

Comparison of postoperative Synechiae formation between Conventional and Endoscopic Septoplasty for Deviated Nasal Septum: A Randomized Clinical Trial

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ABSTRACT

Objective: To compare the efficacy of endoscopic and conventional septoplasty in terms of frequency of postoperative synechiae formation.

Study Design: A Randomized Clinical Trial.

Place and Duration: This study was conducted in the ENT department Holy Family Hospital Rawalpindi from 1st November 2015 to 30th April 2016.

Methodology: A total of 90 patients with Deviated Nasal Septum (DNS) causing permanent nasal obstruction were randomized into two groups. Group A patients underwent conventional septoplasty and endoscopic septoplasty was performed on Group B patients. Both groups were evaluated for postoperative synechiae formation on 8th postoperative week.

Results: Both groups were comparable for age, gender and types of the deviated nasal septum. Overall synechiae formation was observed in 11.1% in the conventional septoplasty after 8 weeks of follow up, while none of the patients developed synechiae in the endoscopic septoplasty, the overall effect was significant, p-value .001. Both groups showed improvement in nasal obstruction from baseline.

Conclusion: Endoscopic septoplasty was found superior to conventional septoplasty in terms of avoiding postoperative synechiae in patients undergoing surgical correction for deviated nasal septum regardless of patient's age and gender.

Keywords: Deviated nasal septum, Conventional septoplasty, Endoscopic septoplasty, Nasal obstruction, Postoperative synechiae.

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INTRODUCTION

Nasal obstruction due to deviated nasal septum is a common distressing and annoying problem encountered by

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otolaryngologists. It not only causes breathing difficulties but also results in improper aeration of paranasal sinuses predisposing to sino-nasal infections and also results in drying of mucosa leading to crusting and epistaxis¹. Septal surgery is the procedure of choice for treatment of nasal obstruction caused by deviated nasal septum². Various surgeries have been proposed for the correction of deviated nasal septum like Submucosal resection, Conventional septoplasty and Endoscopic septoplasty¹. Septoplasty is a procedure used to correct the deviated part of the nasal septum. Conventional septoplasty has been proposed by Cottle in 1947³.

Septoplasty has evolved over time and endoscopic septoplasty is the latest trend⁴. Septoplasty by endoscopic approach is a fast developing concept in otorhinolaryngology and gaining popularity. Endoscopic septoplasty was described in the early nineties of the 20th century and is an accepted alternative to Traditional septoplasty. This approach provides a direct-targeted route to the anatomic deformity, better illumination, improved visualization and magnification of the surgical field, precise and safe removal of posterior deviations, high deviations, isolated spurs and excellent teaching tool in teaching hospitals⁵⁻⁷. No doubt endoscopic septoplasty is a superior tool but caudal deflections of the septum are better corrected by conventional technique⁸. The present study is to reflect the superiority of the endoscopic technique as compared to the

conventional septoplasty in terms of efficacy and minimal post-operative complications specifically the decreased chances of synechiae. After the widespread use of endoscopes in the field of otolaryngology, endoscopic surgical correction of the nasal septum helped in removing only the deviated part, spur and maxillary crest. Endoscopic septoplasty is more effective with fewer manipulations and can be used to diagnose and treat the lateral wall abnormalities of the nose at the same sitting along with minimal trauma to nasal mucosa which is the key factor in the formation of post-operative synechiae.

Complications of septoplasty like septal perforation, synechiae formation and saddle nose deformity are less with endoscopic septoplasty as compared to conventional septoplasty⁹. The reason is that the endoscopic septoplasty offers better illumination and excellent magnification to the mucoperichondrial flap of septal framework particularly in more posterior deviations over conventional septoplasty hence reducing chances of post-operative complications. This study was conducted with an objective to compare the efficacy of endoscopic septoplasty against conventional septoplasty in terms of post-operative nasal synechiae formation.

METHODOLOGY

This randomized clinical trial study was conducted from 1st November 2015 to 30th April 2016 at ENT Head and Neck Surgery Department Holy Family Hospital Rawalpindi, Pakistan. The patients of both genders, between 16 to 50 years of age and the patients with symptomatic nasal septum deviation diagnosed on anterior rhinoscopy were included in the study. The patients with acute infection of the nose and paranasal sinuses, patients operated previously for deviated nasal septum and immunocompromised patients like diabetics were excluded from the study. The purpose and benefits of the study were explained to all patients and written informed consent was obtained.

All patients were randomly allocated in two groups by lottery method. Patients allocated in group A underwent conventional septoplasty and patients allocated in group B underwent endoscopic septoplasty.

For all patients, surgeries were performed by experienced ENT surgeons. After surgery, all patients were followed up and were discharged from hospital on 2nd post-op day. All patients in group A and B were followed up and examined by nasal endoscopy for absence or presence of synechiae at 8th week postoperatively by the surgeons who did the surgeries. Symptoms including nasal obstructions, headache, nasal discharge, hyposmia and postnasal drip were asked for. Post-operative questions were asked including the following five points nasal parameters: Nasal congestion or stuffiness, nasal blockage or obstruction, trouble breathing through the nose, troubled sleeping and unable to get air enough through the nose during exercise or exertion.

Data Analysis: Data were analyzed using the statistical program for the social sciences SPSS version 20. Quantitative data were expressed as mean \pm SD. Qualitative data were expressed as frequency and percentage. A chi-square test has been applied

to compare the frequency of efficacy between the two groups taking p-value ≤ 0.05 as statistically significant. Data has been stratified for age and gender to address the effect modifiers. The post-stratification chi-square test has been applied. P-value of ≤ 0.05 has been considered statistically significant.

RESULTS

A total of 90 patients were included in the study. The demographic data of all patients with nasal septal deviation are summarized in Table-I. It was supplemented by an objective assessment of the presence and absence of synechiae that was carried out by diagnostic nasal endoscopy. The frequency of postoperative synechiae was significantly higher with conventional septoplasty (22.2% vs. 0%; $p=0.001$) as compared to endoscopic septoplasty and this difference was significant across all age and gender groups Table II. As regards the other nasal symptoms there was a significant improvement of the post-operative nasal discharge in both groups as well as postoperative headache, snoring and hyposmia, however there no improvement of snoring in either group.

Table-I: Demographic data of age, gender and type of deviation in group A and B (N = 90)

Demographic data	Group A (n=45)	Group B (n=45)	p-value
Age (years)	29.76 \pm 9.40	29.96 \pm 9.07	.001
Gender			
Male	32 (71.1%)	31 (68.9%)	
Female	13 (28.9%)	14 (31.1%)	
Type of Deviation			
S-shaped	15 (33.33%)	14 (31.11%)	
C shaped	12 (26.67%)	15 (33.33%)	
Septal spur	18 (40%)	16 (35.56)	

Independent sample t-test and chi-square test, observed difference was statistically insignificant

Table-II: Comparison of post-operative synechiae formation between two groups (N = 90)

	Total	Endoscopic n=45	Conventional n=45	p-value
Synechia present	10 (11.1%)	0 (0%)	10 (22.2%)	.001
Synechai absent	80 (88.9%)	45 (100%)	35 (77.8%)	

The P-value for Fisher exact test

Table-III: Comparison between other nasal symptomology before and after septoplasty in two groups. (N = 90)

Symptoms	Group A		Group B	
	Pre-op	Post-op	Pre-op	Post-op
Nasal Discharge	4	0	5	0
Headache	15	5	12	4
Snoring	2	2	3	3
Hyposmia	2	0	1	0

DISCUSSION

The evolution of endoscopic septoplasty for the correction of the deviated nasal septum is one of the great achievement in the history of surgery and this has led to more research in the indication, technique and effectiveness of endoscopic septoplasty¹. The comparative study of conventional septoplasty and endoscopic septoplasty in terms of post operative synechiae formation and identification at followup, revealed that the incidence of the development of complication i-e; postoperative synechiae was 22.2% after conventional septoplasty as compared to the absence of this complication after an endoscopic procedure.

Sathyaki et al, conducted a study comparing the conventional and endoscopic septoplasty in which synechiae formation was seen in 16% of patients in conventional septoplasty as compared to the absence of this complication in an endoscopic procedure¹. Jain et al reported 20% higher incidence of postoperative synechiae formation after conventional septoplasty as compared to endoscopic³. Shrestha and colleagues and Salama et al also showed the same results in his study^{10,11}. In other studies by Verma et al, Shehata et al, Iqbal et al, Yadav et al significantly low incidence of postoperative synechiae formation was observed after endoscopic septoplasty as compared to the conventional procedure¹²⁻¹⁷.

In our study, the incidence of the development of postoperative synechiae was 22.2% after conventional septoplasty as compared to the absence of this complication after an endoscopic procedure. Hence our results are consistent with the other studies. Post-op complications in our series were minimal whether early or late.

Our patients were all evaluated subjectively and objectively before and after the surgery by questionnaire and endoscopic examination respectively. In our study, the pre-operative data in both groups were very comparable as regards age, gender, duration of nasal obstruction, associated nasal septum deflection and type of nasal deformity indicating that any expected differences between the post op results of both the groups was not dependent upon these factors.

CONCLUSION

Endoscopic septoplasty was found superior to conventional septoplasty in terms of postoperative synechiae, in patients undergoing surgical correction of deviated nasal septum regardless of patient's age and gender.

AUTHOR'S CONTRIBUTION

Akaash H: Data analysis

Ashfaq AH: Manuscript Writing, Designed research methodology

Akhtar A: Data Collection, Conceived idea, Manuscript writing

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