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A comparative study of endoscopic versus conventional septoplasty: an analysis of 50 cases

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ABSTRACT

Background: Nasal obstruction is the most common complaint in ENT practice. Surgical correction of deviated nasal septum has been performed by a variety of techniques of which sub mucous resection and Septoplasty procedures of surgical correction of nasal septum play a prime role in management of patients of nasal obstruction. Nasal endoscope is very useful tool to visualize posterior part of septum and do the surgery more precisely and with less complication as compare to conventional method. The objectives of the study were to compare the outcomes of conventional and endoscopic septoplasty, to evaluate the advantages, disadvantages and complications of both endoscopic and conventional septoplasty

Methods: 50 cases (between (Oct. 2014 - March 2016) of deviated nasal septum selected in this prospective study and they were randomly divided equally in 2 groups for endoscopic (A) and conventional (B) septoplasty respectively.

Results: The study included 50 cases. Majority of patients in this study were males 84% (n=42) and 16% (n=18) were female. 46% (n=23) patients had DNS to right side and 54% (n=27) patients had left side, anterior deviation (48%). C and S shaped deviations (14%). Spur was present in 22% (n=11) of cases and 10% (n=5) patients presented with thickening. After completing 2 months of follow up 92% (n=23) of group A and 88% (n=22) of group B were relieved from nasal discharge, while nasal obstruction was absent in 96% (n=24) patients of group A and 80% (n=20) of group B. 4% cases (n=1) in endoscopic septoplasty was having persistent deviated nasal septum and 16% (n=4) patients of conventional septoplasty belong to this group.

Conclusions: Endoscopic septoplasty has an obvious edge over the conventional approach due to better illumination which enables to identify the pathology accurately, excise the deviated part of septum precisely and realignment of the cartilage for best results.

Keywords: Septoplasty, Endoscopic septoplasty, DNS

INTRODUCTION

Nasal obstruction is the most common complaint in rhinologic practice and a deviated nasal septum is the most common cause of nasal obstruction. A significantly deviated nasal septum has been implicated in epistaxis, sinusitis, obstructive sleep apnea and headache attributable to contact points with structures of the lateral nasal wall. Surgical correction of deviated nasal septum has been performed by a variety of techniques of which sub mucous resection and Septoplasty procedures of surgical correction of nasal septum play a prime role in management of patients of nasal obstruction. After the invention of nasal endoscopes tremendous changes have evolved in the field of septal surgery. Now a day's endoscopes are being used in performing septal surgery

so as to allow access in performing endoscopic sinus surgery where it is was termed as Endoscopic Septoplasty.² Septoplasty is a surgical procedure that corrects a deformity of the nasal septum. The usual purpose is to improve the nasal breathing. When compared with standard head light technique, endoscopic septoplasty provides important advantages which include adequate visualization, room for instrumentation during functional endoscopic sinus surgery, access to para nasal sinuses and for other surgeries like trans-septal approach to the sphenoid sinus, visualization and stoppage of postnasal bleeds. But before introduction of functional endoscopic sinus surgery, majority of septoplasties were done for nasal airway obstruction. Furthermore in complex deformities, better correction is possible with the help of an endoscope since we can clearly see the posterior deviations. Whereas patients undergoing traditional septoplasty require a longer stay due to bleeding or lip edema than those undergoing endoscopic septoplasty. Endoscope also aided limited resection and thus more conservation by guiding precise shaving of septal cartilage.³ Endoscopic septoplasty is a fast developing concept and gaining popularity with an increasing trend towards the endoscopic surgeries.⁴ Endoscopic technology greatly enhances visualization during septoplasty. Discrete septal pathologies such as isolated deflections, spurs, perforations and contact points can be addressed in a directed fashion.⁵ Endoscopic septoplasty has several advantages over traditional headlight septoplasty which include superior visualization, accommodation of limited and minimally invasive septoplasty and usefulness as an effective teaching tool with video imaging.

Objective

- 1) To compare the outcomes of endoscopic and conventional septoplasty.
- To evaluate the advantages, disadvantages and complications of both endoscopic and conventional septoplasty.

METHODS

Study design

Hospital based prospective comparative study.

Study area

Patient presenting with symptomatic deviated nasal septum to the department of ENT in MMIMSR, Mullana, Ambala.

Sample size

50 patients were taken for the study.

Study duration

One and half years (October 2014 - March 2016)

Study population

50 patients were selected and randomly allotted into 2 groups consisting to 25 patients each.

Inclusion criteria

Inclusion criteria were age more than 14 years; patient with symptomatic deviated nasal septum, nasal obstruction, chronic rhinosinusitis, patient suffering with complications like epistaxis, headache, snoaring.

Exclusion criteria

Exclusion criteria were age less than 14 yrs; external deviation with deviated nasal septum, patients with acute rhinitis or allergic rhinitis or vasomotor rhinitis, patients above 65 yrs.

The ethical clearance for the study was obtained from Institutional Ethics of MMIMSR, Mullana, Ambala.

A group of fifty patients with deviated nasal septum refractory to medical treatment with long term nasal obstruction and headache were selected as per the inclusion criteria from in patient department of Otorhinolaryngology. A well informed written consent was taken. Preoperative assessment was done, a detailed history was taken, patients were examined clinically and endoscopically and preoperative findings were noted. Preoperative medication was given to the patients and they were taken for surgery.

Patients were randomized into 2 groups by randomization, a total of 50 envelops were taken consisting of 25 chits marked as endoscopic septoplasty and 25 marked as conventional septoplasty. Prior to operation, in the operation theater, envelop was opened and type of septoplasty was decided.

Techniques for conventional septoplasty

After infiltration with 2% xylocaine with adrenaline into columella and septum under headlight, incision (hemitransfixion incision) was made at caudal border. The mucoperichondrial and periosteal flaps were elevated upto perpendicular plate of ethmoid. The osseocartilaginous junction was dislocated. A 0.5 cm of the anterior margin of perpendicular plate of ethmoid was removed with Luc's forceps. An inferior cartilaginous strip of 0.5 cm was removed if necessary. The incision was closed using chromic catgut (3-0) and nasal packing was done.

Technique for endoscopic septoplasty

The procedure was performed under local or general anaesthesia. The septum was injected with 2% xylocaine in 1: 20,000 epinephrine on the convex side of the most deviated part of the septum using 0° rigid 4 mm

endoscope. Hemitransfixation incision was made. Incision was extended superiorly and inferiorly just as needed to expose the most deviated part. A submucoperichondrial flap was raised using a suction elevator under direct visualization with an endoscope, underlying bone was exposed and the most deviated part was removed. The flap was repositioned back after suction clearance and edges of the incision were just made to lie closely without the need to suture. The nasal cavity was packed with Vaseline nasal packs.

Intra-operatively following parameters were noted:

- a) Duration of surgery.
- b) Blood loss during surgery.
- c) Associated turbinate procedure.

Nasal packing was done for all cases in both groups with Vaseline nasal packs and I.V. antibiotics were started.

Patients of both groups were discharged with one week of antibiotics and analgesics, decongestant nasal drops were given for 3 days followed by saline nasal drops till next visit.

Postoperatively second week, fourth week, eighth, follow up was done and following points were noted on diagnostic nasal endoscopy:

- a) Persistence of anterior/posterior deviation or spur.
- b) Formation of synechiae.
- c) Persistent pathology of turbinates.
- d) Presence of discharge in middle meatus.
- e) Cold spatula test.
- f) Any change in external appearance.

Data collected was entered in Microsoft excel. Data was analyzed by using SPSS version 20 for calculating "p" value and other statistical analysis.

RESULTS

The study included 50 cases. Age range varied from (16-54 years) with a mean age of 28 years. Most common age group involved was 21-30 years with (n=18) involving 36% of cases. The least common age group was patients >40 years (n=6) involving 12% of cases (Figure 1). Majority of patients in this study were males 84% (n=42) and 16% (n=18) were female Patients with male to female ratio was 4:1 (Figure 2). Clinical assessment was done in all 50 patients after dividing them into 2 groups out of which 25 underwent endoscopic septoplasty and 25 conventional septoplasty.

Nasal obstruction was the commonest symptom in both the groups involving (n=21) 84% in group A and (n=18) 72% in group B. Equal no. of patients (n=4) 16% were seen in both the groups presenting with sneezing. Hyposmia was the least common feature in both the groups (Figure 3). 46% (n=23) of patients had DNS to

right side and 54% (n=27) patients to left side. 48% (n=24) patients had anterior deviation. C and S shaped deviations were present in 14% (n=7) and 6% (n=3) respectively. Spur was present in 22% (n=11) of cases and 10% (n=5) patients presented with mucosal thickening. After completing 2 months of follow up in our 50 patients, revealed that 92%(n=23) of group A and 88% (n=22) of group B were relieved from nasal discharge, while nasal obstruction was improved in 96% (n=24) patients of group A and 80% (n=20) of group B. Headache and post nasal discharge was improved in 100%(n=25) patients of group A and 88% (n=22) patients of group B. In this study 4% of patients (n=1) in endoscopic septoplasty was having synechiae and 8% (n= 2) patients with conventional septoplasty. 4% cases (n=1) in endoscopic septoplasty was having persistant Deviated nasal septum and 16% (n=4) patients of conventional septoplasty belong to this group. There were no complications of epistaxis and crusting in endoscopic septoplasty but in case of conventional septoplasty 4% (n=1) patient was having anterior epistaxis and 8% (n=2) were having crusting (Figure 4).

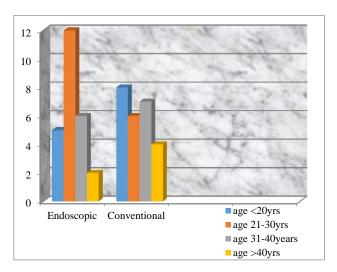


Figure 1: Age distribution.

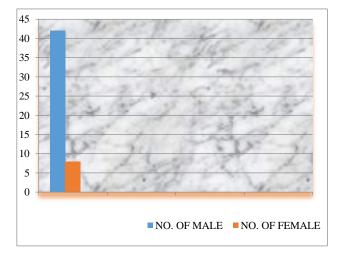


Figure 2: Gender distribution.

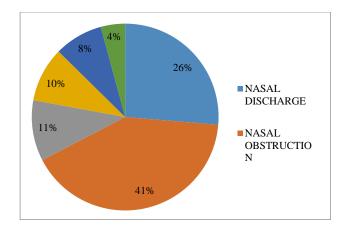


Figure 3: Analysis of nasal symptoms.

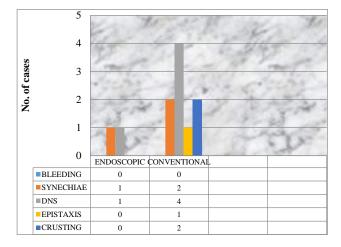


Figure 4: Post-operative complications.

DISCUSSION

Surgery on a deviated nasal septum has seen several modifications since its inception, starting from radical septal resection to mucosal preservation and subsequent preservation of the possible septal framework. Various techniques have been described for the correction of different types of septal deviations in the past. The concept of SMR was popularized and refined by Killian and Freer separately in the early twentieth century. However an increasing incidence of complications of septal surgery led to the more conservative septoplasty.

Nasal obstruction is one of the most frequent among the nasal symptoms affecting the human population. Deviated nasal septum apart from producing nasal obstruction also may be the cause for Epistaxis, sinusitis, obstructive sleep apnea and headaches attributable to contact points with structures of the lateral nasal wall.⁷

Present day evaluation of septal deviation depends on physical examination and imaging. Refinement in the diagnosis and treatment of nasal obstruction is possible with the use of the endoscope. Apart from the abnormalities of lateral nasal wall nasal endoscopy can precisely diagnose the pathological abnormalities of the nasal septum.⁸

Olphen described that Cottle in 1963 gave the concept of conventional septoplasty which is done in 6 phases:

- a) Gaining access to the septum
- b) Correction of pathology
- c) Removing pathology
- d) Shaping removed cartilage and bone
- e) Reconstruction of the septum
- f) Stabilizing the septum

But this septoplasty technique have also seen ended with many post-op complications.⁹

Thus the advent of nasal endoscope facilitates the accurate identification of the septal deviations with limited mucoperichondrial flap elevation, minimal cartilage resection as well as proper realignment of the septum and thus the endoscopic septoplasty is a convincing alternative to the conventional septoplasty. ¹⁰

Table 1: Comparative incidence of nasal obstruction in different studies.

	Present study	Salama MA ¹¹
Nasal obstruction	78%	90%

In our study, the average patient age at the time surgery was >20 years to <40 years, and maximum number of patients fell in the age group of 21-30 years. This is in concordance with Salama. 11 There were 84% (21/25) males and 16% (4/25) females in group A, and 84% (21/25) males and 16% (4/25) females in group B. Our observation was that overall deviated nasal septum is more common in males. The most common symptom with which our patients presented was nasal obstruction. 84% in Group A and 72% in Group B. Overall incidence of nasal obstruction was 78%. These were also in accordance to the observation done by Salama and Peacock (Table 1).11,12 Nasal discharge was present in 52% cases of Group A and 48% cases of Group B. Headache were seen in both the groups (20%) in each group. Thus both our study groups were comparable and homogenous in terms of the patient symptomatology. Bleeding was seen in 14% of patients similar results were also seen in a study done by Gulati, Al Tawy. 13,14 Anterior rhinoscopic findings were analyzed and can be compare with previous studies. 54% patients were found to have DNS to right. Further in different types of DNS. 48% patients had anterior deviation and spur was seen in 22% of patients (Table 2). 92% (n=23) of group A and 88% (n=22) of group B were relieved from nasal discharge, while nasal obstruction was improved in 96% (n=24) patients of group A and 80% (n=20) of group B in our study. Harley et al was observed significant improvement in patients with nasal obstruction and headache in endoscopic group as compared to conventional group.¹⁸ In a study by Nayak et al, the endoscopic-aided septoplasty group was found to be more effective in correction of nasal symptoms such as nasal obstruction and headache. In some studies regarding the relief of symptoms of nasal symptoms it was reported that simultaneous surgical procedures in the nose using an endoscope either in the form of resection of middle turbinate or others improves relief of nasal symptoms. Follow up of our patients revealed that patients undergoing conventional septoplasty were found

to have higher incidence of synechiae formation (2 case) in coventional as compare to 1 case in endoscopic septoplasty. Study conducted by Rao revealed 14% synechiae formation in conventional group when compared to 4.67% in endoscopic group. Another study by Talluri revealed synechiae formation in 18.6% of conventional septoplasty group and 4% of endoscopic group. 22

Table 2: Comparative incidence of spur in different studies.

	Present study	Krishna Chaitanya et al ¹⁵	Dipak Ranjan Nayak et al ¹⁶	Nishi Gupta ¹	Salma MA ¹¹	Ritesh Shelkhar et al ¹⁷
Spur	22%	35%	59%	20%	22%	21%

Table 3: Post op persistent DNS in different studies.

	Present	study	Talluri KK ²²	
	Endoscopic septoplasty	Conventional septoplasty	Endoscopic septoplasty	Conventional septoplasty
DNS	4%	16%	6.6%	13.3%

Persistant deviated nasal septum was present in 1 (4%) patient in endoscopic group and 4 (16%) patients in conventional group. A study conducted by Talluri revealed that around 13.3% had incomplete correction in conventional septoplasty and 6.6% had incomplete correction in endoscopic septoplasty (Table 3).²²

Crusting and epistaxis was absent in group A but was present in 2% and 1% patients of group B. Another study conducted by Gulati concludes that there is better symptomatic relief in endoscopic septoplasty when compared to conventional septoplasty. A similar study done by Kaushik concluded that improvement in symptoms are better in endoscopic septoplasty compared to conventional septoplasty.

CONCLUSION

All the 50 patients chosen were followed up for a minimum period of 2 months postoperatively and the results were assessed in terms of symptomatic (subjective), endoscopic findings improvement (objective) and complications, if any. There were 84% males and 16% females in Group A, and 84% males and 16% females in Group B. Conclusion of higher prevalence of deviated nasal septum in males can be drawn. The commonest symptom was nasal obstruction, seen in almost all the patients in both groups, 84% in Group A 72% in Group B. 2nd and 3rd most predominant symptoms were found to be that of nasal discharge and headache. The right sided high deviated nasal septum was found to be more common than left deviation on preoperative endoscopic examination. Post-operatively 96% and 92% patients of endoscopic group got relieved from nasal obstruction and nasal discharge respectively. While only 80% and 88% go relief of nasal obstruction and nasal discharge in conventional group. Postoperatively endoscopy revealed residual high deviated nasal septum in 4 patients of conventional group and 1 in endoscopic group. Also the complications like epistaxis, crusting and synechiae were found to be more common in conventional group.

We conclude from this study that the endoscopic Septoplasty is safe, effective and conservative approach with better results and less complications as compared to conventional group. We recommend this technique as procedure of choice in these patients. As it provides direct vision, and means that only small flaps need to be elevated to remove malformations, thus making only minor alterations to the nasal pathology.

The final result is better patient compliance, a shorter recovery time as trauma and bleeding are reduced, and greater stability as those parts of the septum not affected by deviation are spared.

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Ethical approval: The study was approved by the

Institutional Ethics Committee

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