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# ENDOSCOPIC SEPTOPLASTY VERSUS CONVENTIONAL SEPTOPLASTY : A COMPARATIVE STUDY

Otolaryngology

**Dr. Soumen Biswas** Dept. of ENT; Institute of Otolaryngology and Head &Neck Surgery; IPGMER; Kolkata; India.

**Dr. Bijoy Krishna Bhadra*** Dept. of ENT; Institute of Otolaryngology and Head &Neck Surgery; IPGMER; Kolkata; India. *Corresponding Author

**Dr. Debarshi Jana** Institute of Post-Graduate Medical Education and Research, A.J.C. Bose Road, Kolkata, West Bengal, India-700020.

## ABSTRACT

Endoscopic septoplasty is a new technique with certain advantages compared to the conventional headlight technique. With butter visibility of the nasal cavity, lesser injury to the surrounding structures and better patient tolerability and hospital stay, endoscopic technique is an effective alternate to the conventional technique. To evaluate and compare the two techniques we conducted a prospective randomized study with 30 patients in each group. Detailed clinical examination and DNE was done prior to the surgery. And patients were given NOSE questionnaire to record the severity of symptoms. And after the surgery patients were followed up for 3 months. At the end of 3 months post-operative DNE was done and NOS a questionnaire was given to the patients to record the relief of symptoms. In this way We compared the disease from both subjective and objective perspectives. There was significant less postoperative hospital stay in endoscopic group and it was a longer procedure compared to conventional septoplasty. Posterior and high septal deviations were better treated with endoscopic septoplasty. Since it is done with a digital monitor system it is an effective tool in teaching.

## KEYWORDS

Nasal Septum, Endoscopic Septoplasty, Conventional Septoplasty

## INTRODUCTION

Nasal septum is the key structure in maintaining the aerodynamics of nasal airflow beside nasal valves. It is central pole like support to the dorsum and columella. And it has a major role in maintaining symmetry of external nose, just as it maintains the nasal cavity symmetry. Septum is the supporting structure to the most projected part of face, and it is susceptible to injuries. With each occurrence of injury there will be subtle changes in the growth pattern of soptum which becomes evident in a later date. Besides it will also cause disturbance In growth of its attached bony structures to grow an unnatural way 11 Nasal septal deformities (NSD) are one of the most common disorders in humans. The incidence of NSD in adult humans was shown to be very high, ranging around 90% tz). But majority of patients remain asymptomatic. In the vast majority of cases, the deviated shape of the nasal septum is a result of irregular development of the Naso-maxillary complex. And less frequently is the consequence of the trauma to the nose. Kowalski et al. emphasized the importance of nasal trauma during the birth. They found that the incidence of the nasal septum deformities was 22% in children delivered by normal labour vs. children delivered by Cesarean section in which the Septal deformities were registered in 3.9% of them. Septoplasty is a surgical procedure which corrects the structural deformity of nasal septum in them. The surgical methods adapted ranges from crude fracture dislocation and relocating, to relatively aggressive procedures like submucosal resection. There used to be huge burden of morbidity like septal perforations, saddle nose deformity and tip deformities. And the remaining portion of two layered septum often becomes flappy. In this study we have tried to compare the outcomes of septoplasty when done with the help of endoscopes and with the conventional method Even though nasal obstruction is the most obvious symptom of a deviated nasal septum (DNS): It is attributed to many other symptoms in rhinology such as recurrent bleeding from nose, anosmia, frequent crusting, headache, sinusitis, post nasal bleeding, snoring, even external nasal deformity etc. and the treatment is correction of anatomical deformity. There are many methods to correct the DNS starting from Freer's (1902) sub mucosal resection 19 Killian's (1904) modified sub mucosal resections, Cottie's (1948) septoplasty, Lanza et alm and Stammberger's endoscopic nasal septoplasty (1991).18 Endoscopic septoplasty was initially done in supplementation to FESS in cases where adequate access to the ostiomeatal complex was not possible because of Deviated nasal septum.

But in this method (endoscopic) there are many advantages like excellent illumination, minimal mucosal damage. precise and minimal excision of deviated part of nasal septum. But the aims of the septal surgery remain that it (a) should relieve the nasal obstruction (b) should be conservative (c) should not produce iatrogenic deformity (d) should not compromise the osteomeatal complex and (c) must have the scope for a revision surgery, if required later. There were no specific grading systems which could be reliably used to assess the severity of DNS. And many of investigators use questionnaire methods to grade the severity. Here we have used Nasal Obstruction Symptom Evaluation (NOSE) scale which was developed and validated by Michael G. Stewart in 2002 and it has been used by many investigators and has been translated in many languages for convenience. This scoring system uses 5 questions with answers in grading 0 - 4. Each response is multiplied by 5 to have the sum of all to give a total score of 100. This questionnaire can be used pre and post operatively to assess the improvement of symptoms after the surgery. [10]

1. To compare the techniques of endoscopic and conventional Septoplasty among patients.
2. To assess whether Endoscopic septoplasty is a better surgical procedure in correcting high septal deviations.
3. To assess outcome of septoplasty by endoscopic and conventional techniques.
4. To assess whether endoscopic septoplasty can replace conventional septoplasty in future.

## MATERIALS AND METHODS

This is a prospective randomized cohort study done on sixty patients with nasal obstruction attributed to septal deviation, between January 2018 to August 2019. This study was conducted at department of otorhinolaryngology, IPGMER and SSKM Hospital. The follow-up period of patients in this study ranged from 1 month to 3 Months.

Patients were selected on the basis of the following inclusion criteria.
a) All patients with symptomatic (nasal obstruction, discharge, hyposmia, facial pain) deviated nasal septum willing to undergo operation.

The exclusion criteria for patients were as follows.
a) Patients with nasal polyposis.
b) Patients with allergic rhinitis.
c) Patients undergoing septoplasty with other nasal surgeries.
d) Revision septoplasty.

60 patients selected for the study, they were divided into two groups randomly. These patients were evaluated by detailed history taking about any complaints attributable to deviated nasal septum. Complete ENT examination was done in every patient and they were posted for diagnostic nasal endoscopy. They were advised to take medical line of treatment depending upon the DNE findings and asked to review in two weeks. Patient was asked for improvement in symptoms. They

were given the option of surgical management and willing patients were Worked up for surgery.

## OBSERVATIONS AND RESULTS

The age of patients in the study sample varied between 18 and 53 years. In conventional septoplasty group minimum age was 18 yrs and maximum age was found to be 53 years with mean age 31.2 years. In Endoscopic septoplasty group minimum age was 18 years and maximum age was 52 years with mean age 29.6 years. Majority of the patients were in the 3rd decade in both the groups. Considering all 60 patients, the majority of patients were in the 3rd decade.

There were 39 male patients (65%) and 21 female patients (35%) with male to female ratio 1.9:1 in the study. The sex distribution is shown in the Pie chart. The Conventional septoplasty group had 20 males (33.3%) and 10 females (66.7%), whereas the Endoscopic septoplasty group had 19 males (63.3%) and 11 females (36.7%) .

All patients were evaluated for the following symptoms; nasal obstruction, headache, nasal bleeding, nasal discharge and anosmia. The commonest symptom in the conventional septoplasty group was nasal obstruction 24 (80%) followed by headache 7 (23.3%), anosmia 4 (13.3%), nasal bleeding 3 (10%) and nasal discharge 2 (6.7%) The commonest symptom in the endoscopic septoplasty group was nasal obstruction 23 (76.6%) followed by headache 16 (53.3%), nasal bleeding 7 (23.3%), anosmia 4 (13.3%) and nasal discharge 3 (10%).

We did students t test of unpaired samples assuming equal variance for statistical comparison. Mean duration of hospital stay in conventional septoplasty group was 2.2 days and the endoscopic septoplasty group was 1.5 days. The test gave us a p value of 0.0001667. Hence there was a statistical difference between these two groups. Endoscopic septoplasty group had significantly lesser hospital stay compared to conventional septoplasty groups.

Duration of surgery was compared with both the groups. Average time taken for the procedure in conventional septoplasty group was 34.4 minutes and average time taken for endoscopic septoplasty was 35.6 minutes We run a statistical test (student's t test assuming equal variance between two groups), and we found that the p value was 0.48957392 which was more than 0.05. Hence we concluded that even though endoscopic septoplasty took more time than conventional septoplasty, there was no statistical difference between two groups.

In conventional septoplasty group 2/6 (33.3%) patients had persisted HIT, 1/9 (11.2%) patient had persisted anterior nasal deviation, 7/22 (31.8%) patients had persisted to have posterior deviation, 4/5 (80%) patients had persisted high septal deviation and 1/4 (25%) patient had persisted septal spur. In endoscopic septoplasty group 1/4 (25%) patients had persisted HIT, 2/12 (16.6%) patient had persisted anterior nasal deviation, 0/20 (0%) patients persisted to have posterior deviation, 1/6 (16.6%) patients had persisted high septal deviation and 0/5 (0%) patient had persisted septal spur.

Mean Nose questionnaire scores in conventional septoplasty group was 56.67 preoperatively and postoperatively 12.5. We applied paired sample student's t test for analysis and we got a p value of <0.001 which was statistically significant. The mean improvement in score was 44.2. Mean Nose questionnaire scores in conventional septoplasty group was 55.67 preoperatively and postoperatively 9.17. We applied paired sample student's t test for analysis and we got a p value of <0.001 which was statistically significant. The mean improvement in score was 46.5 The improvement of nose score of each group was calculated and compared statistically by conducting unpaired sample t test and we got p value of 0.51. Hence we concluded that the improvement in either group was not statistically different.

Synechiae and septal perforations were the complication of surgery encountered in this study. In conventional septoplasty group 3 (10%) were having synechiae at the end of 3rd month and 1 of the patient in the endoscopic septoplasty group had synechiae. In conventional septoplasty group, 1 patient was having septal perforation at the end of 3rd month and none of the patients in the endoscopic septoplasty group had septal perforation.

## DISCUSSION

Endoscopic septoplasty is a recent advance in the field of ENT. The advent of this Technique Happened When Surgeon Found Difficulty in Accessing Middle meatus and internal walls of the nose. And as the surgeon was already ready with the endoscopes and related instruments, it was wise to use this to do the septoplasty as well. And this technique gave surgeon a better visibility of Intranasal structures as well as better access to all parts of the septum. Especially in the higher and posterior part of septum where it is difficult to visualize with the traditional headlight method. And in this view Many surgeons have adopted this technique in pure septoplasty surgeries as well. To verify the effectiveness of this technique, many authors have tried to compare this with traditional headlight septoplasty. There are no defined parameters for success of septoplasty. And the diagnosis of deviated septum It self is more of a subjective conclusion. And hence it is difficult to estimate the success rate. These tools include patient satisfaction questionnaires, physical examination, acoustic rhinomanometry, and change in quantity of medications used to relieve nasal obstruction. Many studies have shown the success rate in long term to be 43 - 85%. and It depends greatly on the tool used to measure success. Samuel S. Becker et al in their study, collected data of 547 patients undergoing septoplasty. In these about 70 patients were undergoing revision surgeries. And the main cause in majority of these patients was nasal valve abnormality. Hence even when we find a deviated nasal septum in a patient, it is very crucial to identify other causes of nasal obstruction Haitham Abdul-Malik Al-Nori et al did a study on effect of septoplasty on squeal of nasal septal deviation to find the effectiveness of septoplasty in improving symptoms of septal deviations and found out about 80.9% of patients had improvement in symptoms of nasal obstruction. They also found out that improvements in recurrent sinusitis, chronic pharyngitis, epistaxis and snoring was 55.5%, 28.5%, 80% and 25% respectively. This says that the septoplasty has effect on nasal obstruction the most and less on other symptoms of septal deviations, Because, all of the nasal symptoms which patient presents cannot be caused by DNS alone and they concluded that septoplasty is indicated mainly to relieve nasal obstruction resulting from moderate to severe nasal septal deviation 1133 In our study of 60 patients, males were more in number with male to female ratio of 1.9:1. And similar ratio was found in both the case and control group. This is consistent with many other studies conducted by Ali Maeed Al-Shehri [16] Chung et al [36] and Haitham Abdul-Malik Al-Nori et al [13] Main presenting symptoms was nasal obstruction which was present in 47 (78.3%) patients. In conventional septoplasty there were 24(80%) patients and in endoscopic group 23(76.6%) which is comparable. Studies conducted by other authors like Leena jain et al (73%) Kanu singla et al (76%) 25) Ali Maeed Al-Shehri (78.6%) 116 also showed similar patient demography. Details are shown in table 11 In our study age of the patients varied from 18 to 53 years. In conventional Septoplasty group minimum age was 18 years and maximum age was 53 years with mean age of 31.2 years. In Endoscopic septoplasty group minimum age was 18 years and maximum age was 52 years with mean age 29.6 years. In this study mean age at presentation was 30.4 years with standard deviation of 9.07. Predominant age group Anterior nasal septal deviation was the second common finding with 21 (35%). In conventional septoplasty group 9 (30%) patients and 12 (40%) patients in the endoscopic septoplasty group had anterior septal deviation. This is consistent with study by Gupta et al 123) Krishna chaitanya et al 24 We calculated the duration of procedure from infiltration of nasal cavity till the packing of both the nasal cavity.

And we compared the duration of surgery in each group. Average time taken for the procedure in conventional septoplasty group was 34.4 minutes and average time taken for endoscopic septoplasty was 35.6 minutes. Even though the endoscopic septoplasty took relatively a longer operative time it was not statistically significant. The mean hospital stay in both the groups was compared. Conventional septoplasty patients stayed at hospital for 2.2 days and endoscopic septoplasty patients stayed for 1.5 days on an average. And this the difference was statistically significant with p value of 0.0001. In a study done by Gupta et al (23) there was lesser hospital stay in endoscopic septoplasty group. However in their study the difference was not statistically significant.

We compared the preoperative and postoperative DNE findings to compare the residual deformity. In conventional septoplasty group 2 out of 6 patients who had HIT pre-operatively, still had the findings. In endoscopic septoplasty group 1 out of 4 patients had similar findings postoperatively also. There was not statistically significant difference in these findings in two groups. In conventional septoplasty group, 1 out of 9 patients who had anterior nasal septal deviation pre-operatively, still had the findings retained. In endoscopic septoplasty

group, 2 out of 12 patients had similar findings postoperatively also.

There was not statistically significant difference in these findings in two groups. So both the techniques are equally good in treating anterior septal deviations. In conventional septoplasty group 7 out of 22 patients who had posterior nasal septal deviation preoperatively, still had the findings. In endoscopic septoplasty group none of 20 patients had similar findings postoperatively. There was statistically significant difference in these finding in two groups. This means that endoscopic septoplasty is superior compared to conventional methods in treating posterior septal deviations. In conventional septoplasty group 4 out of 5 patients who had high septal deviation still had the findings. In endoscopic septoplasty group one of 6 patients had similar findings postoperatively. There was statistically significant difference in these two groups. This concludes endoscopic technique is superior compared to conventional methods in treating high septal deviations. In conventional septoplasty group 1 out of 4 patients who had septal spur still had the findings. In endoscopic septoplasty group none of 5 patients had similar findings postoperatively. There was no significant statistical difference in these findings in two groups. So both the techniques are equally good in treating anterior septal deviations when done by good hands. A study by Magdy et al (19) there was statistically significant persistence of posterior septal deviation in conventional septoplasty group. Similarly in our study endoscopic septoplasty was a better tool for posterior septal deviation. Nose instrument was used to measure of improvement in symptoms, and it was found that each group had statistically significant improvement in symptoms after surgery. But there was no significant difference in both groups in the improvement of score after surgery. So both the techniques of septoplasty are equally good in alleviating patient's symptoms. In our study septal perforation and synechiae were the only two complications encountered. And there was no statistical difference of complications occurred in both the groups. So it concludes that both the surgical procedures are equally safe to perform in good hands. Rao and Chitradur [14 observed that the synechiae were formed in significantly less number in patients of endoscopic septoplasty group as compared to conventional group. Krishna kishore et al (37) also found that there was increased incidence of synechiae in conventional septoplasty and it was significant.

## CONCLUSION

1. Posterior septal deviation is the most common type of deviation: In conventional it was 22 cases and in endoscopic septoplasty group it was 20 cases. It was followed by anterior septal deviation and high septal Deviation least common was septal spur.
2. There is a significantly lesser duration of hospital stay with endoscopic septoplasty groups.
3. Endoscopic septoplasty is comparatively a longer procedure than conventional septoplasty but it was not statistically significant.
4. In our study anterior septal deviations were better treated with conventional septoplasty (only 1 case of persistence)
5. Posterior septal deviation and high septal deviation was better treated with endoscopic septoplasty(no cases of persistence of posterior deviation and only 1 case of high septal deviation)
6. There were fewer complications like septal perforations and synechiae in endoscopic septoplasty group which was note statistically significant.
7. Nose scoring showed that surgery improved the symptoms in both the group. There was improvement in nasal obstruction, bleeding per nose, repeated common cold, etc with slightly better result with endoscopic method. But the difference between groups was statistically insignificant.

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