

RESEARCH ARTICLE

Comparison between Endoscopic Septoplasty and Conventional Septoplasty: Our Experience

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ABSTRACT

Introduction: 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.

Objective: This study was conducted to evaluate the outcomes and complications of endoscopic and conventional septoplasty.

Materials and methods: This is a prospective, randomized study done in Government Medical College, Latur in which 52 patients with symptomatic deviated nasal septum were included in the study. Eighteen of them underwent conventional septoplasty and the rest had endoscopic septoplasty.

Results: The difference in the functional outcome of both the surgeries was insignificant. Endoscopic septoplasty had better outcome with respect to complications and proved as an easier method to correct posterior deviations and isolated spurs.

Conclusion: Endoscopic septoplasty allows accurate, conservative repair of obstructive nasal septum deviations, with fewer complications and better functional results compared to conventional septoplasty.

Keywords: Conventional septoplasty, Deviated nasal septum, Endoscopic septoplasty, Septoplasty.

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INTRODUCTION

Nasal obstruction is the most common complaint in rhinologic practice and a deviated nasal septum is the most common cause of nasal obstruction. The evaluation of septal deviation causing nasal obstruction depend heavily on physical examination and imaging.¹ Apart

from nasal obstruction, a significantly deviated nasal septum has been implicated in epistaxis, sinusitis, obstructive sleep apnea and headaches attributable to contact points with structures of the lateral nasal wall.

An ideal surgical correction of the nasal septum should satisfy the following criteria: (a) should relieve the nasal obstruction; (b) should be conservative; (c) should not produce iatrogenic deformity; (d) should not compromise the osteomeatal complex and (e) must have the scope for a revision surgery if required later. Initially submucous resection of septum was done which was a radical surgery and was associated with lot of complications. The traditional surgeries like conventional septoplasty improve the nasal airway but do not fulfill the above mentioned criteria in most instances. The reasons being, poor visualization, relative inaccessibility, poor illumination, difficulty in evaluation of the exact pathology, need for nasal packing, unnecessary manipulation, resection and overexposure of the septal framework reducing the scope for a revision surgery, if required later. The nasal endoscope allows precise preoperative identification of the septal pathology and associated lateral nasal wall abnormalities and helps in better planning of endoscope-aided septal surgery.² A directed endoscopic septoplasty approach is useful for treatment of isolated septal spurs in the absence of larger septal deviations. A directed approach results in limited dissection and faster postoperative healing. Septoplasty was first described by Cottle in 1947 as a treatment to correct nasal airway obstruction.³ Lanza et al (1991) described endoscopic techniques to correct septal deformities. Since that time surgeons have performed concomitant endoscopic septoplasties under varying situations not only to treat symptomatic nasal obstruction but also for improving surgical access to the middle meatus as an adjunct to FESS.⁴ Early reports of endoscopic septoplasty describe several advantages associated with the technique, e.g. it makes easier for surgeons to see the tissue planes and offers a better way to treat isolated septal spurs. Additionally, the endoscopic approach makes it possible for many people to simultaneously observe the procedure on a monitor, making the approach useful in a teaching hospital. Nasal endoscopy is a valuable tool for initial assessment of the relationship of the septum to the middle turbinates,

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which allows the surgeon to judge whether or not the position of the septum will limit access during functional endoscopic sinus surgery (FESS). Even in the absence of subjective nasal obstruction or gross septal deviation, septoplasty may be necessary to maximize access to the middle meatus during FESS, such as in the setting of a narrow nasal cavity with a prominent septal body. Nasal endoscopy is an excellent tool for outpatient surveillance following septoplasty during the initial postoperative healing period and beyond.⁵ Hence, the present study was taken up to compare the two techniques, i.e. conventional and endoscopic septoplasty.

Preoperative symptom analysis, postoperative analysis and complications are presented in this study.

AIMS AND OBJECTIVES

- To assess endoscopic septoplasty as the better surgical procedure in correcting septal deviation
- To compare the postoperative morbidity among conventional and endoscopic septoplasty.

MATERIALS AND METHODS

The present study was carried out in the Department of Otorhinolaryngology, Government Medical College, Latur between 15th July 2014 and 14th July 2015. All patients attending the Out Patient Department of Otorhinolaryngology, Government Medical College, Latur with symptomatic deviated nasal septum were included in the study. 'Patients with age less than 10 years, allergic rhinitis, vasomotor rhinitis and with acute infection were excluded'.

Data were collected by selecting the patients with symptomatic deviated nasal septum willing for surgery. They were divided into two groups; one group undergoing conventional septoplasty and the other endoscopic septoplasty by random selection. Fifty-two patients were included in the study. Eighteen of them underwent the conventional septoplasty and rest of 34 patients underwent endoscopic septoplasty.

METHODS OF COLLECTION OF DATA

Cases selected for the study were subjected to detailed history and clinical examination. They were evaluated subjectively and objectively before the surgery. Deviation were classified as right or left or S shaped depending on the side of deviation. Depending on the involvement of cartilaginous or bony parts of septum they were classified into anterior or posterior or both. Posterior rhinoscopy was done in all patients to rule out other pathologies. Diagnostic nasal endoscopy was performed. Computed tomography scan of nose and paranasal sinuses were

done in selected cases. A correlation was established between clinical features and endoscopic findings. After complete preoperative evaluation patients were subjected to surgical intervention.

RESULTS

The results of 18 cases of conventional septoplasty and 34 cases of endoscopic septoplasty (Graph 1) were assessed under the following headings:

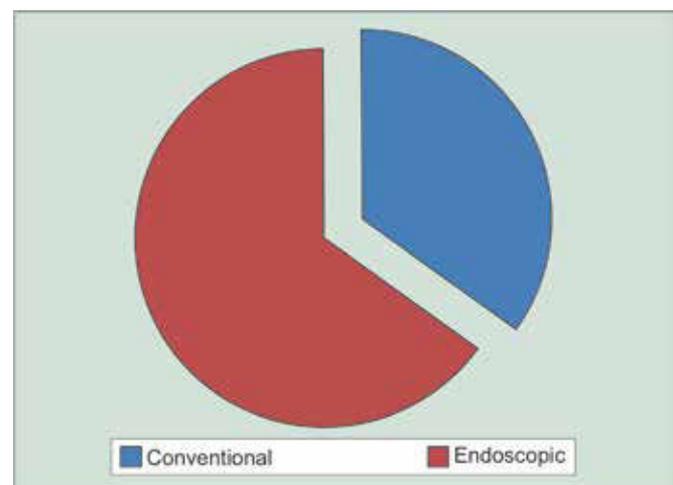
- Patients satisfaction
- Surgical results
- Anatomical results
- Functional results.

In our study of 52 cases, the age of the patients was varying between 10 and 60 years and in the group who underwent conventional septoplasty, the average age was 29.30 years (10–50 years) and in the endoscopic septoplasty group, the average age was 26.58 years (18–60 years) while the overall average was 27.75 years.

In the group that underwent conventional septoplasty, youngest patient was 15 years old and the oldest was 42 years old. In that six patients were in the age group of 11 to 20 years, six in the age group of 21 to 30 years, five in the age group of 31 to 40 years and one patient was in the age group of 41 to 50 years. Among the patients who underwent endoscopic septoplasty, the youngest patient was 12 years old and the oldest was 55 years old. In that 10 patients were in the age group of 11 to 20 years, 14 in the age group of 21 to 30 years, seven in the age group of 31 to 40 years and three patients in the age group of 51 to 60 years (Table 1).

Sex Distribution

In this series, the male to female ratio was 3:1 with 39 males (75%) and 13 females (25%). There were 11 male patients and seven female patients in the conventional



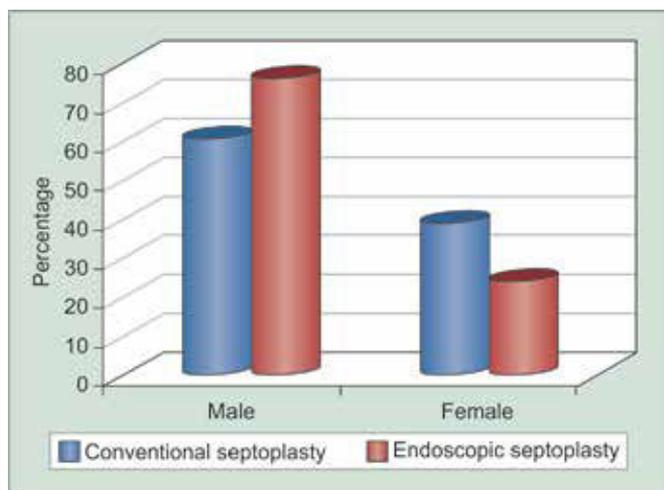
Graph 1: Distribution of type of surgery performed

Table 1: Age distribution of patients undergoing conventional and endoscopic septoplasty

Age group	Conventional septoplasty	Endoscopic septoplasty
11–20 years	6	10
21–30 years	6	14
31–40 years	5	7
41–50 years	1	0
51–60 years	0	3

Table 2: Distribution of symptoms of patients posted for endoscopic and conventional septoplasty

Symptoms	Conventional septoplasty	Endoscopic septoplasty
Nasal discharge	13	16
Headache	18	4
Sneezing	5	8
Epistaxis	1	2
Hyposmia	0	1



Graph 2: Sex-wise distribution of patients with conventional and endoscopic septoplasty

septoplasty group with the ratio of 1.57:1. In the endoscopic septoplasty group, 26 were male patients and eight were female patients with the ratio of 3.25:1 (Graph 2).

Symptomatology

‘In our study, all 52 patients had presented with unilateral nasal obstruction’.

The next common symptom was nasal discharge which was present in 29 patients, (13 cases in conventional septoplasty group and 16 cases in endoscopic septoplasty group). The next symptom was headache which was present in 22 patients, (18 cases in conventional septoplasty group and four cases in endoscopic septoplasty group). Sneezing was present in 13 patients, (five cases in conventional septoplasty group and eight cases in endoscopic septoplasty group). Least common symptoms were hyposmia and epistaxis. Hyposmia was present in one patient of endoscopic septoplasty group and epistaxis was present in one patient of conventional septoplasty group and two of endoscopic septoplasty group (Table 2).

Anterior Rhinoscopy and Diagnostic Endoscopic Findings

All the patients were examined with thudicum’s nasal speculum and with 0 degree nasal endoscope. Deviated nasal septum was the most common finding and was

Table 3: Distribution of anterior rhinoscopic findings

Anterior rhinoscopic findings	Conventional septoplasty	Endoscopic septoplasty
Right-sided deviated nasal septum	9	17
Left-sided deviated nasal septum	6	13
Bony spur	3	4
Hypertrophied inferior turbinate	8	17
Polypoidal middle turbinate	1	1
Concha bullosa	0	2
Discharge in middle meatus	3	2

present in all the 52 patients. Right-sided septal deviation was present in nine cases of conventional septoplasty group and 17 cases of endoscopic septoplasty group. Left-sided deviation was present in six cases of conventional septoplasty group and 13 cases of endoscopic septoplasty groups. Spur was present in three cases of conventional septoplasty group and four cases of endoscopic septoplasty group. Hypertrophied inferior turbinate was found in eight cases of conventional septoplasty group and 17 cases of endoscopic septoplasty group. Discharge in the middle meatus was found in three cases of conventional septoplasty group and two case of endoscopic septoplasty group. Polypoidal middle turbinate was seen in one case of endoscopic septoplasty group and one case of conventional septoplasty group and concha bullosa was found in two case of endoscopic septoplasty group (Table 3).

Objective Assessment of Nasal Airflow

The patients were divided into four groups based on nasal airflow as described by Gertner.

Group 1: Severe nasal obstruction; group 2: moderate nasal obstruction; group 3: mild nasal obstruction; group 4: very mild nasal obstruction.

In conventional septoplasty group, there were three patients belonging to group 1, 11 belonging to group 2, three belonging to group 3 and one to group 4.

In endoscopic septoplasty group there were five patients belonging to group 1, 23 belonging to group 2, four belonging to group 3 and two patients belonging to group 4.

Type of Surgical Intervention

Of the total 52 cases in our study, 18 patients underwent conventional septoplasty and 34 patients underwent endoscopic septoplasty. In endoscopic septoplasty group, along with septoplasty functional endoscopic sinus surgery was carried out in six patients, and Dacryocystorhinostomy in 13 patients (Graph 3).

Postoperative Symptomatology

Postoperatively the patients were reviewed on 3rd, 7th, 30th day, and then at 3rd and 6th month. During each visit, patients were asked about benefits from their symptoms. Out of 52 patients with nasal obstruction, 49 of the 52 patients were relieved of the symptom of which 16 of the 18 patients belonged to conventional and 33 of the 34 patients belonged to endoscopic septoplasty group. Nasal discharge did not persist in patients belonging to either of the groups. Headache persisted in three of the 18 patients in conventional septoplasty group. None of the patients in the endoscopic septoplasty group complained of headache. Hyposmia was relieved in patients belonging to endoscopic septoplasty group. Epistaxis was relieved in patients belonging to conventional septoplasty group and endoscopic septoplasty group (Table 4).

Postoperative Findings

All the patients were examined during their postoperative visit by thudicum nasal speculum and 0° endoscope.

There were no septal deformities like persistent deviation or spur in both the groups. Persistence of hypertrophy of turbinates were present two of eight patients in conventional septoplasty group and one of the 17 patients in endoscopic septoplasty group. Discharge was not seen in patients belonging to either of the group.

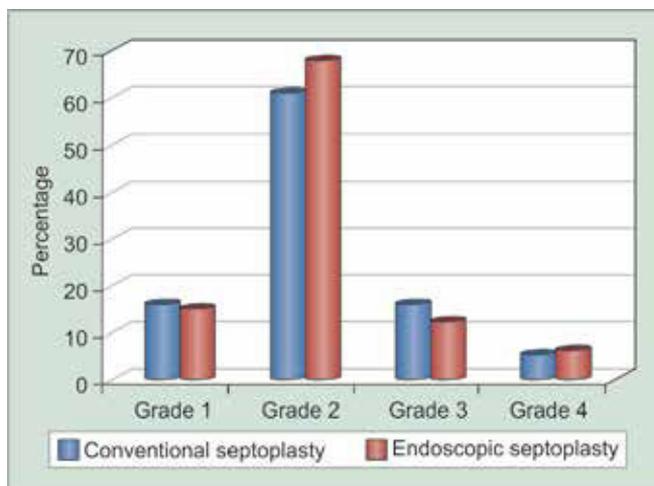
Postoperative Objective Assessment

Postoperative objective assessment of nasal patency was done at first follow-up on 10th day and later at 1st and 3rd month. The assessment done during the first follow-up showed the following.

In the conventional septoplasty group seven patients had airflow of 2 to 3 cm, eight patients had 4 to 5 cm and three patients had 6 to 9 cm. In endoscopic septoplasty group two patient had airflow of 2 to 3 cm, 17 had 4 to 5 cm and 15 patients had 6 to 9 cm. The patency was same on 10th day, 1st and 3rd month follow-ups (Graph 4).

Postoperative Stay of the Patients

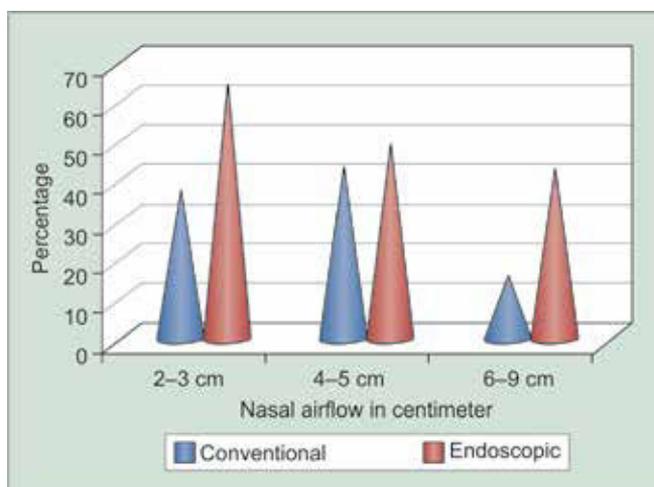
Patients with conventional septoplasty required longer stay (16.66%) as compared to patients with endoscopic septoplasty (2.9%).



Graph 3: Distribution of patients as per objective assessment of nasal airflow in conventional and endoscopic septoplasty

Table 4: Postoperative improvement in symptomatology of patients of endoscopic and conventional septoplasty

Symptoms	Conventional septoplasty (%)	Endoscopic septoplasty (%)
Nasal discharge	100	100
Headache	83.33	100
Nasal obstruction	88.89	97.05
Epistaxis	100	100
Hyposmia	—	100



Graph 4: Distribution as per postoperative nasal airflow in conventional and endoscopic septoplasty

Complications

The intraoperative and postoperative complications were as follows. In this study, two patients in conventional septoplasty group had intraoperative hemorrhage and only one patient in the endoscopic septoplasty group had this. Mucosal tear occurred in two patients belonging to conventional septoplasty group and zero patients belonging to endoscopic septoplasty group. Four patients belonging to conventional septoplasty had synechae formation in between septum and inferior turbinate and only one patient belonging to endoscopic septoplasty had



Table 5: Complications of conventional and endoscopic septoplasty found in the study

Complications	Conventional septoplasty (%)	Endoscopic septoplasty
Intraoperative hemorrhage	11	3
Mucosal tear	11	0
Septal perforation	11	0
Residual deviation	11	0
Synechiae formation	11	3

this. Two patients belonging to conventional septoplasty and one patient belonging to endoscopic septoplasty group had residual deviation. Two patient belonging to conventional septoplasty had septal perforation and none of the patient belonging to endoscopic septoplasty had this (Table 5).

DISCUSSION

Park et al conducted a study on 44 patients to compare the endoscopic assisted correction of deviated nose with that of classical septorhinoplasty. Of the 44 patients, 16 underwent endoscopic assisted septoplasty and the rest underwent classical septorhinoplasty. The patient satisfaction was 87.5 and 71.4% and complications were 0 and 14.3% for endoscopic and classical approaches respectively.⁶ Another study was conducted by Nayak et al on 60 patients. Among them 30 patients underwent endoscopic assisted septoplasty and rest underwent conventional septoplasty. There was significant improvement of symptoms in patients who underwent endoscopic assisted septoplasty and the objective assessment by nasal endoscopy also showed better results in patients who underwent the same.^{7,8} In the present study, out of 52 patients with nasal obstruction, 49 of the 52 patients were relieved of the symptoms of which 16 of the 18 patients belonged to conventional and 33 of the 34 patients belonged to endoscopic septoplasty group. Nasal discharge did not persist in patients belonging to either of the groups. Headache persisted in three of the 18 patients in conventional septoplasty group. None of the patients in the endoscopic septoplasty group complained of headache. Hyposmia was relieved in patients belonging to endoscopic septoplasty group. Epistaxis was relived in patients belonging to conventional septoplasty group and endoscopic septoplasty group. There was significant improvement in symptoms in both the groups when compared with preoperative symptomatology. The objective assessment was done by examining the condition of septum and persistent pathology on the lateral wall and by assessing the nasal patency. There were no septal deformities like persistent deviation or spur in both the groups. Persistence of hypertrophy of turbinates were present in three of the 11 patients in conventional septoplasty group and one

of the 12 patients in endoscopic septoplasty group. This may be the reason for persistence of nasal obstruction. Discharge was not seen in patients belonging to either of the groups. Assessment of nasal patency showed following results. In the conventional septoplasty group 7 patients had airflow of 2 to 3 cm, eight patients had 4 to 5 cm and three patients had 6 to 9 cm. In endoscopic septoplasty group two patient had airflow of 2 to 3 cm, 17 patients had 4 to 5 cm and 15 patients had 6 to 9 cm. 'The above mentioned studies had not compared the objective assessment of nasal patency'. The difference in improvement was insignificant. The results were similar with the existing literature. In a study conducted by Park et al, complications were seen in 14.3% of the patients who underwent conventional septoplasty as compared to 0% in endoscopic correction of deviated nose. In another study conducted by Bothra et al minor complications like hemorrhage, infraorbital edema and nasal pain were more in patients who underwent conventional septoplasty.⁹ Synechae persisted in two patients of each group. In this study, two patients in conventional septoplasty group had intraoperative hemorrhage and only one patient in the endoscopic septoplasty group had this. Mucosal tear occurred in two patients belonging to conventional septoplasty group and 0 patients belonging to endoscopic septoplasty group. Four patients belonging to conventional septoplasty had synechae formation in between septum and inferior turbinate and only one patient belonging to endoscopic septoplasty had this. Two patients belonging to conventional septoplasty and one patient belonging to endoscopic septoplasty group had residual deviation. Two patients belonging to conventional septoplasty had septal perforation and none of the patient belonging to endoscopic septoplasty had this. The results of the present study were comparable with the existing literature.

CONCLUSION

Evolution of endoscopic septoplasty is a major event in the history of septal surgery. It helps in dealing with posterior deviations, high deviations and isolated spurs. It gives better illumination and precise vision of the anatomy of nasal cavity, and thus helps in proper planning of the surgery. In our study, although the objective assessment showed insignificant difference in the functional outcome of both, the complications significantly occurred in the conventional septoplasty group. The subjective assessment of symptoms was insignificant. The following are the technical advantages of endoscopic septoplasty. 'Endoscopic septoplasty is perform with minimal incision and minimal manipulation. This resulted in minimal damage to the tissues, minimal removal of septum,

and hence precise reconstruction. So, the stability of the septum is not compromised, mucosal tears are avoided, and hence synechae formation'. 'Under endoscopic guidance we could identify the bleeding points and reduce the incidence of hemorrhage. In cases of isolated spurs it is easier to avoid mucosal tears as the vision is better in endoscopic technique unlike the conventional septoplasty where the region inferior and posterior to the spur is relatively invisible leading to mucosal tears and excessive manipulation of tissues leading to synechae formation. Contact points can be precisely addressed due to better visualization'. Our study concluded that it was easier to correct posterior deviation, high deviation and isolated spurs with endoscopic septoplasty.

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