

A Prospective Randomized Study Comparing Endoscopic Septoplasty with Conventional Septoplasty

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Abstract

Aim: The aim of the study was to study the advantages and disadvantages of endoscopic septoplasty and conventional septoplasty and to co-relate the two procedures in terms of intra-operative visualization, duration of surgery, procedural difficulties, hospital stay and complications.

Methods: The present study was done to compare the conventional and endoscopic septoplasty was carried out in the Department of ENT, Patna Medical College & Hospital Patna, Bihar, India, for 12 months. Total 120 Patients with symptomatic DNS with no other comorbidities and willing for surgical treatment were included. Data was collected by selecting the patients with DNS willing for surgery. They were divided into two groups: one group undergoing conventional septoplasty and the other endoscopic septoplasty by random selection and following up the patients preoperatively and postoperatively.

Results: In the present study, major pre-operative symptom was found to be nasal obstruction 90%, followed by Headache 54.17%, postnasal drip 50%, Hyposmia 48.33% and epistaxis 33.33%. It was noticed that improvement of nasal obstruction was 92%, nasal headache (83.33%), Postnasal drip (77.78%) Hyposmia (87.10%) Epistaxis (80%) in endoscopic septoplasty (ES) group. On the other hand, in conventional septoplasty group improvement of nasal obstruction (60.34%), headache (54.43%), Postnasal drip (PND) (30.30%) Hyposmia (62.96%) Epistaxis (60%) was seen (Table 4). This difference in relief of symptom was found to be very significant. On 90th day of follow-up visit, residual deviation was found to be present in 20 (33.33%) of patient of conventional groups whereas it was present in 4 (6.67%) patients of endoscopic group (P=0.005). In conventional group, 19(31.67%) patients developed synechiae whereas in endoscopic group 7(11.67%) patients developed synechiae (P=0.021).

Conclusions: For minimal and posterior deviations of the septum, endoscopic septoplasty is better, whereas for anterior deviations, conventional septoplasty could be better choice.

Keywords: Deviated Nasal Septum, Conventional Septoplasty, Endoscopic Septoplasty.

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Introduction:

Deviated nasal septum is the most common cause of nasal obstruction. Apart from nasal obstruction, a severely deviated septum can cause epistaxis, headache, and sinusitis attributable to contact with lateral nasal wall[1]. The detailed physical examination and imaging can diagnose septal deviation causing nasal obstruction[2]. Various surgical techniques have been implicated regarding the treatment of deviated septum, but none have completely improved the nasal airway. An ideal correction of the septum should satisfy the following criteria[3].

1. Relief from nasal obstruction.
2. Conservative procedure.
3. Should not compromise osteomeatal complex.
4. Must have scope for revision surgery, if required later.

The conventional surgeries for septal correction improve nasal airway but do not fulfil the above criteria. Various drawbacks regarding conventional surgeries include poor visualization, poor illumination, difficulty in assessing exact pathology, need for nasal packing, and overexposure and over manipulation of the septal framework making revision surgeries difficult[4].

The endoscopic septoplasty is a direct targeted approach to septal anatomic deformity, allowing minimally invasiveness[5]. It allows limited septal flap dissection and removal of a small cartilaginous and/or bony deformity. Better illumination and visualization help to increase the precision of the surgical procedure with limited exposure of the septal flap[6]. It is an adjunct to functional endoscopic sinus surgery[7] and is helpful in the correction of posterior septal deformities[8] and revision cases[9]. Endoscopic surgery is an excellent teaching tool as the entire procedure can be viewed on the monitor[10].

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Material and methods

The present study was done to compare the conventional and endoscopic septoplasty was carried out in the Department of ENT, Patna Medical College & Hospital Patna, Bihar, India, for 12 months. 100 patients were included in the study.

Patients with symptomatic DNS with no other comorbidities and willing for surgical treatment were included in this study. DNS diagnosed patients with allergic rhinitis, upper respiratory tract infections, sinusitis, and other co-morbidities and unfit for surgery will be excluded from study.

Data was collected by selecting the patients with DNS willing for surgery. They were divided into two groups: one group undergoing conventional septoplasty and the other endoscopic septoplasty by random selection and following up the patients preoperatively and postoperatively. Cases selected for the study were subjected to detailed history and clinical examination. Anterior rhinoscopy and diagnostic nasal endoscopy details were noted. X-ray of paranasal sinuses or CT scan of paranasal sinuses were done. A correlation was established between clinical features and radiological findings. Patients were randomly grouped into two groups of 25 each, one group underwent conventional septoplasty and the other endoscopic septoplasty.

After complete preoperative assessment patients were subjected to surgical intervention. Patients were put on appropriate antibiotics, along with analgesics and decongestants. Nasal pack is removed 24 hours after the surgery. Decongestant nasal drops (3 times daily) are advised for a week.

Patients were discharged and advised to follow up on 1st week, 15th day, 1 and 3 months. At each follow up visit, patients' clinical features and symptoms, if present were analysed. Subjective assessment was done by asking about nasal obstruction, headache, nasal discharge, nasal bleed. Objective assessment was done by diagnostic nasal endoscopy. With above findings, the outcomes of surgery were measured.

Statistical analysis

The data is analysed by using SPSS 25.0 version software. For qualitative analysis

Chi-square test is applied. For quantitative data T-test and ANOVA is applied for significance. If $p < 0.05$, is considered as significant.

Results

The study included 120 cases. Out of 120 patients, 50 were females (41.67%) and 70 were males (58.33%). Among 50 females, 25 patients underwent endoscopic, and 25 patients underwent conventional septoplasty. Out of 70 males 35 patients underwent endoscopic and 35 patients underwent conventional septoplasty (Table 1). The observations showed that the male patients predominated over their female counterpart. The age of the patients ranged from 15 to 60 years. Minimum and maximum age was 17 and 60 years subsequently with mean age 39.13 years and std. deviation 10.67. The majority of our patients were in their third and fourth decades of life (Table 1)

Table 1: Gender incidence and Age distribution among two groups

Groups	Gender		AGE (in years)		
	Male=70	Female=50	15-30	30-45	45-60
Endoscopic septoplasty	35	25	19	26	15
Conventional septoplasty	35	25	8	32	20

Table-2: pre-operative symptoms among two groups

Symptoms	Endoscopic septoplasty group n=60		Conventional septoplasty group n=60		Total	%
Nasal obstruction	50	83.33%	58	96.67%	108	90
Headache	30	50%	35	58.33%	65	54.17
Postnasal drip	27	45%	33	55%	60	50
Hyposmia	31	51.67%	27	45%	58	48.33
Epistaxis	15	25%	25	41.67%	40	33.33

In the present study, major pre-operative symptom was found to be nasal obstruction 90%, followed by Headache 54.17%, postnasal drip 50%, Hyposmia 48.33% and epistaxis 33.33% (Table 2). It was observed

that the mean time taken for conventional septoplasty was 32.11 minutes standard deviation 5.12. On the other hand endoscopic septoplasty required 24.41 minutes standard deviation 4.62 (Table 3).

Difference between two groups was not statistically too much significant. Intra operative blood loss: Average blood loss (in ml) in the conventional septoplasty (CS)

was 87.61 (standard deviation 21.34) while that of endoscopic septoplasty (ES) group was 53.22 (standard deviation 11.06) (Table 3). Blood loss was more in CS group

Table 3: Duration and volume of blood loss during surgery

Parameter	Endoscopic septoplasty		Conventional septoplasty	
	Mean	Std deviation	Mean	Std. deviation
Duration of surgery (minute)	24.41	4.62	32.11	5.12
Volume of blood loss (ml)	53.22	11.06	87.61	21.34

The Post-operative result was analysed by dividing then into subjective & objective assessment at the end of 90th day. There was significant subjective improvement among patients of both groups. It was noticed that improvement of nasal obstruction was 92%, nasal headache (83.33%), Postnasal drip (77.78%)

Hyposmia (87.10%) Epistaxis (80%) in endoscopic septoplasty (ES) group. On the other hand, in conventional septoplasty group improvement of nasal obstruction (60.34%), headache (54.43%), Postnasal drip (PND) (30.30%) Hyposmia (62.96%) Epistaxis (60%) was seen (Table 4). This difference in relief of symptom was found to be very significant.

Table 4: Comparison of relief in symptoms in both groups at the end of 90th day

Symptoms	Endoscopic group	Conventional group
Nasal obstruction	46/50 (92%)	35/58 (60.34%)
Headache	25/30 (83.33%)	18/35 (51.43%)
Postnasal drip	21/27 (77.78%)	10/33 (30.30%)
Hyposmia	27/31(87.10%)	17/27 (62.96%)
Epistaxis	12/15 (80%)	15/25(60%)

On 90th day of follow-up visit, residual deviation was found to be present in 20 (33.33%) of patient of conventional groups whereas it was present in 4 (6.67%) patients of endoscopic group (P=0.005). In

conventional group, 19(31.67%) patients developed synechiaes whereas in endoscopic group 7(11.67%) patients developed synechiaes (P=0.021). It was statistically significant (Table 5).

Table 5: Objective assessment in both groups at the end of 90th day

Parameter	Endoscopic group (n=60)	Conventional group (n=60)	P-value
Persistence of deviation	4 (6.67%)	20 (33.33%)	0.005
Persistence of spur	3 (5%)	9 (15%)	0.19
Formation of synechiaes	7 (11.67%)	19 (31.67%)	0.03
Septal perforation	0 (0%)	4(6.67%)	0.44

Discussion

The current study was conducted to compare the outcomes of endoscopic and conventional septoplasty among patients.

To obtain accurate results, 100 patients were included in the study and divided into two equal groups (endoscopic septoplasty group and conventional septoplasty group) by computer-generated random sampling.

As per the available literature neither the incidence of symptomatic DNS nor the outcome of surgery has any difference in male and female. Mohammad et al conducted a descriptive study on 200 patients to assess the complications of septoplasty and submucosal resection of septum, in which 162 patients (81%) were males and 38 patients (19%) were females with a ratio of 4.26:1.[13] In many other studies, male patients were more common than female patients. This can be attributed to more exposure to trauma in males or random assignment of patients. Similar to the existing literature, in our study also had more male (60%) Patients compared to female (40%) patients and symptomatic DNS, outcome of surgery did not have any difference on gender.

The age of the patients ranged from 15 to 60 years. Minimum and maximum age was 17 and 60 years subsequently with mean age 39.13 years and std. deviation 10.67. The majority of our patients were in their third and fourth decades of life. Jain et al. and Rao et al.[14,15] also concluded in their study that the most common age groups involved were in the second and third decades of life.

In the present study, major pre-operative symptom was found to be nasal obstruction 90%, followed by Headache 54.17%, postnasal drip 50%, Hyposmia 48.33% and epistaxis 33.33%. The present findings were quite similar to observation of Nayak DR et al[16] where 78.3% patients had complaint of nasal obstruction. Headache was present in 76.66%, rhinorrhoea in 45%, PND in 58.33% and hyposmia in 8.33%. In another study conducted by Gulati et al[17] nasal obstruction was complained by 92% patients, Headache by 58% patients, catarrh in 50 % patients and post-nasal discharge in 30%.

It was observed that the mean time taken for conventional septoplasty was 32.11 minutes standard deviation 5.12 On the other hand endoscopic septoplasty required 24.41 minutes standard deviation 4.62. A similar

experience was obtained by Aiyer[18] who stated that majority of patient (82%) who underwent endoscopic septoplasty had minimal (<50ml) blood loss as compared to 45% in conventional septoplasty group.

The Post-operative result was analysed by dividing then into subjective & objective assessment at the end of 90th day. There was significant subjective improvement among patients of both groups. It was noticed that improvement of nasal obstruction was 92.92%, nasal headache (83.33%), Postnasal drip (77.78%) Hyposmia (87.10%) Epistaxis (80%) in endoscopic septoplasty (ES) group. On the other hand, in conventional septoplasty group improvement of nasal obstruction (60.34%), headache (54.43%), Postnasal drip (PND) (30.30%) Hyposmia (62.96%) Epistaxis (60%) was seen. This difference in relief of symptom was found to be very significant.

Our observations were in consensus with other similar studies. In a study by Harley et al[19] patients with nasal obstruction and headache were selected and significant improvement are observed in endoscopic group as compared to conventional septoplasty group. Gulati et al[16] in their comparative study enrolling 50 cases stated that 90.5% cases reported improvement of their obstruction by the endoscopic method while 80% cases of conventional got relief. This is also in favour of our findings. In a study by Sindhwani & Wright[20], 54% patients with complaints of nasal obstruction and facial pain were cured and 38% showed improvement and 8% patients were not benefitted. In a study by Harley et al[19] patients with nasal obstruction and headache were selected and significant improvement was observed in endoscopic group as compared to conventional group. These findings are quite similar to ours. Park et al[21] 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 patients' satisfaction was 87.5 and 71.4%, and complications were 0 and 14.3% for endoscopic and classical approaches respectively. In the present study, ES group of patients showed statistically significant improvement in correction of septal deviation and spur in comparison to CS group. 20 (33.33%) of patient of conventional groups whereas it was present in 4 (6.67%) patients of endoscopic group ($P=0.005$). This result is at par with the results of Nayak et al[16]. They showed that only 10% patients of anterior deviation had persistent septal deformity and posterior deviations/spurs were effectively corrected in most of the cases in endoscopic septoplasty group. They also observed that endoscopic septoplasty was found to be more effective in treating symptoms such as nasal obstruction and headache which is similar to the present results. In the study by Park et al[21] the synechiae were formed in significant lower number of patients in ES group as compared To the CS group. This is in concordance with the current study.

In conventional group, 19(31.67%) patients developed synechiae whereas in endoscopic group 7(11.67%) patients developed synechiae ($P=0.021$). It was statistically significant. It was statistically significant. This is quite similar to the result of Prakash et al.[22] where statistically significant higher incidence of complication was observed in the conventional group (35%) as compared to the endoscopic group (15%). This result was partly similar to the study of Gupta et al.[23], Jain et al.[14] and Talluri et al.[24].

Conclusion

The present study concluded that endoscopic septoplasty is a better option for treating patients with posterior septal deviations as it provides good visualization of the surgical field. This procedure drastically reduces the operating time as compared to the conventional septoplasty. Hence reduced hospital stays and reduced

post-operative complications. It also has less intra-operative bleeding and mucosal tear complications, reduces the duration of wound healing as there is minimal tissue handling. But endoscopic septoplasty also has got its own drawbacks which includes learning curve, adjustment towards single handed surgery. And drawbacks of conventional septoplasty were difficulty in removal of posterior deviation, and due to poor illumination.

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