was discovered in 1991.⁶

Endoscopic septoplasty technique, being adopted by many otorhinolaryngologists offers several advantages. Firstly, it allows better visualization of

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internal nasal anatomy. Exact position and nature of septal deviation be accurately determined. Posterior spur, not visible on speculum examination can easily be seen and addressed by using endoscope. Associated pathology like hypertrophied turbinate can also be addressed simultaneously. Secondly, adequate haemostasis can be achieved under direct vision and may obviate the need of nasal pack. Video assistance can also help educate OT staff and residents. In addition, total operating time and post operative complications are relatively less when utilizing endoscopic technique. It is also the preferred procedure for revision cases.⁷

Endoscopic nasal procedures like endoscopic sinus surgery and septoplasty have been practiced in different military and civil setups across Pakistan for over a decade.^{8,9} However, there is paucity of data on the comparative effectiveness of endoscopic septoplasty techniques in our setup. The purpose of this study was to compare postoperative symptom relief and complication rate of endoscopic and conventional septoplasty.

METHODOLOGY

This quasi-experimental study was conducted over a course of six months at ENT department of a tertiary care hospital in Rawalpindi from April to September 2025 after approval by ethical review committee (ERC) of the institute (vide letter no. CMH/RWP/968). A sample size of 150 was calculated using open Epi software keeping 95% confidence level, 80% precision, exposed: unexposed ratio of 1 and expected percentage of unexposed with outcome as 72% and exposed with outcome as 91% with improvement in nasal obstruction as a primary outcome variable.¹

Nonprobability consecutive sampling technique was used to enroll patients meeting inclusion criteria and willing for septoplasty operation, from among those who visited ENT OPD from April 2025 to September 2025.

Inclusion Criteria: Patients aged 18 to 50 years with a symptomatic deviated nasal septum (i.e. who experienced any of the symptoms associated with deviated nasal septum such as nasal obstruction, nasal discharge, headache, or difficulty breathing), and who provided informed consent were included.

Exclusion Criteria: Individuals with nasal polyps, nasal masses, poorly managed comorbid conditions, or a prior history of septoplasty and endoscopic sinus surgery were not included in this study.

NOSE SCORE

The Nasal Obstruction Symptom Evaluation (NOSE) survey is an assessment tool that can help us understand how your breathing symptoms are affecting your quality of life. NOSE is a simple, five-question, validated survey that uses a 30-point scale to capture breathing symptoms, with higher scores indicating more severe symptoms than lower scores.

Over the past one month, how much of a problem were the following conditions for you?

	Not a problem	Very mild problem	Mild problem	Severe problem	Very severe problem
Nasal congestion or stuffiness	0	1	2	3	4
Nasal blockage or obstruction	0	1	2	3	4
Trouble breathing through my nose	0	1	2	3	4
Trouble sleeping	0	1	2	3	4
Unable to get enough air through my nose during exercise or exertion	0	1	2	3	4

NOSE score: multiply your total score by

Mean obstructive severity classification: mild (0-20), moderate (21-30), severe (31-40), very severe (41-50)

A score of 0 means no problems with nasal obstruction and a score of 100 means the worst possible problems with nasal obstruction. Instrument was not designed to be used with individual patient data or to predict outcome on individuals.

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Lipson M, Munt M Development of a severity classification system for subjective nasal obstruction. JAMA Facial Plastic Surg. 2014;16(2):94-97.

Stewart M, Smith TL, Stewart RD et al Obstruction after nasal septoplasty: results from the Nasal Obstruction Symptom Evaluation (NOSE) study. Otolaryngol Head Neck Surg. 2004;130(4):469-470.

Validated Nasal Obstruction Symptom Evaluation (NOSE) Score¹⁰

Baseline nasal symptoms of participants were recorded using validated NOSE questionnaire (Nasal Obstruction Symptom Evaluation) having Cronbach alpha score of 0.89.¹⁰ Questionnaire was administered by trained house officers. The age and gender of patients were also documented as part of their demographic information. Baseline objective assessment was done by trained ENT residents by anterior rhinoscopy and nasal endoscopy. Written informed consent was secured followed by detailed counselling about both the procedures and the study. A sealed envelope technique was employed to allocate participants into one of the two groups: Group-A, which underwent endoscopic septoplasty, and Group-B, which underwent conventional septoplasty (Figure-1). The date of surgery was provided following the pre-anaesthesia assessment.

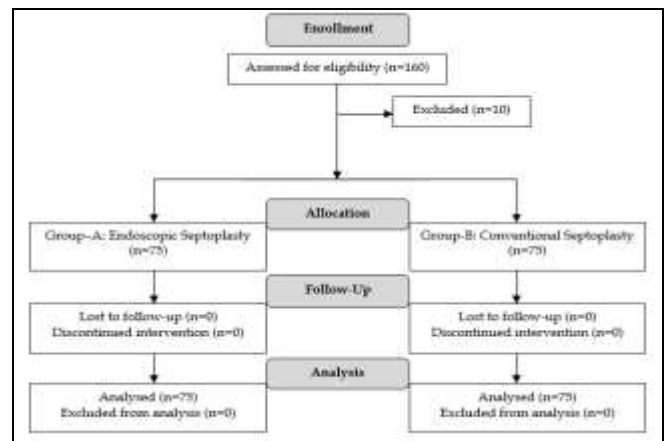


Figure-1: phases of the study

After the surgery, patients were scheduled for a follow-up appointment 1-month post procedure. Both

subjective evaluations, via the NOSE questionnaire, and objective assessment, through anterior rhinoscopy and nasal endoscopy, were conducted on the same lines as the baseline assessment and documented. Blinding was achieved at 2 levels: at the level of the outcome assessors who were not informed about the type of procedure performed and at the level of data analysers who were provided with coded data not revealing the type of surgery done.

Data was analyzed by using Statistical Package for Social Sciences (SPSS) 22.00. Normality of data was checked by Shapiro-Wilk test that showed that all the variables were normally distributed. Quantitative data was represented using mean $\pm$ standard deviation. Qualitative data was shown as percentages and frequencies. Chi square test (for qualitative variables), and paired sample t-test (for pre- and post-operative NOSE score) were applied and p -value of ≤ 0.05 was considered as statistically significant.

RESULTS

Out of total of 150 patients included in this study, 119(79.3%) were male and 31(20.7%) were female. Mean age was 32.41 ± 8.23 years ranging from 18 to 51 years. The demographic characteristics of both groups are shown in Table-I. Mean age of participants in Group-A was 30.48 ± 7.29 years, while in Group-B it was 34.33 ± 8.71 years.

Table-I: Demographic characteristics of groups (n=150)

Characteristic(s)	Study groups	
	Group-A (Endoscopic septoplasty) Exposed (n=75)	Group-B (Conventional septoplasty) Unexposed (n=75)
Gender		
Male	62(82.7%)	57(76.0%)
Female	13(17.3%)	18(24.0%)
Age(years)		
Mean $\pm$ SD	30.48 ± 7.29	34.33 ± 8.71

Baseline objective endoscopic assessment showed that most common pathology was DNS with anterior and posterior spur (45.3% patients in Group-A and 52% patients in Group-B). In 49.4% patients, DNS with a deviated maxillary crest was encountered. Caudal septal deviation was less frequently encountered i.e. only in 16% patients in both groups. The difference in pre-operative endoscopic findings between the two groups was not statistically significant ($p=0.866$). This data is shown in Figure-2.

For Group-A, the mean pre-operative score for nasal congestion or stuffiness decreased significantly from 3.35 ± 0.07 to 0.77 ± 0.06 ($p < 0.001$) while it also decreased in Group-B from 3.43 ± 0.07 to 1.76 ± 0.08 ($p < 0.001$) who

underwent conventional septoplasty, but improvement was more in patients who underwent endoscopic septoplasty. Group-A patients experienced greater relief from nasal obstruction and improved nasal breathing compared to other NOSE score parameters. In Group-A, the mean total nose score decreased from 86.87 ± 4.70 preoperatively to 17.53 ± 6.39 postoperatively ($p < 0.001$), reflecting a substantial improvement. In Group-B, the score decreased from 88.13 ± 4.98 to 36.60 ± 7.54 ($p < 0.001$), indicating a significant improvement after surgery, though the improvement was less than that observed in patients who had endoscopic septoplasty. All scores were normally distributed as shown in (Table-II).

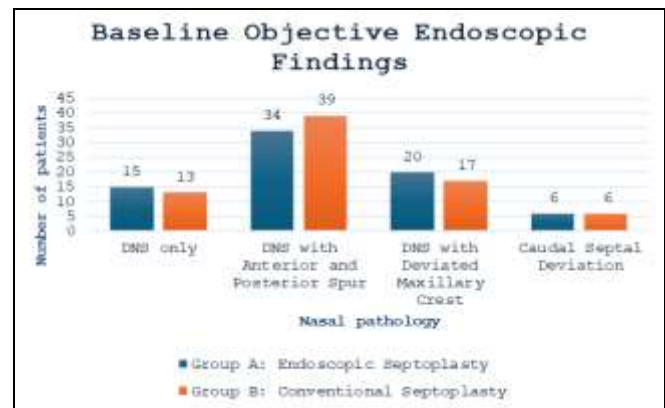


Figure-2: Association of baseline objective endoscopic findings among study groups (n=150)

Table-II: Comparison of Pre-operative and Post-operative Nose Score among groups (n=150)

Variable(s)	Group-A Endoscopic Septoplasty (n=75)			Group-B Conventional Septoplasty (n=75)		
	Pre-operative	Post-operative	p-value	Pre-operative	Post-operative	p-value
Nasal congestion or stuffiness	3.35 ± 0.07	0.77 ± 0.06	< 0.001	3.43 ± 0.07	1.76 ± 0.08	< 0.001
Nasal obstruction or blockage	3.63 ± 0.05	0.57 ± 0.07	< 0.001	3.57 ± 0.06	1.01 ± 0.08	< 0.001
Trouble breathing through nose	3.43 ± 0.61	0.53 ± 0.06	< 0.001	3.75 ± 0.05	1.60 ± 0.07	< 0.001
Trouble sleeping	3.44 ± 0.06	0.76 ± 0.05	< 0.001	3.40 ± 0.05	1.49 ± 0.06	< 0.001
Unable to get enough nose during exercise	3.53 ± 0.05	0.85 ± 0.07	< 0.001	3.59 ± 0.05	1.45 ± 0.08	< 0.001
Total NOSE score	3.35 ± 0.07	0.77 ± 0.06	< 0.001	3.43 ± 0.07	1.76 ± 0.08	< 0.001

A higher percentage of patients in Group-A had no postoperative complications, while residual deviation was more common in Group-B, indicating better surgical outcomes and fewer complications in Group-A shown in Table-III. Patients who had endoscopic septoplasty showed a slightly higher rate of mucosal flap perforation 9(12%) and adhesion formation 6(8.0%) than those who had conventional septoplasty.

Table-III: Comparison of Post operative complications among the study groups (n=150)

Post op complications	Group-A (n=75)	Group-B (n=75)	p-value
No Complication	47(62.7%)	35(46.7%)	0.012
Mucosal Flap Perforation	9(12.0%)	3(4.0%)	
Residual Deviation	12(16.0%)	29(38.7%)	
Adhesion/Synechiae Formation	6(8.0%)	5(6.7%)	
Septal Hematoma	1(1.3%)	3(4.0%)	

DISCUSSION

Our study evaluated two surgical interventions: conventional septoplasty with Killian's nasal speculum and endoscopic septoplasty, a less invasive technique that uses an endoscope for better visualisation. Results indicated that patients who had the endoscopic procedure experienced notable reductions in nasal obstruction, congestion and other symptoms.

Deviated nasal septum is of the most common pathology of osteocartilaginous framework of nose that can affect patient's quality of life. In addition, it can also cause non rhinological symptoms like facial pain and headaches.¹¹ There is a strong relationship between degree of nasal obstruction caused by DNS and rhinosinusitis as reported by Alghamdi *et al.*¹² Nasal septoplasty is the most commonly and routinely used procedure in order to address the obstructive type of deviated nasal septum.¹³

A PRISMA analysis in Indonesia also found that endoscopic septoplasty provided a statistically greater improvement in nasal obstruction due to DNS and was associated with a relatively lower rate of complications but the long-term benefits in relieving nasal symptoms were same for both techniques.¹⁴ A study conducted in Mongolia by Purev *et al.*, also showed that subjective and objective improvements were almost equal in endoscopic and conventional group.¹⁵

In our study, the rate of complications was significantly less among those who underwent endoscopic septoplasty. Higher rates of residual deviation that was previously experienced after conventional septoplasty was addressed by this technique. A systemic review conducted by Kim *et al.*, also showed that complications like epistaxis, synechiae formation, mucosal perforation, residual deviation were lower with endoscopic septoplasty.¹⁶ However in our study, rate of damage to mucosa resulting in tear or perforation was higher in endoscopic group. This could result from a lack of

familiarity with endoscope handling and from poor technique among inexperienced surgeons.

A study conducted in India compared the efficacy of both techniques. Both procedures effectively improved patients' nasal symptoms while endoscopic surgery took relatively less per-operative time and resulted in lesser complication rate.¹⁷

A 2020 study conducted at Jinnah Hospital in Lahore, Pakistan demonstrated favourable outcomes for the endoscopic septoplasty procedure. Patients in endoscopic septoplasty group did not develop post operative nasal adhesions and had lesser hospital stay. Also, only few patients had requirement for anterior nasal pack after endoscopic surgery.¹⁸

LIMITATION OF STUDY

The study was conducted at a single hospital. The patients had to be informed in detail about the procedure being performed prior and hence could not be blinded, which may have introduced some degree of information bias in reporting of symptoms etc. Long term effectiveness and outcomes could not be accessed and determined due to relatively shorter course of our study and limited follow ups of the patients.

CONCLUSION

Endoscopic septoplasty is an effective novel technique for correcting deviated nasal septum with better clinical outcomes and lesser post operative complications. By equipping young doctors with the skills and confidence required to perform endoscopic procedures effectively, the overall quality of patient care can be enhanced.

Conflict of Interest: None.

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Authors' Contribution

Following authors have made substantial contributions to the manuscript as under:

AZ & MR: Data acquisition, data analysis, critical review, approval of the final version to be published.

EM & FS: Study design, data interpretation, drafting the manuscript, critical review, approval of the final version to be published.

FB & UAM: Conception, data acquisition, drafting the manuscript, approval of the final version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

REFERENCES

1. Dawood MR. Endoscopic septoplasty versus conventional septoplasty. J Appl Health Sci Med 2025; 5(7): 1-9. <https://doi.org/10.31579/2690-8816/157>

2. Lee KI, In SM, Kim JY, Hong JY, Han KD, Kim JS, et al. Association of nasal septal deviation with the incidence of anxiety, depression, and migraine: A national population-based study. *PLOS ONE* 2021;16(11):e0259468. <https://doi.org/10.1371/journal.pone.0259468>
3. Ashwinirani SR, Suragimath G, Telrandhe S, Suragimath DG. Deviated Nasal Septum: A Comprehensive Review. *J Datta Meghe Inst Med Sci Univ* 2024;19(3):406. https://doi.org/10.4103/jdmimsu.jdmimsu.185_24
4. Taghiloo H, Halimi Z. The frequencies of different types of nasal septum deviation and their effect on increasing the thickness of maxillary sinus mucosa. *J Dent Res Dent Clin Dent Prospects* 2019;13(3):208–214. <https://doi.org/10.15171/joddd.2019.032>
5. Tiwari N, Budhathoki D, Shrestha I, Kc G. Prevalence of Deviated Nasal Septum among Nepalese Preclinical Students at Kathmandu Medical College Teaching Hospital, Nepal. *J Univers Coll Med Sci* 2018;6(2):60–63. <https://doi.org/10.3126/jucms.v6i2.22498>
6. Yadav P, Agarwal SP, Verma V, Rani P. A study of comparison between the efficacy of endoscopic septoplasty and traditional septoplasty. *Int Surg J* 2016;1134–1140. <https://doi.org/10.18203/2349-2902.isj20162190>
7. Kulkarni SV, Kulkarni VP, Burse K, Bharath M, Bharadwaj C, Sancheti V. Endoscopic Septoplasty: A Retrospective Analysis of 415 Cases. *Indian J Otolaryngol Head Neck Surg* 2015;67(3):248–254. <https://doi.org/10.1007/s12070-015-0880-1>
8. Raza M, Rafique A, Khattak SF, Ali M, Aleem A, Zubair M. A Study On The Endoscopic Sinus Surgery Over The Period Of 9 Years. *Pak Armed Forces Med J* 2021;71(Suppl-1):S82-86. <https://doi.org/10.51253/pafmj.v71iSuppl-1.4737>
9. Javaid W, Andleeb H, Rashid A, Akbar RA, Bukhari ST, Khan T, et al. Success of Endoscopic Surgery in Nasal Polyposis. *Pak J Med Health Sci* 2022;16(05):168. <https://doi.org/10.53350/pjmhs22165168>
10. Jahandideh H, Biglari Abhari M, Arab M, Roomiani M, Mohebbi A, Fazeli B. Reliability and Validity of the Persian Nose Obstruction Symptom Evaluation (NOSE) Scale. *World J Plast Surg* 2024;13(2):25–31. <https://doi.org/10.61186/wjps.13.2.25>
11. Lee KI, In SM, Kim JY, Hong JY, Han KD, Kim JS, et al. Association of nasal septal deviation with the incidence of anxiety, depression, and migraine: A national population-based study. *PLOS ONE* 2021;16(11):e0259468. <https://doi.org/10.1371/journal.pone.0259468>
12. Alghamdi FS, Albogami D, Alsurrayhi AS, Alshibely AY, Alkaabi TH, Alqurashi LM, et al. Nasal Septal Deviation: A Comprehensive Narrative Review. *Cureus* 14(11):e31317. <https://doi.org/10.7759/cureus.31317>
13. Most SP, Rudy SF. Septoplasty: Basic and Advanced Techniques. *Facial Plast Surg Clin N Am* 2017;25(2):161–169. <https://doi.org/10.1016/j.fsc.2016.12.002>
14. Trimartani K, Damara FA. The comparison of endoscopic septoplasty and conventional septoplasty: A PRISMA analysis. *Eur Ann Otorhinolaryngol Head Neck Dis* 2023;140(5):211–219. <https://doi.org/10.1016/j.anorl.2022.12.010>
15. Purev M, Hoon HY, Gombogaram T, Nansalmaa E, Lkhagvasuren T, Logshir N, et al. Comparative Study of Endoscopic and Conventional Septoturboplasty in Patients with Nasal Airway Obstruction. *Cent Asian J Med Sci* 2022;8(3):150–159. <https://doi.org/10.24079/cajms.2022.09.003>
16. Kim DH, Kim SW, Hwang SH. Efficacy and safety of endoscopic septoplasty for treating nasal septal deviations compared with conventional septoplasty: A systematic review and meta-analysis. *Clin Otolaryngol* 2023;48(2):108–121. <https://doi.org/10.1111/coa.14021>
17. Dhawan R, Kumar S. Comparing The Efficacy and Outcomes of Endoscopic Versus Conventional Technique In Septoturboplasty. *Int J Med Public Health* 2024;14(4):312–315. <https://doi.org/10.70034/ijmedph.2024.4.60>
18. Haider H, Aziz B, Wahab U, Rehman A, Aleem Z, Umar M, et al. Analogical Evaluation of Endoscopic Septoplasty in Posterior Septal Deviation. *Pak J Med Health Sci* 2022;16:106–108. <https://doi.org/10.53350/pjmhs20221611106>