

Original Research Article

Comparative study of outcomes of conventional and endoscopic septoplasty

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ABSTRACT

Background: Literature and other available research states lots of comparison between endoscopic and conventional septoplasty. The study helps conclude the merits and demerits of both techniques and compares the superiority of one method over the other on various aspects from surgeon's and patient's point of view. The objective of the study was to compare outcomes of conventional and endoscopic septoplasty.

Methods: Study included 48 patients having symptomatic deviated nasal septum willing for surgery randomly divided into two groups of 24 each who underwent endoscopic septoplasty and conventional septoplasty. All the patients selected for study, were assessed for subjective and objective evaluation pre-operatively and post-operatively on 7th day, 1 month and 3 months. The study was conducted at Surat Municipal Institute of Medical Education and Research (SMIMER), Surat.

Results: There are technical advantages of using endoscope during septoplasty as it is definitely superior from surgeon's point of view but there is no significant difference in terms of functional outcome, complications and post-operative hospital stay.

Conclusions: There are technical advantages of using endoscope being superior in terms of illumination, preciseness and surgery, visualization of deeper parts of nasal cavity and resection of posterior deviation and spur especially in isolated septal spur and in achieving hemostasis. The study helps us conclude that endoscopic septoplasty has merits over conventional septoplasty on various aspects.

Keywords: Conventional septoplasty, Endoscopic septoplasty, Deviated nasal septum, Nasal obstruction

INTRODUCTION

Nasal obstruction is one of the most common complaint that brings the patient to an otorhinolaryngologist.¹ Among these patients, deviated nasal septum is often the cause for nasal obstruction. Patients with the symptomatic deviated nasal septum are advised septal correction surgery, which has undergone several modifications since its inception.

Conventional septoplasty includes surgical correction of the deviated nasal septum using Bull's lamp and head

mirror or electric head light, which gives very limited illumination and visualization of deeper parts of the nose during surgery.

With the introduction of endoscopes in otorhinolaryngology, efforts were being made to use it for correction of deviated nasal septum targeting surgical procedure to only deviated part of nasal septum with the preservation of most of its anatomy.

Use of an endoscope has definite advantages of better illumination, little manipulation and minimal post-

operative complication so conventional septal surgery has been replaced by endoscopic surgery in last few decades.

Objectives

Objectives of the study were to study the conventional and endoscopic septoplasty and to compare outcome in conventional and endoscopic septoplasty.

METHODS

Study type

Prospective observational was the study type.

Sample size

Sample size was calculated by using open EPI software considering the proportion of complication (nasal obstruction) in conventional surgery and endoscopy 90% from previous study.

Level of significance (that is alpha) 99%, power (that is beta)-95%, percent of unexposed (conventional) with outcome-30%, percent of exposed (endoscopy) with outcome-90%, total-sample size-48, each group, conventional septoplasty-24, endoscopic septoplasty-24 and it was conducted in ENT department at Surat Municipal Institute of Medical Education and Research (SMIMER).

Inclusion criteria

Patients with symptomatic deviated nasal septum between age of 10-60 years were included in the study.

Exclusion criteria

Patients with age 60 years, allergic rhinitis, vasomotor rhinitis, DNS with nasal polyposis and patients with acute nasal infection were excluded from study.

The study was conducted in 48 patients having symptomatic deviated nasal septum willing for the surgery. It was conducted in the department of otorhinolaryngology (ENT) and head and neck surgery at Surat Municipal Institute of Medical Education and Research (SMIMER), Surat, Gujarat, India, over a period of two years i.e., Oct 2018 to Oct 2020. This study was approved by the institutional review board. Patients were selected by simple random sampling and then randomly divided into two groups: group A (n=24) underwent endoscopic septoplasty and group B (n=24) underwent conventional septoplasty. Randomization of the study was done on alternate basis of admission. All patients selected for the study, were assessed for subjective and objective evaluation using descriptive statistical method.

Along with detailed history been taken, for subjective assessment patients were given questionnaire (Table 1) and all patients were requested to fill according to the severity and discomfort they felt.

A thorough clinical examination was performed including nasal patency test and anterior rhinoscopy followed by diagnostic nasal endoscopy. Selective patients were advised CT PNS as well post examination.

Then the patients underwent surgical intervention, i.e., endoscopic/conventional septoplasty under local anaesthesia or general anaesthesia.

All the patients were assessed pre-operatively and post-operatively on the 7th day, 1 month and 3 months by subjective assessment and by objective assessments. Subjective assessment was done by patient’s complaints and objective assessment by anterior rhinoscopy and post-operative diagnostic nasal endoscopy. For subjective assessment, patients were given NOSE (Nose obstruction symptoms evaluation) questionnaire, and they were asked to fill the questionnaire for the post-operative improvement.

Table 1: Nose Obstruction Symptoms Evaluation (NOSE) questionnaire.²

Variables	Not a problem	Very mild problem	Moderate problem	Fairly bad problem	Severe problem
Nasal congestion or stuffiness	0	1	2	3	4
Nasal blockage or obstruction	0	1	2	3	4
Trouble breathing through my nose	0	1	2	3	4
Trouble sleeping	0	1	2	3	4
Unable to get enough air through my nose during exercise or exertion	0	1	2	3	4

RESULTS

Results of 24 cases of conventional septoplasty and 24 cases of endoscopic septoplasty were assessed under the

following criteria: 1) Patient particulars, 2) chief complaints, 3) nasal examination findings and 4) surgical results.

Table 2: Objective assessment among study subjects by anterior rhinoscopy and 0-degree scope.

Findings of nose		Endoscopic		Conventional		Total	Percentage (%)
		N	%	N	%		
Right septal deviation	Anterior	5	20	12	50	17	35
	Posterior	4	16	3	12	7	15
Left septal deviation	Anterior	6	25	4	16	10	21
	Posterior	4	16	1	4	5	10
Spur	Anterior	7	29	9	37	16	33
	Posterior	4	16	5	20	9	19

Table 3: Conventional septoplasty group: preoperative and postoperative NOSE score.

Variables	Pre-operative mean	Post-operative means	Reduced mean (comparative)	P value
Nasal congestion or stuffiness	2.75	0.45	2.30	<0.00001
Nasal blockage or obstruction	2.79	0.38	2.41	<0.00001
Trouble breathing through my nose	2.66	0.54	2.12	<0.00001
Trouble sleeping	1.70	0.29	1.41	<0.00001
Unable to get enough air through my nose during exercise or exertion	2.08	0.41	1.67	<0.00001
Total score	11.98	2.07	9.91	<0.00001

*p value calculated by paired t test.

Table 4: Endoscopic septoplasty group: pre-operative and post-operative NOSE score.

Variables	Pre-operative mean	Post-operative mean	Reduced mean (comparative)	P value
Nasal congestion or stuffiness	2.87	0.41	2.46	<0.003
Nasal blockage or obstruction	2.79	0.29	2.50	<0.003
Trouble breathing through my nose	2.66	0.33	2.33	<0.003
Trouble sleeping	2.83	0.25	2.58	<0.003
Unable to get enough air through my nose during exercise or exertion	2.58	0.20	2.38	<0.003
Total score	13.73	1.48	12.25	<0.003

*p value calculated by paired t test.

Table 5: Conventional vs endoscopic septoplasty group: pre-operative and post-operative NOSE score.

Groups	Preop mean NOSE score	Postop mean NOSE score	Drop in mean NOSE score	Percentage of fall in mean NOSE score (%)	P value
Conventional (CS)	11.98	2.07	9.91	83	<0.003
Endoscopic (ES)	13.73	1.48	12.25	94	

*p value calculated by paired t test.

Table 6: Post-operative findings of nose through Thudicum’s nasal speculum as well as 0-degree endoscope

Variables	Endoscopic		Conventional	
	N	Percentage (%)	N	Percentage (%)
No. of residual deviation	0	0	5	21
No. of mucosal tear	3	12.5	16	66.7
No. of septal perforation	0	0	0	0
External nose deformity	0	0	0	0
Synechia	0	0	1	4
Heamatoma	0	0	0	0

DISCUSSION

In our study, found most common age group affected was between 11-20 years which accounts for approximately

44% and mean of age group in conventional and endoscopic is 26 years and our study’s outcomes are consistent with previously carried out studies.³

As per literature present till now neither incidence of DNS nor the outcome of surgery depends upon male and female difference and our study's outcomes are consistent with the literature.⁴

Most common complaints of patients with septal deflections were nasal obstruction, anterior nasal discharge, headache, anosmia, and our study's outcomes are consistent with previously carried out studies.⁵

It was observed that there were definite intra-op advantages of endoscopic septoplasty over conventional septoplasty: Endoscopic septoplasty facilitates accurate identification of the pathology due to better illumination, improved accessibility to remote areas and magnification. It allows limited incision and elevation of the flaps and simultaneously not compromising with adequate exposure of the pathological site. Visualization of surgical space was good in all the 24 (100%) cases included in the endoscopic group when compared with the conventional septoplasty group where the visibility of surgical space was poor in 20 cases and 4 cases had fair visibility.^{6,7} Total unilateral tear was seen in 16 (66%) of patient of conventional group compared to 3 (12.5%) of patient in endoscopic group. The result was consistent with the previous studies and is statistically significant with p value less than 0.05.

When we compared the post-operative duration of stay in both the groups, we found that majority of the patients had post-operative stay between 48-72 hours in both the groups which was not similar to the previous study however the number of patients staying for more than 72 hours was more in the conventional group compared to the endoscopic group which was similar to the result of previous study.⁸

Post-operative complications like residual deviation, mucosal tear and synechia formation were found more with conventional septoplasty compared to endoscopic septoplasty. There were no septal perforation, post-operative hematoma or external nose deformity seen in either of the group.

There were subjective post-operative improvements in the NOSE scores across all the participants and within both groups, with no differences found between groups.⁹

However, it was found that objective outcomes such as operative time, and intra-operative complications favoured the endoscopic group.⁹

So, the endoscopic approach for septoplasty may be considered superior to the traditional approach for the correction of septal deviation.⁹

CONCLUSION

We conclude that: there is no significant difference in the terms of functional outcome (improvement of nasal

symptoms), complications and postoperative hospital stay, in conventional septoplasty group and endoscopic septoplasty group.

There are technical advantages of using endoscope during septoplasty as it is definitely superior in the terms of illumination, preciseness and surgery, visualization of deeper accurate parts of nasal cavity and resection of posterior deviation and spur especially in isolated septal spur.

Endoscopic septoplasty can be performed with minimal limited incision and manipulation, which results in minimal tissue trauma and septum resection, especially in isolated septal spur. Moreover, bleeding which especially occurs during maxillary crest removal that can be easily treated with endoscope and easily controlled using the electro cautery or bone wax.

We also noticed that finding the sub mucoperichondrial plane after putting the incision over the caudal border of septum (Freer's incision) is very difficult. So, we first identified plane using Thudicum's nasal speculum and Freer's elevator under top-light or conventional headlight. Once the plane is obtained, we used endoscope for doing the all over steps of septoplasty.

Finally, while transitioning to endoscopic septoplasty from traditional headlight technique may seem more time consuming, the operative time becomes similar after gaining familiarity with this procedure. In fact, for isolated spur, endoscopic septoplasty can be done faster compare to conventional approach. Ultimately, improved illumination hence the visualization is what this technique so appealing for treating deviated nasal septum.

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Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Sathyaki DC, Geetha C, Munishwara GB, Mohan M, Manjuranth K. A comparative study of endoscopic septoplasty versus conventional septoplasty. Indian J Otolaryngol Head Neck Surg. 2014;66(2):155-61.
2. Stewart MG, Witsell DL, Smith TL. Development and validation of the Nasal Obstruction Symptom Evaluation (NOSE) scale. Otolaryngol Head Neck Surg. 2004;130:157-63.
3. Gulati PS, Wadhera R, Ahuja N, Garg A, Ghai A. Comparative evaluation of endoscopic with conventional septoplasty. Indian J Otolaryngol Head Neck Surg. 2009;61(1):9-13.
4. Muhammad IA, Nabil-Ur Rahman. Complications of the surgery for the deviated nasal septum. J coll physicians surgery Pak. 2003;13(10):565-8.
5. Gupta M, Motwani G. Comparative study of endoscopic aided septoplasty and traditional

- septoplasty in posterior nasal septal deviations. *Indian J Otolaryngol Head and Neck Surg.* 2005;57(4):309-11.
6. Giles WC, Gross CW, Abram AC. How I do it Head and Neck Plastic surgery a targeted problem and its solution. *Endoscopic Septoplasty. Laryngoscope.* 1994;104(12):1507-9.
 7. Hwang PH, MC Laughlin RB, Lanza DC. Endoscopic Septoplasty: indications, technique and results. *J Otolaryngol Head Neck Surg.* 1999;120:678.
 8. Kaushik S, Vashistha S, Jain NK. Endoscopic vs Conventional Septoplasty: A Comparative Study. *Clin Rhinol Int J.* 2013;6(2):84-7.
 9. Paradis J, Rotenberg BW. Open versus endoscopic septoplasty: a single-blinded, randomized, controlled trial. *J Otolaryngol Head Neck Surg.* 2011;40(1):S28-33.

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