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A comparative study of conventional septoplasty versus endoscopic septoplasty

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ABSTRACT

Introduction: A deviated septum can be asymptomatic or can cause functional and cosmetic abnormalities. Different studies have been proposed for the correction of deviated septum, but septoplasty has been the treatment of choice. Septoplasty is a more conservative surgery and endoscopic septoplasty has become increasingly popular over the past few decades.

Materials and Methods: The study was carried out to compare the post-operative results among patients of conventional and endoscopic septoplasty and to assess the efficacy of endoscopic septoplasty with other surgeries. The present study was conducted among 40 patients of deviated nasal septum admitted in the Department of Otolaryngology of Adesh Institute of Medical Sciences and Research, Bathinda. Patients were selected by simple random sampling and were divided into Groups A and B, with 20 patients in each group. Group A underwent conventional septoplasty and Group B underwent endoscopic septoplasty.

Results: The male-to-female ratio in the present study was 3:1. Deviated nasal septum was commonly associated with inferior turbinate hypertrophy (45%) and concha bullosa (27.5%). Postoperatively, a significant relief from the symptoms of nasal obstruction (85%), nasal discharge (25%), headache (30%), and postnasal drip (55%) was observed in endoscopic septoplasty. Complication rate was higher in conventional septoplasty. The endoscopic approach facilitates proper alignment by limited and precise resection of pathological areas.

Conclusion: Endoscopic septoplasty provides precise resection of the pathological areas and better illumination with limited flap dissection and exposure.

Keywords: Endoscopic septoplasty, Conventional, Deviated nasal septum, Endoscopic Sinus Surgery

INTRODUCTION

Deviated nasal septum is the most common cause of nasal obstruction. Apart from nasal obstruction, a severely deviated septum can cause epistaxis, headache, and sinusitis attributable to contact with lateral nasal wall.[1] The detailed physical examination and imaging can diagnose septal deviation causing nasal obstruction.[2] Various surgical techniques have been implicated regarding the treatment of deviated septum, but none have completely improved the nasal airway. An ideal correction of the septum should satisfy the following criteria:[3]

1. Relief from nasal obstruction;
2. Conservative procedure;
3. Should not compromise osteomeatal complex;
4. Must have scope for revision surgery, if required later.

The conventional surgeries for septal correction improve nasal airway but do not fulfill the above criteria. Various drawbacks regarding conventional surgeries include poor visualization, poor illumination, difficulty in assessing exact pathology, need for nasal packing, and overexposure and over manipulation of the septal framework making revision surgeries difficult.[4]

The endoscopic septoplasty is a direct targeted approach to septal anatomic deformity, allowing minimally invasiveness.[5] 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.[6] It is an adjunct to functional endoscopic sinus surgery[7] and is helpful in the correction of posterior septal deformities[8] and revision cases.[9] Endoscopic surgery is an excellent teaching tool as the entire procedure can be viewed on the monitor.[10]

The present study was undertaken to assess the advantages and problems, if any, during endoscopic septoplasty and its comparison with conventional septoplasty.

MATERIALS AND METHODS

Forty patients of deviated nasal septum were selected by computer-generated random sampling technique, who were admitted to the Department of Otorhinolaryngology of Adesh Medical College and Hospital, Bathinda.

They were divided into Groups A and B, with 20 cases in each group.

Group A underwent conventional septoplasty and Group B underwent endoscopic septoplasty. Of 20 endoscopic septoplasty, 8 (40%) underwent in conjunction with functional endoscopic sinus surgery.

Steps for endoscopic septoplasty

The procedure was performed under local or general anesthesia. The septum was injected with 1% xylocaine in 1:20,000 adrenaline on the convex side of the most deviated part of the septum using 0-degree rigid endoscope. A hemitransfixation incision was given. 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 Merocel.

The conventional technique involves headlight illumination and visualization with a nasal speculum.

RESULTS

In the present study, the male-to-female ratio was 3:1. The most common age group involved belonged to the second and third decade of life in both sexes [Table 1].

Among the prevalence of lateral nasal wall pathology associated with the deviated nasal septum, the most common was inferior turbinate hypertrophy (45%), followed by concha bullosa (27.5%), paradoxical middle turbinate (15%), and uncinate abnormality (7.5%) [Table 2].

The most common complaint was nasal obstruction, followed by nasal discharge, headache, postnasal drip, sneezing, bleeding, and snoring.

Post-operative follow-up of the patients showed that 55% of the cases of Group A and 85% of the cases of Group B were relieved of nasal obstruction, while headache was relieved in 10% of the cases of Group A and 30% of the cases of Group B. However, only 5% of cases in Group A were relieved of hyposmia as compared to 15% of cases in Group B. Symptoms of nasal discharge and postnasal drip were relieved in 15% and 20% of the cases of Group A as compared to 25% and 55% in Group B [Table 3].

Among the complications following surgery, the most common was U/L flap tear, seen in 55% of the patients who underwent conventional septoplasty and 25% of patients done endoscopically. The incidence of bleeding and residual deviation was equal, i.e., five patients each in Group A (conventional septoplasty) which was higher than that encountered in Group B (endoscopic septoplasty), i.e., one each. Septal hematoma was only seen in patients in whom septoplasty was done with the conventional method (15%). The complication of septal perforation was not encountered in any of the groups [Table 4].

Table 1: Distribution of subjects according to age and gender.

Gender	10–20 years	21–30 years	31–40 years	41–50 years	Total
Male	4	5	17	4	30
Female	1	2	5	2	10
Total	5	7	22	6	40

Table 2: Prevalence of lateral nasal wall pathology in association with deviated nasal septum.

Lateral nasal wall pathology	Number of cases	% Age
Inferior turbinate hypertrophy	18	45
Concha Bullosa	11	27.5
Paradoxical middle turbinate	6	15
Uncinate process abnormality	3	7.5

Table 3: Symptoms relieved postoperatively in Group A (*n*=20) and Group B subjects (*n*=20).

Symptom relieved	Conventional septoplasty (Group A) *n*=20	% Age	Endoscopic Septoplasty (Group B) *n*=20	% Age
Nasal obstruction	11	55	17	85
Headache	2	10	6	30
Nasal discharge	3	15	5	25
Hyposmia	1	5	3	15
Postnasal drip	4	20	11	55

Table 4: Complications following surgery.

Complication	Conventional septoplasty (Group A) *n*=20	% Age	Endoscopic septoplasty (Group B) *n*=20	% Age
Bleeding	5	25	1	5
Septal perforation	Nil	0	Nil	0
U/L flap tear	11	55	5	25
Septal heamatoma	3	15	Nil	0
Residual deviation	5	25	1	5

DISCUSSION

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.

Many techniques had evolved before the 1900s but were short lived and soon fell out of favor. In 1900, submucous resection was described and popularized by Freer (1902) and Killian (1904) separately. These too underwent modifications to evolve into the more conservative septoplasty notably by Metzen Baumb (1926), Galloway (1946), and Cottle in 1958. Cottle, in 1958, described conventional septoplasty technique in six phases, i.e., gaining access to the septum, correction of pathology, removing pathology, shaping removed cartilage, reconstruction of the septum, and stabilizing the septum. Later on, in 1978, Lanza *et al*. and Stammberger described the application of endoscopic techniques in the correction of septal deformities.

The current study was conducted to compare the outcomes of endoscopic and conventional septoplasty among patients. To obtain accurate results, 40 patients were included in the study and divided into two equal groups (endoscopic septoplasty group and conventional septoplasty group) by computer-generated random sampling.

In the present study, we found that the male-to-female ratio was 3:1 with the most common affected group being the second and third decades. Similar findings were seen in the study conducted by Gupta and Bajwa *et al*.[11,12] in whom the third decade was found to be the most common age group. 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.

The most common lateral nasal wall pathology in our study was inferior turbinate hypertrophy (45%) followed by concha bullosa (27.5%) which was in accordance with the study conducted by Chilukuri[15] on 50 patients with 25 in each group.

Significant improvement was observed in patients with nasal obstruction and headache in endoscopic group as compared to the conventional group. Similar findings were seen in the study conducted by Sautter *et al*.[16] and Doomra *et al*.[17] In our study, higher rate of persistence of symptoms was found in conventional septoplasty as compared to endoscopic septoplasty.

The most common complication found in our study was unilateral flap tear which was seen in 55% of patients undergoing conventional septoplasty. Similarly, Suraneni who conducted a study on 100 cases found that complications were seen more in conventional septoplasty as compared to endoscopic septoplasty.[18] Singh, also in a study of 44 patients undergoing conventional as well as endoscopic septoplasty, found lower incidence of complications in patients undergoing endoscopic septoplasty as compared to conventional septoplasty.[19] Furthermore, Rambabu *et al*., in his study on 100 patients undergoing septoplasty, found endoscopic septoplasty superior than conventional septoplasty with fewer complications in the earlier technique.[20]

CONCLUSION

Endoscopic septoplasty enables accurate identification of the pathology due to better illumination and magnification. It

facilitates precise resection of pathological areas with precise repair. It is associated with a significant reduction in the patient's morbidity in both pre-operative and post-operative periods due to limited flap dissection, manipulation, and resection of septal framework. However, it has certain limitations which include the need for frequent cleaning of the tip, loss of binocular vision, and inability to use both hands. Furthermore, complex deformities with caudal dislocations cannot be corrected by endoscopic approach.

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Conflicts of interest

There are no conflicts of interest.

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