

Evaluation of Conventional Method and Endoscopy Assisted Nasal Septal Correction Surgery: A Comparative Assessment

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Abstract

Aim: The aim of the study was to Comparative evaluation of conventional with endoscopy assisted nasal septal correction surgery in a tertiary care Hospital in Gaya.

Methods: The present study was done to compare the conventional and endoscopic septoplasty was carried out in the Department of ENT, Anugrah Narayan Magadh Medical College and Hospital, Gaya, Bihar, India, for 12 months. Total 100 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: Out of 100 patients, 40 were females (40%) and 60 were males (60%). Among 40 females, 20 patients underwent endoscopic and 20 patients underwent conventional septoplasty. Out of 60 males 30 patients underwent endoscopic and 30 patients underwent conventional. Mean age 40.13 years and std. deviation 11.67. In the present study, major pre-operative symptom was found to be nasal obstruction 88%, followed by Headache 54%, postnasal drip 49%, Hyposmia 48% and epistaxis 33%. It was observed that the mean time taken for conventional septoplasty was 33.11 minutes standard deviation 6.12 On the other hand endoscopic septoplasty required 25.41 minutes standard deviation 5.62. There was significant subjective improvement among patients of both groups. It was noticed that improvement of nasal obstruction was 92.86%, nasal headache (84.62%), Postnasal drip (75%) Hyposmia (88.46%) Epistaxis (78.57%) in endoscopic septoplasty (ES) group. On the other hand in conventional septoplasty group improvement of nasal obstruction (60.87%), headache (53.57%), Post nasal drip (PND) (32%) Hyposmia (63.64%) Epistaxis (63.16%) was seen. On 90th day of follow-up visit, residual deviation was found to be present in 19 (38%) of patient of conventional groups whereas it was present in 3 (6%) patient of endoscopic group (P=0.005). In conventional group, 18 (36%) patients developed synechiae whereas in endoscopic group 6(12%) patients developed synechiae (P=0.027). It was statistically significant.

Conclusions: We 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.

Keywords: Deviated nasal septum, Conventional septoplasty, Endoscopic septoplasty

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Introduction

Nasal septal deviation is associated with congenital and traumatic etiology and the nasal septal deviation has been reported both in the paediatric as well as in the adult population.[1,2] A significant number is reported to suffer from nasal septal deviation.[2] Happanemi reported that 9.5% incidence among children.[3] Nasal septal deformity (NSD) has adverse effect on the facial development. The prevalence of septal deformity ranges from 0.93% to 55% (Ilhami). There are different types of nasal septal deformities and the conventional method of surgery has been followed over years.[1] Recent days endoscope assisted septal correction is gaining momentum as it provides a direct approach to the targeted site.[4] Individuals with septal deformity develop nasal block, recurrent sinusitis, hyposmia, head ache, epistaxis, and occasional external disfigurement. Hence these cases require septal correction. Endoscope assisted septal correction allows limited septal mucosal flap elevation and removal of cartilaginous and bony deformities, providing direct visual approach to the area of interest with limited but sufficient exposure.[4,6] There is no physical distortion of the nasal cavity unlike the use of rigid nasal speculum in the conventional method. When combined with functional endoscopic sinus surgery, a single source of light with endoscope is sufficient for both the procedures instead of changing over to the head light in between. The surgical procedure can be transmitted through audio visual system, thus forming a good teaching tool and can be recorded and kept for further documentation. 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.[7] It is an

adjunct to functional endoscopic sinus surgery[8] and is helpful in the correction of posterior septal deformities[9] and revision cases.[10] Endoscopic surgery is an excellent teaching tool as the entire procedure can be viewed on the monitor.[11]

Material and methods

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

Inclusion criteria

Patients with symptomatic DNS with no other comorbidities and willing for surgical treatment were included.

Exclusion criteria

DNS diagnosed patients with allergic rhinitis, upper respiratory tract infections, sinusitis, 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) is 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 100 cases. Out of 100 patients, 40 were females (40%) and 60 were males (60%). Among 40 females, 20 patients underwent endoscopic and 20 patients underwent conventional septoplasty. Out of 60 males 30 patients underwent endoscopic and 30 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 40.13 years and std. deviation 11.67. 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=60	Female=40	15-30	30-45	45-60
Endoscopic septoplasty	30	20	16	22	12
Conventional septoplasty	30	20	6	27	17

Table 2: pre-operative symptoms among two groups

Symptoms	Endoscopic septoplasty group n=50		Conventional septoplasty group n=50		Total	%
Nasal obstruction	42	84%	46	96%	88	88
Headache	26	52%	28	58%	54	54
Postnasal drip	24	48%	25	50%	49	49
Hyposmia	26	52%	22	44%	48	48
Epistaxis	14	28%	19	38%	33	33

In the present study, major pre-operative symptom was found to be nasal obstruction 88%, followed by Headache 54%, postnasal drip 49%, Hyposmia 48% and epistaxis 33% (Table 2). It was observed that the mean time taken for conventional septoplasty was 33.11 minutes standard deviation 6.12. On the other hand endoscopic septoplasty required 25.41 minutes standard deviation 5.62 (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 88.61 (standard deviation 22.34) while that of endoscopic septoplasty (ES) group was 54.22 (standard deviation 12.06) (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)	25.41	5.62	33.11	6.12
Volume of blood loss (ml)	54.22	12.06	88.61	22.34

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 92.86%, nasal headache (84.62%), Postnasal drip (75%) Hyposmia (88.46%) Epistaxis (78.57%) in endoscopic

septoplasty (ES) group. On the other hand in conventional septoplasty group improvement of nasal obstruction (60.87%), headache (53.57%), Post nasal drip (PND) (32%) Hyposmia (63.64%) Epistaxis (63.16%) 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	39/42 (92.86%)	28/46 (60.87%)
Headache	22/26 (84.62%)	15/28 (53.57%)
Postnasal drip	18/24 (75%)	8/25 (32%)
Hyposmia	23/26(88.46%)	14/22 (63.64%)
Epistaxis	11/14 (78.57%)	12/19 (63.16%)

On 90th day of follow-up visit, residual deviation was found to be present in 19 (38%) of patient of conventional groups whereas it was present in 3 (6%) patient of endoscopic group (P=0.005).

In conventional group, 18 (36%) patients developed synechiae whereas in endoscopic group 6(12%) patients developed synechiae (P=0.027). It was statistically significant (Table 5).

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

Parameter	Endoscopic Group (n=50)	Conventional Group (n=50)	P value
Persistence of deviation	3 (6%)	19 (38%)	0.005
Persistence of spur	2 (4%)	8 (16%)	0.179
Formation of synechiae	6 (12%)	18 (36%)	0.027
Septal perforation	0 (0%)	3(6%)	0.469

With the introduction of endoscopes into other branches of surgery, there have been attempts at its utilization in septal surgery. Endoscopic septoplasty is an attractive alternative to traditional headlight septoplasty. It is a conservative and precise approach toward deviated nasal septum correction and provides easy and accurate access in correcting the deviated part of the septum without causing much complication. 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[12] 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 had 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 40.13 years and std. deviation 11.67. The majority of our patients were in their third and fourth decades of life. Jain et al. and Rao et al.[13,14] 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 88%, followed by Headache 54%, postnasal drip 49%, Hyposmia 48% and epistaxis 33%. The present findings were quite similar to observation of Nayak DR et al[15] 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 [16] 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 33.11 minutes standard deviation 6.12 On the other hand endoscopic septoplasty required 25.41 minutes standard deviation 5.62. A similar experience was obtained by Aiyer[17] 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 92.86%, nasal headache (84.62%), Postnasal drip (75%) Hyposmia (88.46%) Epistaxis (78.57%) in endoscopic septoplasty (ES) group. On the other hand in conventional septoplasty group improvement of nasal obstruction (60.87%), headache (53.57%), Post nasal drip (PND) (32%) Hyposmia (63.64%) Epistaxis (63.16%) 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 [18] patient 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 & Wright¹⁹, 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[18] 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[1] 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. On 90th day of follow-up visit, residual deviation was found to be present in 19 (38%) of patient of conventional groups whereas it was present in 3 (6%) patient of endoscopic group ($P=0.005$). This result is at par with the results of Nayak et al[15] 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[1] 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 the present study, in conventional group, 18 (36%) patients developed synechiae whereas in endoscopic group 6(12%) patients developed synechiae ($P=0.027$). It was statistically significant. This is quite similar to the result of Prakash et al.[20] where statistically significant higher incidence of complication was observed in the conventional group (35%) as compare to the endoscopic group (15%). This result was partly similar to the study of Gupta et al.²¹, Jain et al[13] and Talluri et al.[22]

Conclusion

We 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.

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