

## Comparative evaluation of endoscopic with conventional septoplasty

S. P. Gulati · Raman Wadhwa · Neetika Ahuja · Ajay Garg · Anju Ghai

**Abstract** A study was conducted to assess the merits and demerits of endoscopic septoplasty. Fifty patients having symptomatic DNS were randomly divided into two groups of 25 patients each. One group underwent endoscopic septoplasty and other group underwent conventional septoplasty. The groups were compared regarding the complaints with pack in postoperative period, relief of symptoms after surgery and complications. The symptoms complained by the patients with pack in postoperative period and complications after surgery were significantly less in endoscopic septoplasty group.

**Keywords** Endoscopic septoplasty · Conventional septoplasty

### Introduction

Endoscopic septoplasty is a fast developing concept and gaining popularity as it provides a direct – targeted approach to the septal anatomic deformity, allowing a minimally invasive procedure with limited septal mucosal flap dissection and removal of a small cartilaginous and/or bony deformity. More than one incision can be given, to correct the deformities, on either side of the nasal septal mucosa. Better light visualization and magnification, provided by the endoscope, help to increase the precision of the surgical procedure. Endoscope aids limited but sufficient exposure of septal pathology and there is no need for disarticulation of ethmoidochondral and vomerichondral junctions. The application of endoscopic techniques for the correction of septal deformities was initially described in 1991 by Stammberger [1]. Giles et al. evaluated the role of endoscopic septoplasty as an adjunct to functional endoscopic sinus surgery [2]. Park et al. concluded that they could visualize the nasal septum under magnification on a video monitor and operate with precision, as well as demonstrate the technique [3]. Hwang et al. stated that endoscopic septoplasty is helpful in correction of posterior septal deformities, revision cases and as an effective teaching tool [4]. The present study was undertaken to assess advantages and problems, if any, during endoscopic septoplasty and to compare postoperative results and complications of endoscopic with conventional septoplasty.

### Material and methods

The present study was conducted in the Department of Otorhinolaryngology, Pt. B.D. Sharma PGIMS, Rohtak. The Study was conducted in 50 patients having symptomatic DNS, in the age group of 18–40 years after obtaining their consent. The patients were randomly divided into two groups of 25 patients each. Group A ( $n = 25$ ) underwent

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S. P. Gulati · R. Wadhwa · N. Ahuja · A. Garg · A. Ghai  
Department of Otorhinolaryngology & Anaesthesiology,  
PT. BDS. PGIMS,  
Rohtak, India

S. P. Gulati (✉)  
E-mail: dr.wadhwa@yahoo.com

endoscopic septoplasty and Group B ( $n = 25$ ) underwent conventional septoplasty under local anaesthesia.

### Steps of endoscopic septoplasty

The rigid endoscopes ( $0^\circ$  and  $30^\circ$  with 4 mm diameter) were used for the procedure. Xylocaine 2% with adrenaline infiltration was given on both sides just anterior to deviation. An incision caudal to the deviation on the convex side was made roughly parallel yet cephalic to the classically described hemitransfixation incision. Mucoperichondrial / Mucoperiosteal flap was raised and deviation whether bony, cartilaginous or combination was visualized. The cartilage was incised parallel but posterior to the flap incision and caudal to the deviation. If the deviation was bony, the incision was made at the bony cartilaginous junction. Mucoperichondrial elevator was inserted through the cartilaginous incision and mucoperichondrial/mucoperiosteal flap on the opposite side was raised. The deviation was excised. The usual care was taken in preservation of adequate dorsal cartilage to retain the dorsal nasal shape. The flaps were returned to their anatomic position. For septal spurs, an ipsilateral incision was given parallel to the floor of the nose on the apex of the spur. Flaps were elevated superiorly and inferiorly with an elevator to expose the underlying bony or cartilaginous spur. An osteotome was then seated against the base of the spur and used to remove the bony protrusion. Additional remnants of spur were trimmed with through cutting endoscopic forceps. Then flaps were restored to their native position. Nasal cavity was packed with small sized antibiotic immersed packs.

Packing was removed after 24 hours in endoscopic septoplasty and after 48 hours in conventional septoplasty. All the patients were followed up after 2 weeks, 4 weeks and 8 weeks. Final assessment was made after 8 weeks of surgery and endoscopic examination was done in all cases. Chi-square test was used for statistical analysis for comparing the results of two groups.

### Results

It was observed that maximum number of patients was in the young age group (up to 25 years); 64% in conventional septoplasty group and 72% in endoscopic group. There were 20 males and 5 females in each group. Patients were asked regarding pain during surgery and in postoperative period as per pain scale [5]. Peroperatively the average for perception of pain was found to be 6.92 for conventional group and 2.4 for endoscopic group. Postoperatively the average for perception of pain with pack was found to be 7.24 for conventional group and 1.6 for endoscopic group. Comparison of complaints with pack in postoperative period is shown in Table 1. There was statistically significant difference between two groups regarding all the complaints. After one week of surgery, 2 patients of conventional group presented with septal haematoma which was drained and packing was done. None of patients in endoscopic group was found to have such complaint. Comparison in relief of symptoms at the end of 8 weeks is shown in Table 2. No statistically significant difference was found in between two groups. On follow up examination at 8 weeks, residual deformity was found to be present in 5(20%) patients of conventional group, whereas it was present in 2(8%) patients of endoscopic group ( $p < 0.05$ ). In conventional group, 9(36%) patients developed synechiae whereas in endoscopic group, only 2 (8%) patients developed synechiae ( $p < 0.01$ ). It was statistically significant difference.

### Discussion

With the introduction of endoscopes into other branches of surgery, there have been attempts at its utilisation in septal surgery. Endoscopic septoplasty is an attractive alternative to traditional headlight approach for septoplasty. In a study conducted by Durr, patients with complaints of rhinorrhea, pain, nasal obstruction and hyposmia were evaluated and

**Table 1** Comparison of complaints with pack in post-operative period

Sl. no.	Complaints	Endoscopic group No. of patients (%)	Conventional group No. of patients (%)	p value
1.	Headache	6 (24%)	16 (64%)	$p < 0.001$
2.	Watering of eyes	4 (16%)	13 (52%)	$p < 0.001$
3.	Swelling of face	3 (12%)	9 (36%)	$p < 0.01$

**Table 2** Comparison of relief in symptoms in both the groups (after 8 weeks)

Sl. no.	Symptoms	Endoscopic group	Conventional group	p value
1.	Nasal obstruction	90.5% (19 out of 21 patients)	80% (20 out of 25 patients)	$p < 0.05$
2.	Headache	100% (11 out of 11 patients)	87.5% (14 out of 16 patients)	$p < 0.05$
3.	Recurrent rhinorrhea	75% (9 out of 12 patients)	100% (13 out of 13 patients)	$p < 0.05$
4.	Hyposmia	100% (3 out of 3 patients)	88.89% (8 out of 9 patients)	$p < 0.05$
5.	Post nasal drip	80% (8 out of 10 patients)	55% (5 out of 9 patients)	$p < 0.05$

satisfactory results were obtained in 80% cases. Perception of pain was quantified on a scale of 0–7.5 and average perception of pain was found to be 1.88 for endoscopic septoplasty [6]. This is in concordance with our study. Average perception of pain was much lower in endoscopic septoplasty group as compared to conventional group in our study. In a study by Sindhwani & Wright, 54% patients with complaints of nasal obstruction and facial pain were cured and 38% showed improvement and 8% patients were not benefited [7]. In a study by Harley et al. patients with nasal obstruction and headache were selected and significant improvement was observed in endoscopic group as compared to conventional group [8]. In our study more number of patients were relieved from these symptoms in endoscopic septoplasty group as compared to conventional group but difference was not statistically significant. In the study by Park et al. the synechiae were formed in significant lower number of patients in endoscopic septoplasty group as compared to conventional group [3]. This is in concordance with our study. Complication rate in study by Gupta was found to be 2.08% for endoscopic septoplasty [9]. In a study by Hwang et al. complication rate was found to be 5% for endoscopic septoplasty [4].

The endoscopic approach to septoplasty provides several advantages over the standard headlight technique. It facilitates accurate identification of the pathology due to better illumination, improved accessibility to remote areas and magnification. It allows better understanding of the lateral wall pathology associated with the septal deformity. It allows limited incision and elevation of the flaps not compromising with adequate exposure of the pathological site. It facilitates realignment by limited and precise resection of the pathological areas and/or by precise repair, by strategically placed wedge resections/ shaving of cartilage. It effectively relieves the contact areas and thus the contact headache by allowing intraoperative assessment.

Endoscopic septoplasty is associated with significant reduction in patients morbidity in both preoperative

and post operative period (with pack and after pack removal) due to limited extent of flap dissection, not using Killian nasal speculum which by pressure can cause preoperative discomfort, limited manipulation and resection of septal framework thus obviating the need for a tight pack and requiring packing for a lesser duration. Use of light pack after endoscopic septoplasty leads to lesser incidence of pressure headache, vacuum headache and watering of eyes. However the endoscope has its own limitations which include loss of binocular vision and need for frequent cleaning of the tip of the endoscope especially when there is more bleeding.

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