

Conventional versus endoscopic septoplasty

Madan Gopi¹, Jishana Jamaldeen^{2*}, Akhil Chandra Sarma[#], Mary Kurien^{##}

¹Consultant ENT Surgeon, Vellore, Tamil Nadu, INDIA.

²Assistant Professor Of ENT, Pondicherry Institute of Medical Sciences, Puducherry, INDIA.

[#]Senior Specialist, Department of ENT, Arya Hospital, Guwahati, INDIA.

^{##}Professor & HOD, Department of ENT, Pondicherry Institute of Medical Sciences, Puducherry, INDIA.

Email: jishana.j@gmail.com

Abstract

Background: Septoplasty is the treatment of choice for septal deviations, symptoms being mainly obstructive. In recent times, with the advent of endoscopes, conventional septoplasty is less frequently preferred. This prospective study was undertaken to primarily identify if endoscopic septoplasty is superior to conventional one, among patients with symptomatic septal deviation. **Methods:** This was a prospective quasi-randomized study among patients aged between 20 – 50 years age who underwent septoplasty for symptomatic septal deviation, in a tertiary academic centre for two years. Consecutive patients were divided into two groups, among which odd and even numbers underwent conventional and endoscopic septoplasty respectively. Preoperative and postoperative (1 week, one and three months) grading of their symptoms using the standard SNOT 22 score chart, in addition to detailed history, clinical examination and nasal endoscopy were done. **Results:** There were 50 patients in this study with 25 each in Conventional and Endoscopic groups. Majority of the endoscopic group (92%) had relief of nasal obstruction as compared to those in the conventional (72%). This was statistically significant ($p=0.04$). Intraoperatively, conventional group had marginally more significant chance of bleeding ($p=0.04$). Improvement in the SNOT 22 score was significantly more ($p=0.019$) in the endoscopic group as well. **Conclusion:** As per our quasi-randomized study there is significant subjective improvement in nasal obstruction with lesser chance of post-operative complications in endoscopic septoplasty suggesting it to be superior to conventional septoplasty. Future randomized controlled studies are indicated in this endoscopic era to confirm this.

*Address for Correspondence:

Dr Jishana Jamaldeen, Assistant Professor, Department Of ENT, Pondicherry Institute of Medical Sciences, Puducherry – 605014, India.

Email: jishana.j@gmail.com

Received Date: 20/03/2020 Revised Date: 28/05/2020 Accepted Date: 05/07/2020

DOI: <https://doi.org/10.26611/10161522>

This work is licensed under a [Creative Commons Attribution-NonCommercial 4.0 International License](https://creativecommons.org/licenses/by-nc/4.0/). 

Access this article online	
Quick Response Code:	Website: www.medpulse.in
	Accessed Date: 22 August 2020

INTRODUCTION

Deviated nasal septum, the commonest cause of nasal obstruction may produce other symptoms like headache, recurrent sinus infections, epistaxis and hyposmia depending on the type and extent of deviation. Surgery is the mainstay of treatment for symptomatic cases. Submucous resection (SMR) and septoplasty are commonly employed. Septoplasty is considered the gold

standard technique for septal correction¹. But with the advent of endoscopes, modified techniques have evolved. However each of these procedures has limitations and cannot deal with all variants of nasal deformities. Earlier studies regarding endoscopic septoplasty describes several advantages over the conventional method. However there are very few studies that have compared conventional septoplasty and endoscopic septoplasty in terms of clinical outcomes. Of the limited studies (both randomised and observational) that have been conducted, many have methodological limitations, significant heterogeneity in inclusion criteria and outcomes assessed. Therefore, there still exists clinical equipoise in this regard. This study aims to compare the subjective and objective surgical outcomes of these techniques using a quasi-randomised study.

METHODOLOGY

This was a Quasi-randomised study carried out in department of Otorhinolaryngology at Pondicherry

Institute of Medical Sciences between September 2013 and September 2015. After informed consent, patients with symptoms like nasal obstruction, headache, recurrent sinus infections or hyposmia due to deviated nasal septum were included. Patients with active upper respiratory tract infection, uncontrolled hypertension, diabetes, bleeding diathesis and patients below 10 years and above 50 years were excluded from the study. Patients were asked to grade their symptoms using the standard SNOT 22 score chart. Detailed history and clinical examination were done including anterior and posterior rhinoscopy. Cold spatula test and Cottle’s test were done. All patients underwent preoperative diagnostic nasal endoscopy in order to assess the type, extent of deviation, septal spurs and any other abnormalities in the lateral nasal wall. X ray of paranasal sinuses was taken for all patients and CT scan was taken if required. 50 patients were included and divided into group A and B, of which odd numbers underwent conventional septoplasty and even numbers underwent endoscopic septoplasty. Following surgery, patients were assessed at the end of 1st postoperative week and at the end of 1 month and 3 months using both SNOT 22 score and endoscopic assessment. Sample size was calculated assuming that 50% of patients would have symptomatic relief following conventional septoplasty compared to 90% in the endoscopic group; hence sample size was calculated to be 50 (25 in each group) at a power of 80% and alpha error of 5% (Results from OpenEpi, Version 3, open source calculator—SSCohort). The Institute Ethics Committee approved the study and written informed consent was obtained from all included participants prior to enrolment.

RESULTS

Fifty patients with symptomatic nasal obstruction due to deviated nasal septum were divided into 2 groups (Conventional and Endoscopic groups) of 25 each. Patients were predominantly male in both the groups. Nasal obstruction was present in all patients in both groups. The baseline characteristics of patients in the two groups is summarised in tables 1 and 2.

Mean time taken for the procedure was 80.4 (SD – 11.08) minutes in patients who underwent conventional septoplasty compared to 86.4 (SD – 10.17) minutes in the endoscopic group (p=0.05). Among the 25 patients in the conventional group, 18 (72%) had relief of nasal obstruction compared to 23 (92%) in the endoscopic group post-operatively (p=0.04). There were no significant differences between the two groups of patients with respect to post-operative relief of other symptoms (table 3). Post-operative nasal endoscopy was done in all patients at one month post-operatively. Inferior turbinate hypertrophy was present in 7 out of 11 (63.6%) patients in conventional group compared to 10 out of 13 (76.9%) patients in endoscopic group (p=0.2). Incidence of complications was low in both groups; however, 2 patients (8%) in conventional group had intra-operative or post-operative haemorrhage whereas only 1 patient (4%) in endoscopic septoplasty group had this complication (p=0.04). Mucosal tear and synechia were seen only in conventional group in 2 (8%) and 1 (4%) patients respectively. Neither conventional nor endoscopic group patients developed complications like septal hematoma, abscess, perforation, saddling of the nose, supra tip depression, or columellar retraction. Improvement in SNOT 22 score was significantly more in the endoscopic group (40.2 preoperatively to 12 postoperatively) than the conventional group (37.4 preoperatively to 11.1 postoperatively); p=0.019.

Table 1: Baseline characteristics of participants in the two groups (n= 50)

Parameter	Conventional group (n=25)	Endoscopic group (n=25)
Age (years)	29.7	34.9
Male gender (%)	17 (68)	19 (76)
Headache (%)	19 (76)	21 (84)
Nasal obstruction (%)	25 (100)	25 (100)
Nasal discharge (%)	10 (40)	14 (56)
Post nasal drip (%)	4 (16)	10 (40)
Hyposmia (%)	4 (16)	5 (20)
Epistaxis (%)	2 (8)	4 (16)

Table 2: Baseline endoscopic findings in participants of the two groups (n=50)

Endoscopic findings	Conventional group (n=25)	Endoscopic group (n=25)
Right DNS (%)	9 (36)	8 (32)
Left DNS (%)	12 (48)	11 (44)
Bilateral (%)	4 (16)	6 (24)
Spur (%)	13 (52)	15 (60)
Inferior turbinate hypertrophy (%)	2 (8)	4 (16)
Middle turbinate hypertrophy (%)	11 (44)	13 (52)

Uncinate abnormality (%)	2 (8)	5 (20)
Concha bullosa (%)	3 (12)	5 (20)

Table 3: Comparison of symptom relief post-operatively between two groups (n=50)

Symptom	Conventional septoplasty		Endoscopic septoplasty		P value
	Preoperative (%)	Postoperative (%)	Preoperative (%)	Postoperative (%)	
Nasal obstruction	25 (100)	7 (28)	25 (100)	2 (8)	0.04
Nasal discharge	10 (40)	4 (16)	14 (56)	3 (12)	0.32
Headache	19 (76)	8 (32)	21(84)	5 (20)	0.21
Post nasal drip	4 (16)	1 (4)	10 (40)	4 (16)	0.59
Hyposmia	4 (16)	1 (4)	5 (20)	2 (8)	0.63

DISCUSSION

In this quasi-randomized study of 50 patients with symptomatic deviated nasal septum assigned to undergo either conventional septoplasty or endoscopic septoplasty, there was significant relief of nasal obstruction after endoscopic septoplasty compared to conventional surgery. Although the time taken for the procedure was significantly more in the endoscopic group, the mean improvement in SNOT score was more in the endoscopic group. While complications were generally low in the study, intra or post-operative excessive haemorrhage, mucosal tear and synechiae were more common in the conventional group. In this study, all the 50 patients had nasal obstruction. A higher proportion of patients who underwent endoscopic surgery had relief of this symptom post-operatively compared to conventional septoplasty. Jain and co-workers reported postoperative relief of nasal obstruction in 38% cases that underwent conventional septoplasty and 96% cases that underwent endoscopic septoplasty². However, unlike our study, they found a higher statistically significant proportion with relief of other symptoms like post-nasal drip and headache following endoscopic septoplasty. Harely *et al.*³ and several others^{4,5} report a similar change in symptom relief. The relatively lower numbers of patients with these symptoms in our study may explain this disparity. A meta-analysis of studies comparing conventional and endoscopic septoplasty showed results consistent with most of our findings⁶. Nasal obstruction was relieved in a significantly higher proportion of patients undergoing endoscopic procedure compared to conventional septoplasty (RR – 3.7; 95% CI 2.13, 6.43). Moreover, similar to our study, it did not show difference in relief of other symptoms with either procedure, except for improvement in contact point headaches (RR – 2.65; 95% CI 1.11, 6.30). However, a recent observational study concluded that there was no difference between the two techniques in terms of relief of nasal obstruction and change in disease-specific quality of life⁷. We also used change in pre and post-operative SNOT score to determine improvement following surgery in the two groups of patients. The pre-operative scores for conventional

septoplasty and endoscopic septoplasty was 40.2 and 37.4 respectively while the post-operative average SNOT 22 score for conventional septoplasty and endoscopic septoplasty was 12 and 11.1 respectively. The mean improvement in SNOT score for conventional septoplasty and endoscopic septoplasty was 28.24 and 26.32 respectively. Although we were not able to identify studies that used the same score for subjective change assessment, the recent study by Garzaro (7) that used NOSE questionnaire found that despite significant subjective improvements in symptoms and quality of life in each of the techniques, there was no statistically significant difference between the two techniques. The subjective nature of these outcomes may explain the disparity. However objective measures such as rhinomanometric measurements were also not different between the two techniques in this study. Lack of blinding in assessment of outcomes in observational designs could very well explain this finding. While our study noted that time taken to complete the procedure was significantly longer in the endoscopic septoplasty group compared to conventional group, Paradis and colleagues have shown that lesser time is consumed with endoscopic approach⁸. The operating time may be influenced by several factors including the deformity and the experience of the surgeon and therefore unless standardized for these factors, cannot be compared meaningfully. A study by Shelkar *et al.*,⁹ reported no major complications during endoscopic septoplasty or in post-operative period. Mucosal flap tear was the most common complication noted after endoscopic septoplasty which occurred in 4 (7%) and was due to sharp spur, synechiae in 3 (5.2%) and septal perforation in 1(1.7%). However, in our study none of these complications were encountered in the endoscopic surgery group. Overall complication rate in endoscopic septoplasty was 4% in our study which is similar to rates observed by Nawaiseh (10) and Hwang PH *et al.* (11), ranging from 2 to 5%. In the meta-analysis by Hong *et al.*, complications like intra-operative / post-operative haemorrhage (RR – 2.62; 95% CI 1.45, 4.71), mucosal adhesions / synechiae (RR – 3.30; 95% CI 1.49, 7.31), persistent deviation (RR – 2.09; 95% CI 1.44, 3.04) and septal tear (RR – 1.84; 95% CI 1.27, 2.68) were

significantly higher in those undergoing conventional septoplasty. Our findings underscore the significance of these findings that might be of great importance while planning a procedure for symptomatic deviated nasal septum. Our study had several limitations. Despite being a quasi-randomized study, we were unable to achieve balance of baseline variables between the two groups. Several confounders could have affected the assessment of outcomes such as operating time. The maximum follow up was for a period of 3 months; we could not assess long term outcomes. However, our study adds significantly to existing literature since there are very few experimental designs comparing the two techniques. The available studies have limitations in terms of blinding of outcomes and follow up. The objective outcomes were assessed in our study by endoscopy performed by a surgeon not involved in the study and blinded to the procedure. We were also able to ensure complete follow up of all participants. Further, our findings closely parallel the results of the meta-analysis which indicate that the methodology has been robust.

CONCLUSION

This prospective quasi-randomized study reveals that endoscopic septoplasty has several advantages over conventional septoplasty in terms of subjective improvements in nasal obstruction. We were unable to demonstrate significant differences in relief of other symptoms. Post-operative complications were more common in those undergoing conventional septoplasty, in spite of a shorter operating time as compared to endoscopic septoplasty. We conclude that endoscopic septoplasty is a better alternative to conventional septoplasty; future randomised studies should focus on more objective measures including rhinomanometry and long-term outcomes.

REFERENCES

1. Giles WC, Gross CW, Abram AC, Greene WM, Avner TG. Endoscopic septoplasty. *Laryngoscope*. 1994 Dec;104(12):1507-9.
2. Jain L, Jain M, Chouhan AN, Harshwardhan R. Conventional Septoplasty versus Endoscopic Septoplasty: A Comparative Study. 2011;4:5.
3. Harley DH, Powitzky ES, Duncavage J. Clinical outcomes for the surgical treatment of sinonasal headache. *Otolaryngol Head Neck Surg*. 2003 Sep;129(3):217-21.
4. Iqbal SM, Hussain SI, Bhojani MJ. A comparative study of endoscopic versus conventional septoplasty: An analysis of 110 cases. :4.
5. Gulati SP, Wadhera R, Ahuja N, Garg A, Ghai A. Comparative evaluation of endoscopic with conventional septoplasty. *Indian J Otolaryngol Head Neck Surg*. 2009 Mar;61(1):27-9.
6. Hong CJ, Monteiro E, Badhiwala J, Lee J, Almeida JR de, Vescan A, *et al.*. Open versus Endoscopic Septoplasty Techniques: A Systematic Review and Meta-Analysis: *American Journal of Rhinology and Allergy* [Internet]. 2016 Nov 1 [cited 2020 Jun 28]; Available from: <https://journals.sagepub.com/doi/10.2500/ajra.2016.30.4366>
7. Garzaro M, Dell'Era V, Riva G, Raimondo L, Pecorari G, Aluffi Valletti P. Endoscopic versus conventional septoplasty: objective/subjective data on 276 patients. *Eur Arch Otorhinolaryngol*. 2019 Jun 1;276(6):1707-11.
8. Paradis J, Rotenberg BW. Open versus endoscopic septoplasty: a single-blinded, randomized, controlled trial. *J Otolaryngol Head Neck Surg*. 2011 Feb;40 Suppl 1:S28-33.
9. Shelkar R, Ekhar V, Anand A, Rane S, Gangwani R, Lanjewar K. Study of indication, complication and functional outcome in endoscopic septoplasty. *Journal of Evolution of Medical and Dental Sciences*. 2014 Mar 31;3(13):3455-60.
10. Nawaiseh S, Al-Khtoum N. Endoscopic septoplasty: retrospective analysis of 60 cases. *J Pak Med Assoc*. 2010 Oct;60(10):796-8.
11. Hwang PH, McLaughlin RB, Lanza DC, Kennedy DW. Endoscopic Septoplasty: Indications, Technique, and Results. *Otolaryngol Head Neck Surg*. 1999 May 1;120(5):678-82.

Source of Support: None Declared
Conflict of Interest: None Declared

Policy for Articles with Open Access:

Authors who publish with MedPulse International Journal of ENT (Print ISSN: 2579-0854) (Online ISSN: 2636-4727) agree to the following terms: Authors retain copyright and grant the journal right of first publication with the work simultaneously licensed under a Creative Commons Attribution License that allows others to share the work with an acknowledgement of the work's authorship and initial publication in this journal. Authors are permitted and encouraged to post links to their work online (e.g., in institutional repositories or on their website) prior to and during the submission process, as it can lead to productive exchanges, as well as earlier and greater citation of published work.