



ORIGINAL RESEARCH PAPER

ENT

“EARLY EXPERIENCE WITH ENDOSCOPIC SEPTOPLASTY AND COMPARATIVE EVALUATION OF ENDOSCOPIC SEPTOPLASTY WITH CONVENTIONAL SEPTOPLASTY IN DEVIATED NASAL SEPTUM: A CLINICAL STUDY AT TERTIARY CENTRE”

KEY WORDS:

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ABSTRACT

AIM: To study and compare the indication, procedure, efficacy, complications and post operative improvement in patients with pathological nasal septum undergoing conventional septoplasty and endoscopic septoplasty.

MATERIAL AND METHOD:

- Study type: Prospective study and Retrospective study.
- Setting: Department of Otorhinolaryngology, MGMMC, MYH, INDORE.
- Subject: Patients in age group between 18-55 years with clinical presentation of nasal obstruction and atypical headache and facial pain who are refractory to prior 3months of medical treatment.

Method: Patients were randomly divided into two groups, GROUP A: CONVENTIONAL SEPTOPLASTY AND GROUP B : ENDOSCOPIC SEPTOPLASTY. All patients were taken proper history and underwent routine investigations, Diagnostic nasal endoscopy and CT-PNS plain and patients were taken up for respective surgery and immediate postoperative follow up and 6months postoperative follow up done.

RESULT:

- In patients underwent conventional septoplasty, around 38% of patients were relieved from nasal obstruction, 50% from headache and 10% from hyposmia. In contrast to it, in patients who underwent endoscopic septoplasty 96% were relieved from nasal obstruction, 100% from headache and 100% from hyposmia
- In 6months postoperative follow up, in patients underwent conventional septoplasty there was 24% residual deformity and 20% of synechia formation, in contrast to it, in patients with underwent endoscopic septoplasty there was 0% residual deformity and 2% of synechia formation.

CONCLUSION: Evaluation of endoscopic septoplasty has been a major event in the history of septal surgery. It has been performed with better illumination of anatomical structures and with minimal incision and manipulation resulting in minimal damage to tissues and leading to minimal residual deformity and postoperative complications.

INTRODUCTION:

ENT surgeries have always been notoriously known as selfish surgery, because the assistant is not able to watch the surgical steps. Thus endoscopic septoplasty is a better technique as compared to conventional technique both in terms of patient and the surgeon.

Nishi gupta et al 20051 It is also established fact that the anatomy of nose and paranasal sinus is the most varied of all the anatomy of entire body. Hence it is very important to be cognizant of all the variations that can occur. Nasal obstruction is the most common complaint and DNS is the most common cause. Apart from nasal obstruction, a significantly deviated nasal septum also results in epistaxis, OSA and contact point headache.

An ideal surgical procedure of the nasal septum should satisfy the following criteria:

1. Should relieve the nasal obstruction
2. Should be conservative
3. Should not produce iatrogenic deformity
4. Should not compromise the osteomeatal complex and
5. Must have the scope for revision surgery, if required later.

The traditional surgeries improve the nasal airway but do not fulfil all the above mentioned criteria. The reason being poor visualisation, relative inaccessibility and difficulty in evaluating the exact posterior septal and lateral wall pathology, unnecessary manipulation.

Walter Messerklinger 1978 2 identified the range of anatomic variants that can interfere with the mucociliary drainage of OMC including DNS, spurs, concha bullosa, uncinata variations, ethamoidal bulla, Middle turbinate variations, agger nasi and haller cells.

The use of nasal endoscope allows precise preoperative identification of the septal pathology and associated lateral nasal wall abnormalities and helps in better planning of endoscopic aided septal surgery. Additionally the endoscopic approach make it possible for many people to simultaneously observe the procedure a monitor, making the approach useful in a teaching hospital and it is an excellent tool for outpatient surveillance following septoplasty during the initial postoperative healing period.

METHOD:

A retrospective and prospective study was carried out in the Department of ENT, MGMMC, MYH Indore. A total of 100 patients with clinical evidence of rhinosinustis were evaluated with nasal endoscopy and CT scan PNS coronal view from Sept 2010 to Sept 2017.

They were divided into Group A and Group B with 50 cases in each group. Group A underwent conventional septoplasty and Group B underwent endoscopic septoplasty. Endoscopic septoplasty patients were reviewed for surgical indication, intraoperative findings & postoperative complications.

INCLUSION CRITERIA:

- Patients with the age group between 18-55 years
- Patients who present with nasal obstruction, headache and atypical facial pain with septal spur without any neurological or ophthalmic causes and were refractory to optimal medical therapy for a minimum of 3 months prior to undergoing nasal endoscopy and CT imaging.

EXCLUSION CRITERIA:

- Patients with the age group below 18yrs and above 55 yrs
- Patients with sinonasal malignancy, acute sinonasal diseases, mucoceles protruding from sinuses into nasal cavity, radiation therapy to head and neck.
- General medical conditions that preclude elective surgery.

All patients with identifiable disease were subjected to detailed history taking, clinical examination including anterior rhinoscopy and posterior rhinoscopy examination and subjected to diagnostic nasal examination using rigid endoscopes of 0 and 30 degree and followed by radiological assessment with CT PNS plain of coronal and axial sections.

Preoperative written consent taken and immediate postoperative care followed by postoperative follow up at 7days, 1months and 6months were carried out.

PROCEDURE OF ENDOSCOPIC SEPTOPLASTY:

The procedure was done with patient under local anaesthesia. The septum was injected with 1% xylocaine in 1:1000000 epinephrine.

The 0-degree scope is brought into place and the deviation is made roughly parallel to it [Figure 1]. Killian hemi transfixion incision was performed.

Mucoperichondrial flap elevation was performed with a cottle's elevator under direct endoscopic visualization with a 0-degree endoscope. A suction elevator was used to clear blood from field of view during flap elevation. [Figure 2]

The septal cartilage was then incised several millimetres posterior to the mucosal incision. the contralateral mucosal flap was elevated [Figure 3] Flap elevation was continued bilaterally until the complete extent of septal deformity has been dissected. the deviated portion of septum was thus removed, using endoscopic scissors [Figure 4&5]

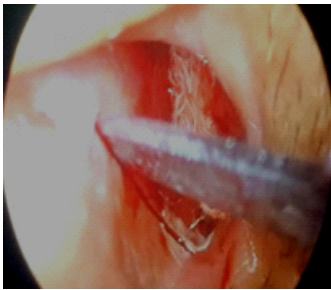


FIG1: Incision over the deviated portion of the septum

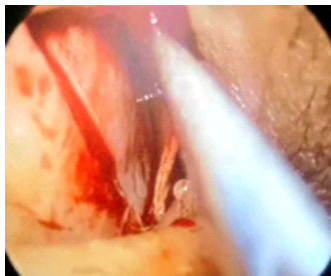


Fig 2: Raising the mucoperichondrial flap

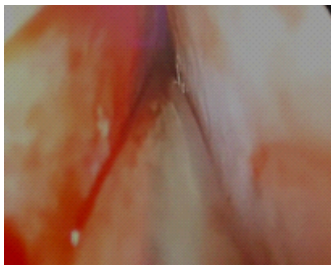


FIG 3: Raising the flaps on opposite side

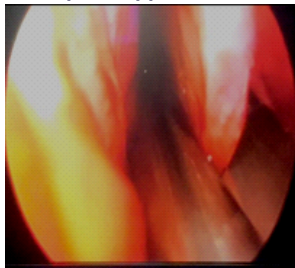


FIG 4: Incising the septal cartilage

RESULT:

- In this study all the patients including both Group A and Group B where in the age group between 18 and 55 years.

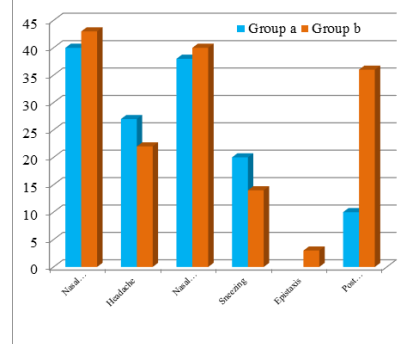
Surgery	Male	Female	18-25yrs	26-35yrs	36-45yrs	46-55yrs
Conventional Septoplasty	30	20	18	21	6	5
Endoscopic Septoplasty	26	24	14	20	13	3

In conventional septoplasty the male to female ratio is 1.5:1 and in endoscopic septoplasty the ratio is 1.08:1.

The most commonly affected subjects belonged to the 26-35 yrs of age with the average age of 28.8yrs and males were commonly affected than females.

PREOPERATIVE ASSESSMENT OF SYMPTOMS:

SYMPTOMS OF DNS	GROUP A(n=50)		GROUP B (n=50)	
	No of patients	(%)	No of patients	(%)
Nasal obstruction	40	80	43	86
Headache	27	54	22	24
Nasal discharge	38	76	40	80
Sneezing	20	40	14	28
Epistaxis	0	0	3	50
Post nasal discharge	10	20	36	72



Most prevalent complaint in the patients of DNS among Group A and B was nasal obstruction 80% and 86% respectively followed by nasal discharge of 76% and 80% respectively. Other symptoms included headache, sneezing, postnasal discharge and epistaxis.

NASAL ENDOSCOPIC FINDINGS:

Endoscopic Findings		Group A		Group B	
		No of patients	%	No of patients	%
Dns	Right	14	28	12	24
	Left	36	72	38	76
Nasal Discharge	Mucoid	38	76	40	80
Inferior Turbinate	Hypertrophy	10	20	35	70
Middle Turbinate	Hypertrophy	7	14	12	24
Post Nasal Discharge		11	22	0	0

DNS was observed unilaterally in all cases with no bilateral DNS, among them left sided DNS showed predominance.

Majority had bilateral mucoid nasal discharge of 80% in group B and 76% in group A

Inferior turbinate hypertrophy in 70% of Group B and 20% of group A

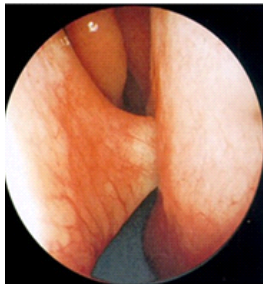
Middle turbinate hypertrophy in 24% of Group B and 10% of Group A.

PREVALENCE OF LATERAL NASAL WALL PATHOLOGY IN ASSOCIATION WITH DNS AMONG STUDY SUBJECTS.

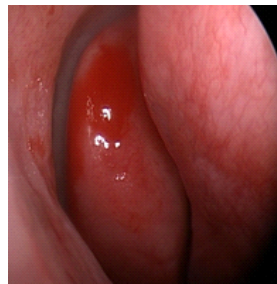
Lateral Nasal Wall Pathology	No Of Cases	Percentage %
Concha bullosa	26	26
Paradoxical middle turbinate	25	25
Polypoidal middle turbinate	19	19
Inferior turbinate hypertrophy	75	75
Overpneumatized bulla	13	13
Uncinate process abnormality	21	21
Mucosal disease	21	21

CT DETECTION OF ANATOMIC VARIANTS:

Anatomic Variations	No Of Patients	Percentage%
NASAL SEPTUM		
Deviation	50	100
Spur	19	38
pneumatised	3	6
INFERIOR TURBINATE		
ST hypertrophy	41	82
Bony hypertrophy	0	0
pneumatised	0	0
MAXILLARY SINUS		
Septated	5	10
Hypoplastic	1	2
Accessory ostia	1	2
OTHERS		
Crista galli pneumatisation	9	18
MIDDLE TURBINATE		
hypertrophy	12	24
Concha bullosa	30	60
paradoxical	5	10
UNCINATE PROCESS		
Medially bent	12	24
Laterally bent	2	4
Anteriorly bent	0	0
Hypertrophied	3	6
Pneumatised	0	0
Perforated	0	0
polypoidal	12	24
ETHAMOIDAL CELLS		
Over pneumatised bulla	17	34
Haller cells	11	22
Agger nasi cells	47	94



Endoscopic view showing septal spur



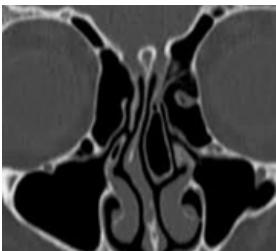
Endoscopic view showing concha bullosa



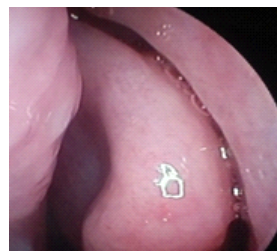
concha bullosa left with haller cell left



Right inferior turbinate HTH, left spur



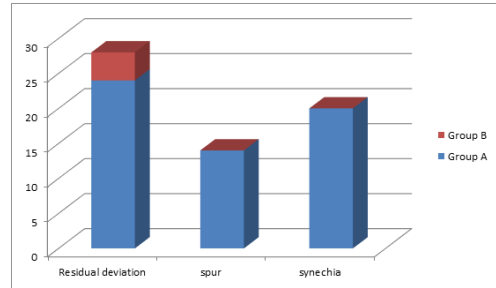
Concha bullosa left , DNS



Medially bent uncinete process

OBJECTIVE ASSESSMENT AT LAST FOLLOW UP

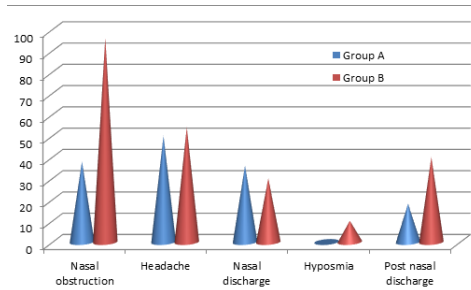
Objective Assessment At 6 Months	Group A		Group B	
	No Of Patients	%	No Of Patients	%
Residual deformity	12	24	0	0
Spur	7	14	0	0
synechiae	10	20	1	2



There was a less persistence of deviation with $p < 0.05$ in Group B patients and hence this is significant.

FREQUENCY OF SYMPTOMS RELIEVED POSTOPERATIVELY.

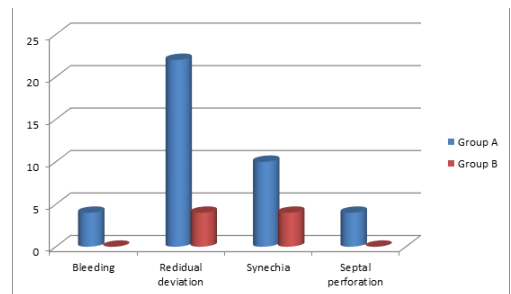
Symptoms Relieved	Group A		Group B	
	No Of Patients	%	No Of Patients	%
Nasal obstruction	19	38	48	96
Headache	25	50	50	100
Nasal discharge	50	100	50	100
Hyposmia	5	5	50	100
Post nasal discharge	50	100	50	100



There was a significant relief from nasal obstruction of $p < 0.01$ and post nasal drip $p < 0.05$ in group B patients.

COMPARISONS OF LATE POST OP COMPLICATIONS:

Complications	Group A		Group B	
	No Of Patients	%	No Of Patients	%
Bleeding	2	4	0	0
Residual deformity	12	24	0	0
Synechiae	5	10	1	2
Septal perforation	2	4	0	0



DISCUSSION:

Numerous medical descriptions are available regarding the pathology and treatment of deviated nasal septum.

Septoplasty is the surgery for correction of DNS under LA or GA. It

is the conservative surgery in which only the deviated part is removed leaving behind as much as cartilage and bone as possible.

Cottle 1947³ described first as a treatment to correct nasal airway obstruction. Lanza et al described endoscopic techniques to correct septal deformities.

In this study all the patients were in the age group of 18-55 years with the average age of 28.8yrs with the predominance in male patients in both the groups. **Mundra et al 2014⁴** had a total of 61 patients of 34 male and 27 female and majority in age gp of 21-40 years.

Our study showed nasal obstruction to be the most common associated complaint(83%) followed by nasal discharge(78%), headache(49%), sneezing(34%). Study done by **Kalpna et al 2015⁵** the most common preoperative complaint was nasal obstruction(86%) similar to our study followed by anterior nasal discharge(52%).

In our study in diagnostic nasal endoscopy left sided unilateral DNS was found to be common(72%) and mucoid nasal discharge(36%), Bilateral IT hypertrophy(54%). Unilateral MT hypertrophy(24%) and post nasal discharge(22%). **Sagar et al in 2017⁶** had DNS to left side(54%) and anterior DNS in 48%.

In our study CT Evaluation of various variants if MT like paradoxical MT was 10% which was found to be in 8.19% in the study by **Mundra et al 2014⁷**.

Agger nasi cell were 94% in our study while they were 98.5% in study by **Bolger et al 2001⁸** and more than 75% in study by **Mundra et al 2014⁷**.

Haller cell of 22% in our study whereas 10% in **Zinreich et al 2001⁹** study.

In our study there was a significant relief from nasal obstruction of $p < 0.01$ and post nasal drip of < 0.05 in Group B patients. **Gulati et al in 2009⁹** in study of 50 patients, 90.5% relieved of obstruction in ES group and 80% in CS gp.

CONCLUSION:

With the use of endoscope in septal surgery, the stability of septum is not compromised, mucosal tears are avoided and hence the rate of synechiae formation reduced drastically. Under endoscopic guidance we could identify the bleeding points and reduce the incidence of hemorrhage.

Contact point can be precisely addressed and thus the contact headache relieved by allowing intraoperative assessment.

Endoscopic septoplasty is associated with significant reduction in patients morbidity in both preoperative and postoperative period 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.

However endoscope has its own limitations which include loss of binocular vision, need for frequent cleaning of tip of endoscope especially when there is more bleeding and lastly by endoscopic approach to septoplasty complex deformities with caudal dislocation cannot be corrected.

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