

## Competitive study of conventional septoplasty versus endoscopic septoplasty

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**Objective:** Traditional surgeries of the nasal septum improve the nasal airway but recent developments of endoscopic techniques have brought focus over several aspects of possible advantages over traditional techniques. These are due to better visualization and illumination, better accessibility and evaluation of exact pathology, the lesser need for unnecessary manipulation, resection and overexposure of the septal framework, and improving the scope for revision surgery if required later. **Materials and methods:** A hundred cases of the deviated nasal septum (DNS) refractory to conservative medical treatment were divided into two groups and underwent corrective surgery for nasal septal deformity using both endoscopic and conventional techniques. These patients were divided into two groups who underwent septal surgery with two different techniques and the results were compared. All patients were followed up in the outpatient and were assessed for subjective improvement. Time taken for the study was four months. **Results:** A hundred patients with deviated nasal septum were recruited into a study where the patients were divided into two groups, 50 cases in each group. Group I underwent conventional septoplasty while group II underwent an endoscopic septoplasty. The most prevalent complaint in the patients was nasal obstruction (88%), headache (60%), nasal discharge (54%) and sneezing (44%). The postoperative follow-up of the frequency of symptoms after surgery showed relief of nasal obstruction in 70% of cases of group I and in 92% of group II. However, the headache was relieved in 73% of cases of conventional septoplasty and 90% of cases of endoscopic septoplasty. **Conclusion:** The clinical results of endoscopic septoplasty were found better as compared to conventional techniques with lesser complications and lesser periods of hospitalization. The use of endoscopic techniques offers lesser complications and lesser periods of hospitalization.

**Keywords:** Deviated nasal septum, Endoscopic, Septoplasty

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## Introduction

The advent of endoscopes has revolutionized rhinology. Endoscopic Septoplasty is a fast developing concept and gaining popularity because of its potentially insignificant subjective and objective morbidity. At birth, the nasal septum is usually straight as age progresses, there is a tendency for the septum to bend on one side or the other. Septoplasty is a commonly performed surgical procedure aimed at relieving nasal airway obstruction. Nasal endoscopes facilitate accurate identification of the pathology.

Further limited elevation of the flap, minimal resection, and realignment is possible. Endoscopic septoplasty provides important advantages which include adequate visualization, room for instrumentation during functional endoscopic sinus surgery, access to paranasal sinuses, and other surgeries like trans-septal approach to the sphenoid sinus, visualization, and stoppage of postnasal bleeds.

But before the introduction of functional endoscopic sinus surgery, the majority of septoplasties were done for nasal airway obstruction. Furthermore in complex deformities, better correction is possible with the help of an endoscope since we can clearly see the posterior deviations. Patients undergoing traditional septoplasty require a longer stay due to bleeding or lipedema than those undergoing endoscopic septoplasty.

The endoscope also aided limited resection and thus more conservation by guiding the precise shaving of septal cartilage. Endoscopic septoplasty is a viable alternative to traditional headlight septoplasty with acceptable outcomes and complications. In this prospective randomized study carried out at the tertiary referral center, patients presenting with symptoms and signs of the deviated nasal septum (DNS) were selected. The aim was to identify nasal septal pathology in relation to the lateral nasal wall in a precise way, correct the pathology and to correlate the efficacy of endoscopic septoplasty with the traditional approach.

## Materials and Methods

In this prospective randomized study carried out at the Department of ENT L.N. Medical College Bhopal, a tertiary referral center, patients presenting with symptoms and signs of the deviated nasal septum (DNS) were selected.

The aim was to identify nasal septal pathology in relation to the lateral nasal wall in a precise way, correct the pathology, and to correlate the efficacy of endoscopic septoplasty with a traditional approach.

In the present study of 100 patients with nasal septal deviations, major complaints were found to be of nasal obstruction, headache, nasal discharge, and nasal bleeding. These patients were divided into two groups who underwent septal surgery with two different techniques and the results were compared. All patients were followed up in the outpatient and were assessed for subjective improvement, relief of symptoms, and complications.

After getting the required information, the collected data were coded, tabulated, and analyzed. The various statistical techniques i.e. the mean, standard deviation and test of significance (t-test and chi-square test) were used for drawing valid conclusions.

**Exclusion criteria:** Patients of gross nasal septal deviations were not included.

**Ethical approval:** Taken

**Evaluation of the response to intervention:** Relief of symptoms

**Statistical Analysis:** After getting the required information, the collected data were coded, tabulated, and analyzed. The various statistical techniques i.e. the mean, standard deviation, and test of significance (t-test and chi-square test) were used for drawing valid conclusions. Statistical analysis was done using the student t-test. SPSS 13.0 software was used to calculate the p-value.  $P < 0.05$  was taken as statistically significant. A descriptive analysis was done on all variables to obtain a frequency distribution. The mean + SD and ranges were calculated for quantitative variables. Continuous variables were compared by the Student t-test. Proportions were analyzed with the chi-square test.

## Results

**Table-1: Symptoms of the deviated nasal septum.**

Clinical presentation	Group A traditional septoplasty		Group B Endoscopic Septoplasty	
	NO	Percentage	NO	Percentage
Nasal obstruction	43	86%	45	90%
Headache	30	60%	30	60%

Nasal discharge	28	56%	26	52%
Nasal bleeding	22	44%	22	44%

**Table-2: Postoperativesymptom relief.**

Complication Relieved	Group A Traditional septoplasty		Group B Endoscopic Septoplasty	
	No	Percentage	No	Percentage
Nasal obstruction	29	70.69%	42	93.33%
Headache	18	73.33%	28	93.33%
Nasal discharge	26	92.85%	25	96.15%
Nasal bleeding	21	95.45%	22	100%

**Table-3: Complications.**

Complications	Group A Traditional septoplasty		Group B Endoscopic Septoplasty	
	No	Percentage	No	Percentage
Haemorrhage	10	20%	2	4%
Mucosal tear	8	16%	2	4%
Hematoma	5	10%	1	2%
Others [synechia, residual deviation, septal perforation]	12	24%	3	6%

A hundred patients with deviated nasal septum were recruited into a study where the patients were divided into two groups, 50 cases in each group. Group I underwent conventional septoplasty while group II underwent an endoscopic septoplasty. The most prevalent complaint in the patients was nasal obstruction (88%), headache (60%), nasal discharge (54%) and sneezing (44%). The most prevalent pathology is hypertrophy of inferior turbinate (81%). The postoperative follow-up of the frequency of symptoms after surgery showed relive of nasal obstruction in 70% of cases of group I and in 92% of group II. However, the headache was relieved in 73% of cases of conventional septoplasty and 90% of cases of endoscopic septoplasty. There was significantly less persistence of posterior deviation, spur, and synchia in group II patients than group I. No major complications in the immediate postoperative period were observed.

## Discussion

The present study showed better results and lesser complications in endoscopic septoplasty as compared to traditional septoplasty group as endoscope gives better illumination and improved access to high DNS and allowed limited incision, limited flap elevation and achieves correction with least resection. This technique causes lesser trauma to the septum, thus reducing the postoperative complications.

Nasal obstruction due to deviated nasal septum is a common problem encountered by otolaryngologists. A variety of surgical procedures have been tried in the treatment of the same. This study was conducted to evaluate the outcomes and complications of endoscopic and conventional septoplasty. In a prospective, randomized study, Sathyaki DC, Geetha C, et al did a comparative study of fifty patients with symptomatic deviated nasal septum, 25 of them underwent conventional septoplasty and the rest underwent an endoscopic septoplasty. The difference in the functional outcome of both surgeries was insignificant. There was a significant difference with respect to complications. Endoscopic septoplasty had a better outcome with respect to complications. It is easier to correct posterior deviations and isolated spurs with endoscopic septoplasty. Complications are lesser with endoscopic septoplasty[1].

Gulati SP did a comparative evaluation of endoscopic with conventional septoplasty.

They conducted a study to assess the merits and demerits of endoscopic septoplasty. Fifty patients having symptomatic DNS were randomly divided into two groups of 25 patients each. One group underwent endoscopic septoplasty and other groups underwent a conventional septoplasty. The groups were compared regarding the complaints with the pack in the postoperative period, relief of symptoms after surgery, and complications. The symptoms complained by the patients with the pack in the postoperative period and complications after surgery were significantly less in the endoscopic septoplasty group[2].

Comparative evaluation of conventional versus endoscopic septoplasty was done by Bothra R, Mathur NN, et al. They compared the procedure, results, and complications of both procedures in cases of limited septal deviation and septal spurs. They did a prospective study; interventional type; randomized block design; comparative clinical trial. Post-operative complications such as hemorrhage, infraorbital edema, nasal pain, and in-patient hospital were slightly more in the conventional septoplasty group. No statistically significant difference was found between the conventional and endoscopic septoplasty groups, as assessed by subjective and objective evaluation [3].

Jain L, Jain M et al did a comparative study on conventional septoplasty versus endoscopic septoplasty.

The study was carried out to compare the postoperative morbidity among patients of conventional and endoscopic septoplasty and to assess the efficacy and use of endoscopic septoplasty with other endoscopic surgeries. The present prospective study was conducted among 100 patients of the deviated nasal septum, Deviated nasal septum was commonly associated with inferior turbinate hypertrophy (75%) and concha bullosa (26%). Postoperatively, significant relief from the symptoms of nasal obstruction (96%), nasal discharge (88%), headache (100%), and postnasal drip (67%) was observed in endoscopic septoplasty. Posterior deviations were best corrected by an endoscopic septoplasty. The complication rate was higher in conventional septoplasty. The endoscopic approach to septoplasty facilitates accurate identification of the pathology. It facilitates realignment by limited and precise resection of the pathological areas [4].

Champagne C et al did a review of literature on endoscopic vs. conventional septoplasty. The aim of this review of the literature was to compare conventional and endoscopic septoplasty in terms of operating time, functional efficacy, and perioperative morbidity. The primary endpoint was operating time, and the secondary endpoints were intra- and postoperative complications, postoperative pain, hospital stay, and functional result. Twenty-nine articles published between 1991 and 2012 compared conventional and endoscopic septoplasty, five of which were prospective randomized trials. Operating time was shorter with endoscopic surgery ( $P < 0.001$ ), with less mucosal damage ( $P < 0.01$ ); there was less synechia ( $P < 0.01$ ) and residual deformity ( $P < 0.05$ ); and postoperative pain was milder. Endoscopic septoplasty thus shortened surgery time and reduced perioperative complications, but the functional result was the same as with conventional septoplasty [5].

The present study was conducted by Salama MA for comparison between septoplasty done by the conventional technique and the endoscopic septoplasty in terms of relief of the symptoms of patients including nasal obstruction, efficacy in the relief of headache, hyposmia and post-nasal drip and synechia formation following either surgery. Eighty patients with deviated nasal septum were recruited into a study where the patients were divided into two groups, 40 cases in each group. Group I underwent conventional septoplasty while group II underwent an endoscopic septoplasty.

The most prevalent complaint in the patients was nasal obstruction (90%), headache (40%), nasal discharge (20%) and sneezing (18%). The most prevalent pathology is hypertrophy of inferior turbinate (81%). The postoperative follow-up of the frequency of symptoms after surgery showed relief of nasal obstruction in 30% of cases of group I and in 90% of group II. However, the headache was relieved in 40% of cases of conventional septoplasty and 60% of cases of endoscopic septoplasty. There was significantly less persistence of posterior deviation, spur, and synchia in group II patients than group I. No major complications in the immediate postoperative period were observed. Endoscopic septoplasty was found effective in relieving almost all symptoms, especially headache, nasal obstruction, and post-nasal drip. Endoscopic septoplasty is associated with a significant reduction in patient morbidity [6].

The study of Nayak et al showed that only about 10% of patients of anterior deflection had a persistent septal deformity and posterior deviations/spurs were effectively corrected in most of the cases. This study also showed that endoscope-aided septoplasty was found to be more effective in treating symptoms, such as nasal obstruction and headache. Study of Gupta, Motwani shows that complication rates were significantly more in the traditional group. In the present study, more complications in group A are in agreement with the mentioned study but it did not attain any statistical significance ( $p > 0.05$ ). The study of Gupta, Motwani, and Nayak et al both studies showed that traditional group patients required longer stay due to bleeding or lipedema which is in agreement with the present study and was found to be statistically significant. In the endoscopic group of patients, more improvement in the posterior deviations and spurs was seen in comparison to the traditional group of patients [7,8].

A comparative study by Kaushik S et al was done. Traditional surgeries of the nasal septum improve the nasal airway but.

**Materials and methods:** Sixty cases of the deviated nasal septum (DNS) refractory to conservative medical treatment were divided into two groups of 30 patients and underwent corrective surgery for nasal septal deformity using both endoscopic and conventional techniques. The postoperative follow-up was done at 1, 2, 4 weeks, and 3 months.

The clinical results of endoscopic septoplasty were found better as compared to conventional techniques with lesser complications and lesser periods of hospitalization. However, the statistical analysis did not show a difference between the two groups. Thus the use of endoscopic techniques offers lesser complications and lesser periods of hospitalization [9]. Kulkarni SV et al did a retrospective analysis of 415 cases of endoscopic septoplasty.

Nasal obstruction is the most common complaint in nasal and sinus disease. This was a retrospective study, conducted in a tertiary care medical college hospital over a period of 5 years. The study group comprised of 415 patients who were subjected to endoscopic septoplasty. The maximum numbers of patients were in the age group 20–39. In the present study out of 415 cases, 256 (67.5%) cases were male and 115 (32.5%) cases were female. There is a male preponderance in the overall distribution of cases. In the present study of 415 patients, the most common operative procedure done was septoplasty in 260 (62.6%), FESS with septoplasty in 38 (9.2%) cases, septorhinoplasty in 41 (9.9%) cases and DCR with septoplasty in 78 (18.3%) cases. Endoscopic septoplasty facilitates good access to accomplish endoscopic DCR, FESS, and accurate and adequate septal graft harvest in severely deviated noses for septorhinoplasty. Complications like dental pain, paraesthesia, septal perforation, saddle nose deformity, and persistent deviation are rarity [10].

Beg MA, Qazi SM et al on the other hand did a prospective analysis of endoscopic septoplasty. This study was aimed to analyze patients undergoing Septoplasty defining its indication, procedure, benefits, and follows up. Nasal obstruction was the most common presenting symptom recorded in 39 (97.2%) patients. Endoscopic Septoplasty alone or with Turbinoplasty was done in 22 (55%) patients. In rest 18 patients, endoscopic Septoplasty was done with FESS in 9 (22.50%), with DCR in 5 (12.50%), with decompression/marsupialization of Sinonasal Mucocele in 3 (7.50%) and with CSF leak repair in 1 (2.50%) patients. On subjective analysis of nasal obstruction symptom evaluation (NOSE) score of patients at baseline, at postoperative 3 and 6 months follow up mean  $\pm$  S.D was  $61.88 \pm 11.53$ ,  $9.50 \pm 5.75$ , and  $8.75 \pm 3.86$ . They also concluded that endoscopic septoplasty is an effective technique that can be performed safely alone or in combination with endoscopic sinus surgery with

Minimal additional morbidity [11].

### Limitation of the present Study

01. Small sample size
02. Chances of bias
03. Single-center trial

## Conclusion

The endoscopic approach to septoplasty facilitates accurate identification of the pathology. It thus shortened surgery time and reduced perioperative complications, but the functional result was the same as with conventional septoplasty. Posterior deviations were best corrected by an endoscopic septoplasty. Postoperatively, significant relief from the symptoms of nasal obstruction, nasal discharge, headache, and the post-nasal drip was observed in endoscopic septoplasty. Posterior deviations were best corrected by an endoscopic septoplasty. The complication rate was higher in conventional septoplasty.

## What does the study add to the existing knowledge?

It facilitates realignment by limited and precise resection of the pathological areas. Recent developments of endoscopic techniques have brought focus over several aspects of possible advantages over traditional techniques. These are due to better visualization and illumination, better accessibility and evaluation of exact pathology, the lesser need of unnecessary manipulation, resection and overexposure of the septal framework and improving the scope for revision surgery if required later.

## Author's contribution

**Dr. Sujata Maini:** Concept and Data collection.  
**Dr. Mritunjay Shriharishi:** Data Analysis and Discussion.  
**Dr. Anusha Shukla:** Manuscript preparation

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