

## Effectiveness of Submucosal Resection and Septoplasty in Deviated Nasal Septum: A Study from Vindhya Region

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### Abstract

**Background:** Deviated nasal septum is a commonly faced challenging surgical morbidity in outpatient's department of otorhinolaryngologist now days. Different surgical modalities have been accepted by surgeons to treat this condition based on their clinical decision.

**Aims and objectives:** To study submucosal resection and septoplasty to evaluate its effectiveness by comparing clinical outcome and complications.

**Material and methods:** Eighty patients with deviated nasal septum were studied. Baseline laboratory and clinical investigations were done to rule out the other conditions. Deviated nasal septum and its type were identified by anterior rhinoscopy. Type of surgical procedure was accepted based on type of deviation.

**Results:** Out of 80 patients 40 patients had SMR and 40 underwent septoplasty. In our study, all the 73 patients had presented with nasal obstruction (91%) followed by headache (48%), nasal discharge (22%). On endoscopy, C-shaped deviation was present in (74%) followed by S-shaped deviated nasal septum (19%), spur (9%). Post operative nasal obstruction relief was seen in 80% patients. In our study, postoperative anterior rhinoscopy and diagnostic endoscopy findings show reduced fogging (5%) and persistent septal deviation (5%). In our present study complications seen in both the group includes excessive bleeding (9%), crust formation (6%), synechiae (9%), septal haematoma (4%), septal perforation (2%), residual deviation (5%), secondary atrophic rhinitis (1%).

**Conclusion:** Based upon analysis of data of our study we concluded that females are more affected in third decade of life to deviated nasal septum than male with the most common presenting symptoms of nasal obstruction. C-shaped deviation is a more common form of septum deviation. Both surgical modalities have similar post-surgical pain relief but after sub mucosal resection patients may have higher chances of having complications.

**Keywords:** Submucosal Resection, Septoplasty and Nasal Septum.

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## Introduction

Two halves of the nasal cavity are separated by cartilaginous or bony structure known as nasal septum. The most common clinical morbidity associated with ENT outpatient department is deviated nasal septum. It plays essential role in nasal obstruction symptoms like dry mouth due to chronic mouth breathing, aesthetic appearance of the nose, nasal congestion[1]. Septal deformity was classified by Mladina in six basic types and also seventh types which is a well-defined combination of other types. All types are divided into two major groups as “vertical” deformities, and “horizontal” ones[2]. Clinically septal deformities happens in two ways one may be due to accidental injury or direct pressure to septal components and other way combined septal deformity caused by compression across the maxillary bones from pressures occurring during pregnancy or parturition[3].

Surgical management of septal deformities have been remain challenging requires preoperative assessments of septal components, relationship with nasal skeleton, risk benefit assessment, and the surgical interventions meant to be executed in a precise manner[4]. It is indicated in case of uncontrolled nasal bleeding, airway obstruction, septal deformities which results in chronic mouth breathing, recurrent infections, facial pain and/or headaches due to septal spurs or obstructive sleep apnea[5]. It is essential to evaluate the degree of nasal obstruction which may done through the Nasal Obstruction Symptom Evaluation (NOSE) scale to find out whether patient is likely to get benefit after surgery[6].

Nasal deviation is corrected by two different surgeries called Submucosal Resection and Septoplasty depending upon type of deviation. Both are performed with objective to correct the deviated cartilage and bone of the nasal septum. Cottle's line divides

septum into anterior and posterior segments. It is a vertical line between the nasal process of frontal bone and nasal spine of maxillary crest. Septoplasty is preferred if the deviation lies anterior to the Cottle's line and submucosal resection if deviation is posterior to the line[7]. Septorhinoplasty is the treatment of choice when the nasal deviation is associated with external deviation of the nose. Submucosal resection preserves mucoperichondrial cartilaginous parts but having more chances of complications like septal perforation and saddling of nose. This limitation leads to emergence of septoplasty with minimal resection of nasal bone/cartilage[8].

Each surgical intervention has their advantages and limitations and need to consider preoperative and postoperative assessment of individual subject. The purpose of this study is to compare the surgical outcomes of submucosal resection and septoplasty.

## Methods:

This is the prospective comparative single centre interventional study and was conducted in the department of otorhinolaryngology, Shyam Shah Medical College, Rewa between October 2015 to September 2017. Patients were randomized into two groups. Forty patients were enrolled in each group. Septoplasty was preferred in one group and the other group underwent SMR. Inclusion criteria; age between 18 to 45 years who are diagnosed with symptomatic Deviated Nasal Septum and exclusion criteria; age above 45 years and below 18 years, refused to give consent, patients with allergic rhinitis, Septal surgery performed for other reasons such as an access to nasal and sinus tumour, pituitary surgery, upper respiratory tract infections, diabetes, hypertension, acute nasal trauma,

adenoid hypertrophy and bleeding tendency, patient with associated external nasal deformity and congenital anomaly.

Selection was done based on detailed history and clinical examination in each case. Cold spatula test was performed followed by anterior rhinoscopy. To rule out other pathologies associated with nasal septum posterior rhinoscopy was performed. Deviated nasal septum was classified in C shaped, S-shaped, anterior dislocation, spurs or Septal thickening based on involvement of bony and cartilaginous parts. Routine blood investigations, including complete blood count, bleeding time, clotting time, X-ray paranasal sinus and chest X-ray were done in all patients. Few of the patients underwent computed tomography. Diagnostic nasal endoscopy was done in all the patients included in the study. A correlation was established between clinical features and radiological findings. Comparison of complications is done with both groups. Prior to the surgery, the patient

was asked to fill in the SNOT-22 questionnaire. In this questionnaire, patients rated 22 different symptoms related to both nasal and general health on a score of 0 to 5 as below: 0 - No problem 1 - Very mild problem 2- Mild or slight problem 3 - Moderate 4 - Severe 5 - Very severe. The patients were assessed preoperatively and postoperatively at 1st week, first month and at 3 months for subjective relief of nasal symptoms and postoperative complications in both groups present.

### Results

Out of 80 patients, 40 patients in group A had submucous resection and 40 patients in group B had septoplasty. In group A 3 patients had age below 21 years, 21 patients between 21-30 years, 10 patients between 31-40 years and 6 patients between 41-50 years. In group B, 7 patients were below 21 years, 19 patients between 21-30 years, 9 patients between 31-40 years, 5 patients between 41-50 years.

**Table 1: Cross-tabulation between age distributions**

Age (year)	Group A (SMR)	Group B (Septoplasty)
<21	3	7
21-30	21	19
31-40	10	9
41-50	6	5
Total	40	40

Out of 50 patients, 40 patients in group A had submucous resection and 40 patients in group B had septoplasty. In group A 38 patients had nasal obstruction, 20 patients had headache, 8 patients had nasal discharge, 5 patients had postnasal drip and

2 patients had hyposmia. In group B 35 patients had nasal obstruction, 18 patients had headache, 9 patients had nasal discharge, 2 patients had postnasal drip and 3 patients had hyposmia.

**Table 2: Cross-tabulation between pre-operative symptoms**

Clinical evidence	Group A (SMR)	Group B (Septoplasty)
Nasal obstruction	38	35
Headache	20	18
Nasal discharge	8	9

Post nasal drip	5	2
Hyposmia	2	3
Total	40	40

Out of 50 patients, 40 patients in group A had sub mucous resection and 40 patients in group B had septoplasty. In group A 13 patients had right sided C-shaped deviated nasal septum, 17 patients had left sided deviated nasal septum, 7 patients S- shaped

deviated nasal septum, 4 patients had spur. In group B, 12 patients had right sided C-shaped deviated nasal septum, 10 patients had left sided deviated nasal septum, 3 patients S- shaped DNS, 4 patients had spur.

**Table 3: Cross-tabulation between preoperative diagnostic endoscopy findings.**

Diagnostic endoscopy findings	Group A (SMR)	Group B (Septoplasty)
C shaped Right sided	13	15
C shaped Left sided	17	14
S shaped	7	8
Spur	4	3
Anterior dislocation	0	0
Total	40	40

Out of 50 patients, 25 patients in group A had submucous resection and 25 patients in group B had septoplasty. In group A 2

patients had nasal obstruction postoperatively and 1 patient in group B.

**Table 4: Cross-tabulation between post-operative symptoms.**

Postoperative symptoms	Group A (SMR)	Group B (Septoplasty)
Nasal obstruction	4	1
Headache	1	0
Nasal discharge	0	0
PND	0	0
Hyposmia	0	0
Epistaxis	0	0

Out of 80 patients, 40 patients in group A had submucous resection and 40 patients in group B had septoplasty. In group A 1 patient had reduced fogging and 2 patients

had persistent septal deformities. In group B 3 patients had reduced fogging and 2 patients had persistent septal deformities.

**Table 5: Cross-tabulation between postoperative diagnostic endoscopy findings**

Diagnostic endoscopic findings	Group A (SMR)	Group B (Septoplasty)
CST Reduced fogging	1	3
Persistent septal deformities (deviation/spur)	2	2

Out of 80 patients, 40 patients in group A had submucous resection and 40 patients in group B had septoplasty. In group A 5 patients had bleeding, 4 patients had crust formation, 4 patients had synechiae, 2 patients had septal haematoma, 2 patients had septal perforations, 3 patients had

residual deviation, and 1 had secondary atrophic rhinitis. In group B 2 patient had bleeding, 2 patients had crust formation, 3 patients had synechiae and 1 patient had residual deviation, 1 had septal hematoma. (figure 1)

**Table 6: Cross-tabulation between complications.**

Complications	Group A (SMR)	Group B (Septoplasty)
Bleeding	5	2
Crust formation	4	2
Synechiae	4	3
Septal haematoma	2	1
Septal perforations	2	0
Residual deviation	3	1
Secondary atrophic rhinitis	1	0
Saddling	0	0
Columellar retraction	0	0

## Discussion

Surgical correction of deviated nasal septum has modified since its inception, starting from radical septal resection to the preservation of the possible septal framework[12]. Endoscopic septoplasty is an attractive alternative to traditional headlight approach for septoplasty. Olphen had introduced the 6 phases of conventional septoplasty (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[9].

In present study of 80 cases the age of the patients was varying between 18 years to 45 years and in the group who underwent septoplasty, the average age was 30.8 years (range was 18-45 years) and in the SMR group, the average age was 29.4 years (range was 18-45 years) and the overall average age was 30.1 years. This demographic data resembles the results of other studies in India[9].

A study done by Ahmad et al showed the maximum number of patients were seen in the age group of 21-30 years[10]. Leena et al. observed that most commonly affected subjects belonged to the 2nd and 3rd decades of life in both sexes[9]. There were 40 and 19 subjects from 21-30 years and 31-40 years, respectively[9]. A study done by Padma et al. showed most commonly females were affected which is similar to our study[11].

In our present study, all the 73 patients had presented with the most common symptoms of nasal obstruction (91%) followed by headache (48%), nasal discharge (22%), postnasal drip (9%), hyposmia (7%) in both the group. The least common symptoms of epistaxis (0%) are not present in any patients. In a study done by Leena et al, it is stated the most prevalent complaint in the patients of deviated nasal septum among study subjects was nasal obstruction (74%), followed by nasal discharge (41%), headache (20%), postnasal drip (8%),

bleeding (3%) which is similar to findings of our study[9].

In a study done by Ahmad et al it was observed that most common presenting complaint in patients of deviated nasal septum among study subjects was nasal obstruction (76%), headache (48%), nasal discharge (50%), postnasal drip (12%), bleeding (16%)[10].

In our study deviated nasal septum was the most common finding present in all the patients in which C-shaped deviation present in (74%) among these right-sided is (35%) and left-sided is (39%) followed by S-shaped deviated nasal septum (19%), spur (9%) while in study conducted by Padma et al. showed right sided in 52% patients and left-sided in 55% patients followed by S-shaped deviation in 17% and spur in 17% patients[11].

In our present study, postoperative symptoms like nasal block only present in 5 and headache in 1 patient. Other symptoms like nasal discharge, postnasal drip, hyposmia and epistaxis were not seen in any of the patients in both the group. In comparison to the present study, in the study performed by Teklal et al out of the 53 patients, 2 patients had nasal block, post nasal drip and persistent external deformity in both SMR and Septoplasty group[12]. The nasal discharge was present in 3 patients in both the SMR group and septoplasty group. Headache was observed in 5 patients in SMR group and 8 patients in septoplasty group. Epistaxis was observed in 1 patient who underwent septoplasty.

In our study, postoperative anterior rhinoscopy and diagnostic endoscopy findings show reduced fogging (5%) and persistent septal deviation (5%) while in other study postoperative anterior rhinoscopy and diagnostic endoscopy findings show reduced fogging (12%) and persistent septal deviation (12%)[12].

In our present study complications seen in both the group includes excessive bleeding (9%), crust formation (6%), synechiae (9%), septal haematoma (4%), septal perforation (2%), residual deviation (5%), secondary atrophic rhinitis (1%) which was similar to study conducted by Padma et al. showed complications in both the group includes excessive bleeding (8%), crust formation (8%), synechiae (12%), septal haematoma (4%), septal perforation (4%), residual deviation (6%).12

In comparison to the present study, in the study performed by Teklal et al, bleeding and crust formation was observed in 3 patients each in SMR group and 1 patient each in septoplasty group[13] while in our study septal perforation and septal hematoma was observed in 2 patients each in SMR group. The findings of our study is not different from study carried out by Agaman G et al.[12].

## Conclusion

Based upon analysis of data of our study we concluded that females are more affected in third decade of life to deviated nasal septum than male with the most common presenting symptoms of nasal obstruction and C-shaped deviation is a more common form of septum deviation. Both surgical modalities have similar post-surgical pain relief but after sub mucosal resection patients may have higher chances of complications.

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