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A COMPARATIVE STUDY OF SURGICAL OUTCOME OF ENDOSCOPIC SEPTOPLASTY VERSUS CONVENTIONAL SEPTOPLASTY: OUR EXPERIENCE

Otorhinolaryngology

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ABSTRACT

Background: Nasal obstruction is the most common complaint in ENT practice and a deviated nasal septum is the most common cause of nasal obstruction. Different surgeries have been proposed for correction of deviated septum but septoplasty has been the procedure of choice. Septoplasty is a more conservative surgery with fewer complications and endoscopic septoplasty has become increasingly popular over the last few decades. Hence, this study is conducted to compare the pre- and post-operative symptomatology, to evaluate the postoperative complications of conventional compared to endoscopic septoplasty (ES). **Aims and objectives:** To compare the pre- and post-operative symptomatology, to evaluate the postoperative complications of conventional septoplasty compared to endoscopic septoplasty (ES). **Material & Methods:** 50 Patients attending ENT OPD at ESIC Medical College & Hospital with age between 10 and 50 years having symptomatic deviated nasal septum and refractory to medical treatment. The patients were divided into two groups: Group A, which included 25 patients in whom conventional septoplasty (CS) was performed, and Group B, which included 25 patients in whom Endoscopic Septoplasty was conducted. **Results:** In the present study of 50 patients with symptomatic Deviated nasal septum**,** the male-to-female ratio was 2.6 :1. Deviated nasal septum was commonly associated with inferior turbinate hypertrophy (40%) and concha bullosa (26%). Postoperatively, a significant relief from the symptoms of nasal obstruction (80%), nasal discharge (32%), headache (36%), and postnasal drip (56%) was observed in endoscopic septoplasty. Complication rate was higher in conventional septoplasty. **Conclusion:** ES is more effective in terms of relief of symptoms and improvement of nasal patency with fewer complications.

KEYWORDS

Deviated Nasal Septum, Endoscopic Septoplasty, Conventional Septoplasty.

INTRODUCTION

Nose is an important sensory organ and cosmetically appealing part of the face. Nose is vulnerable to trauma right from the intrauterine life. Nasal trauma usually involves the septum; Thus, it is unusual to find a straight septum in an adult. Septal deviation can be symptomatic or asymptomatic in nature.

Nasal obstruction is the common complaint seen in day to day practice, significantly deviated nasal septum has been implicated in epistaxis, sinusitis, obstructive sleep apnea and headaches attributable to contact points with structures of the lateral nasal wall. Many methods have been described for correction of different type of septal deviations. The concept of submucosal resection was made popular and modified by Killian [1] and Freer [2] separately in the early 20th century. Due to increased incidence of complications with submucosal resection led to the adoption of more conservative surgery septoplasty[3]. Conventional septoplasty was popularised by Cottle in 1947, is a traditional surgery in which only the deviated part is taken out, leaving behind as much cartilage and bone as possible[4]. It also improves access to the medial meatus in sinus surgery [5]. It is presently tending to replace conventional techniques [6][7]. However, none of these descriptions have highlighted a complete surgical management of this condition to improve the nasal airway.

Each surgical procedure has its limitations and cannot deal with all the variants of the deformities of the nasal septum. An ideal surgical correction of the nasal septum should satisfy the following criteria: (a) should relieve the nasal obstruction; (b) should be conservative;(c) should not produce iatrogenic deformity; (d) should not compromise the osteomeatal complex and (e) must have the scope for a revision surgery, if required later.

The traditional surgeries of the nasal septum improve the nasal airway but do not fulfil the above mentioned criteria in most instances. The reasons being, poor visualization, relative inaccessibility, poor illumination, difficulty in evaluation of the exact pathology, need for nasal packing, unnecessary manipulation, resection and overexposure of the septal framework reducing the scope for a revision surgery[8], if required later.

With the introduction of endoscope into the field of otolaryngology, endoscopic correction of deviated nasal septum is more effective with minimal manipulation. And also has the advantage of diagnosing and treating the abnormalities of the lateral wall of the nose at the same sitting. The nasal endoscope allows precise preoperative identification of the septal pathology and associated lateral nasal wall abnormalities and helps in better planning of endoscope-aided septal surgery. It is study of Lanza *et al*. Stammberger reported endoscopic correction of septal deformity in 1991[9]. Endoscopic septoplasty (ES) offers a number of advantages over conventional headlight septoplasty such as better visualization, more focused flap dissection with resection of isolated deformities, lesser possibility of flap tears, and a more natural transition when the method is combined with endoscopic sinus surgery [10,11]. Early reports of endoscopic septoplasty describe several advantages associated with the technique. e.g. it makes easier for surgeons to see the tissue planes and it offers a better way to treat isolated septal spurs. Additionally, the endoscopic approach makes it possible for many people to simultaneously observe the procedure on a monitor, making the approach useful for young ENT surgeons in a teaching hospital. Nasal endoscopy is a valuable tool for initial assessment of the relationship of the septum to the middle turbinates, which allows the surgeon to judge whether or not the position of the septum will limit access during ESS.

Even in the absence of subjective nasal obstruction or gross septal deviation, septoplasty may be necessary to maximize access to the middle meatus during Endoscopic Sinus Surgery, such as in the setting of a narrow nasal cavity with a prominent septal body. Nasal endoscopy is an excellent tool for outpatient surveillance following septoplasty during the initial postoperative healing period and beyond [12].

Hence, the present study was taken up to compare pre-operative symptoms, post-operative symptoms, complications of endoscopic and conventional approaches for septoplasty.

AIMS AND OBECTIVES

1. To assess pre- and post-operative symptomatology among conventional and endoscopic septoplasty.
2. To compare the postoperative complications among conventional and endoscopic septoplasty.

MATERIALS AND METHODS

This present study is conducted in the Department of ENT, ESIC Medical College and Hospital, Kalaburagi, from the period of October 2021 to October 2022. Ethical clearance was obtained from the Institutional Ethical Committee. An informed consent was obtained from all the patients before the start of study.

Source of Data:
All patients attending the ENT OPD at ESIC Medical College and Hospital, Kalaburagi with symptomatic deviated nasal septum were included in the study. Fifty patients with DNS were selected by random sampling method and they were randomly divided into Groups A and B: 25 cases in each group. Group A underwent Conventional Septoplasty, whereas Group B underwent Endoscopic Septoplasty.

Sample Size: 50

Mode of Selection: by simple random sampling method

Inclusion criteria:
Patients with nasal obstruction, nasal discharge, hyposmia, post nasal drip, facial pain and headache (symptomatic deviated nasal septum refractory to medical treatment) were included in the present study

Exclusion criteria:
Patients with allergic rhinitis and upper respiratory tract infection, age less than 10yrs & more than 50 yrs were excluded.

Methods of collection of data:
Cases selected for the study were subjected to detailed history and clinical examination. Deviation were classified as right or left or S shaped depending on the side of deviation. Depending on the involvement of cartilaginous or bony parts of septum they were classified into anterior or posterior or both. Posterior rhinoscopy was done in all patients to rule out other pathologies. Diagnostic nasal endoscopy was performed. Computed tomography scan of nose and paranasal sinuses were done in selected cases.

METHODOLOGY:
Endoscopic Septoplasty
The procedure was performed under general anaesthesia. The septum was injected with 1% xylocaine in 1: 20,000 epinephrine on the convex side of the most deviated part of the septum using 0° rigid 4 mm endoscope. Hemi-trans fixation was made. Incision was not extended from dorsum to the floor as in classical incision but was extended both superiorly and inferiorly just as needed to expose the most deviated part. A sub-mucoperichondrial flap was raised using a suction elevator under direct visualization with a 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 merocele (Nasal pack), which is sponge like & expands on getting wet and provides uniform pressure over all surfaces in contact. It also avoids mucosal abrasions while doing packing and removal of it.

Conventional septoplasty approach involves headlight illumination and visualization with nasal speculum.

Statistical analysis:
Data were analyzed using the Statistical Package for Social Sciences (SPSS, version 22, IBM corporation, USA).

OBSERVATION AND RESULTS
Table-1: Distribution of subjects according to age and gender.

GENDER	10-20 YRS	21-30 YRS	31-40 YRS	41-50 YRS	TOTAL
MALE	6	7	18	5	36
FEMALE	2	3	6	3	14
TOTAL	8	10	24	8	50

In the present study, the male-to-female ratio was 2.6 :1. The most common age group involved belonged to the third decade of life in both sexes followed by second decade of life(table-1).

Table-2: lateral nasal wall findings

Lateral nasal wall findings	Number of patients	Percentage (%)
Inferior turbinate hypertrophy	20	40%
Uncinate process abnormal attachment	5	10%
Concha bullosa	13	26%
Paradoxical middle turbinate	8	16%

Along with deviated nasal septum, the most common lateral nasal wall finding was inferior turbinate hypertrophy (40%), followed by concha bullosa (26%), paradoxical middle turbinate (16%), and uncinate abnormality (10%) (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 56% of the cases of Group A and 80% of the cases of Group B were relieved of nasal obstruction, while headache was relieved in 20% of the cases of Group A and 36% of the cases of Group B. However, only 4% of cases in Group A were relieved of hyposmia as compared to 12% of cases in Group B. Symptoms of nasal discharge and postnasal drip were relieved in 24% and 28% of the cases of Group A as compared to 32% and 56% in Group B(table-3)

Table-3: Symptoms relieved postoperatively in Group A (n=25) and Group B subjects (n=25).

Symptoms relieved	Conventional Septoplasty (Group A n=25)	Percentage (%)	Endoscopic septoplasty (Group B n=25)	Percentage (%)
Nasal obstruction	14	56%	20	80%
Headache	5	20%	9	36%
Nasal discharge	6	24%	8	32%
Post nasal drip	7	28%	14	56%
Hyposmia	1	4%	3	12%

Table-4: Post-operative complications

Post-operative complications	Conventional Septoplasty (Group A n=25)	Percentage (%)	Endoscopic septoplasty (Group B n=25)	Percentage (%)
Unilateral flap tear	14	56%	8	32%
Residual deviation	8	32%	4	16%
Bleeding	7	28%	3	12%
Septal hematoma	3	12%	Nil	0
Septal perforation	1	4%	Nil	0

In the present study, complications following surgery, the most common was U/L flap tear, seen in 56% of the patients who underwent conventional septoplasty and 32% of patients done endoscopically. The incidence of residual deviation was 32% in Group A & 16% in Group B, bleeding 28 % in Group A & 12% in Group B. Septal hematoma was only seen in patients in whom septoplasty was done with the conventional method (12%). The complication of septal perforation was in only one case done by conventional method. (table-4)

DISCUSSION
With the introduction of endoscopes in ENT, there have been practice of use of endoscopes in septal surgery. Endoscopic septoplasty is an advanced 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 1900s but were short lived and have been replaced by other techniques. 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, 50 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 2.6:1 with the most common affected group being the third decade. Similar findings were seen in the study conducted by Gupta and Bajwa *et al* [13,14]. in whom the third decade was found to be the most common age group. Jain *et al*. and Rao *et al*[15,16]. 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 (40%) followed by concha bullosa (26%) which was in accordance with the study conducted by Chilukuri [17]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*[12]. and Doomra *et al* [18]. 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 56% 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[19]. 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[20]. 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[21].

CONCLUSION:

Evolution of endoscopic septoplasty has great impact on septal surgery. With better illumination and magnification, it facilitates precise removal of deviated areas. It is associated with a significant reduction in the patient's morbidity and post-operative complications due to limited flap dissection, manipulation, and resection of septal framework. In our study we found Endoscopic septoplasty as a 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.

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