

A Study of Clinical Profile of Deviated Nasal Septum and to Determine the Efficacy of Surgery

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Abstract: ***Introduction:** Nasal blockage, dryness, crusting, bleeding, itching, rhinorrhea, anosmia, headache, cosmetic complaints are the symptoms and signs that accompany septal pathology. Septoplasty, one of the most common surgical procedures in the otorhinolaryngology, is performed for correction of the septal deviation. Outcomes of septoplasty can be divided into objective or subjective patient reported outcome measurements. Thus there is a need for the formation of standard protocol to assess the efficacy of septoplasty. **Materials and Methods:** A prospective study, which included 60 patients diagnosed with DNS, was conducted in the Department of Otorhinolaryngology, Bangalore Medical College and Research Institute, between August 2018 to January 2019. NOSE Scale which is brief, valid, reliable, and responsive survey was used in the present study to assess the outcome of septal surgery. **Results:** On analysing the NOSE score it was observed that, at the end of 6 months of follow up period patients had significant improvement with respect to Nasal obstruction, headache, Nasal discharge, facial pain, and hyposmia. **Conclusion:** Surgical correction of the obvious anatomic deviation can significantly improve clinical outcomes including nasal obstruction, headache, facial pain and nasal discharge.*

Keywords: Deviated Nasal septum, NOSE SCALE

1. Introduction

Upto one- third of the general population is symptomatic with chronic nasal obstruction^{1,2}. Although nasal obstruction can be caused by many conditions, such as turbinate hypertrophy, adenoid hypertrophy, and nasal polyposis, the common cause of unilateral nasal airway obstruction is deviated nasal septum³. Nasal blockage, dryness, crusting, bleeding, itching, rhinorrhea, anosmia, headache, cosmetic complaints are the symptoms and signs that accompany septal pathology. Septal deviation hampers the nasal functioning mainly by obstruction. It also may impair mucociliary clearance (MCC) because of increased mucus secretion, disruption of normal ciliary activity and airway epithelial injury. MCC requires the co-ordinated beating of cilia and results in the transport of mucus to oropharynx thus playing an important host defence function of the upper respiratory tract that^{4,5}

Septoplasty, one of the most common surgical procedures in the otorhinolaryngology, is performed for correction of the septal deviation. Outcomes of septoplasty can be divided into objective or subjective patient reported outcome measurements. Thus there is a need for the formation of standard protocol to assess the efficacy of septoplasty.

Objective

- To describe the clinical profile of deviated nasal septum and
- To assess the subjective efficacy of the surgical outcome of septoplasty.

2. Materials and Methods

A prospective study, which included 60 patients diagnosed with DNS, was conducted in the Department of Otorhinolaryngology, Bangalore Medical College and Research Institute, between August 2018 to January 2019.

Sampling Size: 60

Sampling Method: convenience sampling

Study Design: Prospective observational study

Inclusion Criteria:

- Age: > 18 years
- Septal deviation consistent with presenting symptom of chronic nasal obstruction
- Symptoms lasting at least 3 months
- Persistent symptoms after 4 week trial of medical management including either topical nasal steroids, topical or oral decongestants or an oral antihistamine/decongestant combination

Exclusion Criteria

- Sinonasal malignancy
- Radiation therapy to head and neck
- Septoplasty performed with concurrent sinus surgery, rhinoplasty or sleep apnoea surgery
- Septoplasty performed as access to other sites.
- Prior septoplasty, rhinoplasty, turbinoplasty
- History or clinical evidence of chronic sinusitis

Method of Collecting Data

The data was collected on a predesigned proforma, which includes patient demographics, detailed history and clinical examination. Nasal patency test was done followed by anterior rhinoscopy and details were noted. They were assessed objectively and subjectively before the surgery.

Objective assessment

Objective assessment was done using cold spatula test. There was bilateral reduced fogging in patients and in patients fogging was reduced unilaterally.

Subjective assessment:

Subjective assessment was done using NOSE scale.

	Not A Problem	Very Mild Problem	Moderate Problem	Fairly Bad Problem	Severe Problem
Nasal Congestion / Stuffiness	0	1	2	3	4
Nasal Blockage / Obstruction	0	1	2	3	4
Trouble Breathing Through Nose	0	1	2	3	4
Trouble Sleeping	0	1	2	3	4
Unable To Get Enough Air During Exertion	0	1	2	3	4

The patients were informed to grade the severity of symptoms, and each symptom was given points ranging from 0 to 4 depending on the severity. 0 point being minimum and 4 points being maximum. Total points = Q1+Q2+Q3+Q4+Q5. This is divided by 20 & multiplied by 100, to obtain a NOSE score which is expressed as percentage.

Total NOSE Score = $\{(Q1+Q2+Q3+Q4+Q5) / 20 * 100\} \%$.

Higher percentage score indicates more problematic nasal obstruction

Nose Scale: Severity Classification System for Patients with Nasal Obstruction

Severity classification	Percentage
Mild	5-25
Moderate	26-50
Severe	51-75
Extreme	76-100

Septal deviations were classified according to Mladina classification which was modified by Janardhan et al.

Type I – Mild deviation in vertical or horizontal plane.

Type II – Moderate anterior or vertical deviation of cartilaginous septum in full length.

Type III – Posterior vertical deviation at level OM and middle turbinate

Type IV – ‘S’ shaped, posterior to one side and anterior to other.

Type V – Horizontal septal crest touching or not touching the lateral wall.

Type VI – Prominent maxillary crest contralateral to the deviation with a septal crest to the deviated side.

Type VII – Combination of previously described septal deformity types.

- Posterior rhinoscopy was done in all patients to rule out the other causes of nasal obstruction.
- Diagnostic nasal endoscopic findings were also included.
- X ray nose and Paranasal sinuses (Water’s view) were done in all cases.
- CT scan of paranasal sinuses were done in selected cases.

After complete pre operative assessment patients who fulfilled the inclusion / exclusion criteria were subjected to surgical correction.

Technique: The septum was approached by a hemitransfixation incision in front of the caudal end of the septal cartilage. Cottle tunnels were made by a subperichondrial and subperiosteal dissection. Inferior and posterior chondrotomy was performed to create the “swinging-door” with the anterior part of the septum. All areas of deviation were treated and destroyed. The maxilla-premaxilla crest, the posterior part of the septal cartilage, the vomer and perpendicular lamella of the ethmoid bone were

removed by respecting the anterior nasal spine, the choanal arch and skull base to obtain a perfect straight, flat and sagittal septum. The anterior septal cartilage was adjusted, straightened. Nasal packing was performed and was left in place for 24hrs.

Follow Up: There were 4 follow up visits at the end of 1st week, after a month, three months, 6 months duration.

3. Results

Age distribution

In the present study, the age of the patients was Varying between 17 years and 60 years.

Age	Number of patients	Percentage
11- 20 years	22	36.7
21- 30 years	25	41.7
31- 40 years	8	13.4
41- 50 years	4	6.7
51- 60 years	1	1.7

Gender distribution

Out of the 60 patients, 48 (80%) were males and 12 patients were females (20%)

Gender	Number of patients	Percentage (%)
Male	48	80
Female	12	20

Symptoms

Symptoms	Number of patients	Percentage
Nasal obstruction	60	100
Headache	48	80
Nasal discharge	5	8.4
Facial pain	5	8.4
Hyposmia	4	6.7
Epistaxis	2	3.4

Medical illness

In our study 1 patient had diabetes mellitus and 3 patients were hypertensive.

Illness	Number of patients	Percentage
Diabetes	1	1.7
Hypertension	3	5

Anterior Rhinoscopy:

On clinical examination following anterior rhinoscopy, Deviated nasal septum was found in all the 60 patients. 28 patients had right sided deviation and in 32 patients septum was deviated to the left. 18 patients had spur and 40 patients had compensatory hypertrophy of the turbinate on the opposite side.

Findings	Number of patients	Percentage
Septal deviation	60	100
Right	28	46.7
Left	32	53.4
Inferior turbinate hypertrophy	40	66.7
Spur	18	30
External deformity	2	3.4

Diagnostic Nasal Endoscopy Finding

Diagnostic nasal endoscopy was done in all patients using 0 degree nasal endoscope. In patients nasal mucosa was congested. Septal deviation was present in all patients. Compensatory inferior turbinate hypertrophy was present in patients on the opposite side. Patients had spur. Discharge was seen in the osteo meatal complex in patients.

Findings	Number of patients	Percentage
Septal deviation	60	100
Inferior turbinate hypertrophy	40	66.7
Congested mucosa	20	33.4
Spur	18	30
Discharge in the OMC	5	8.4

In the study, all 60 patients were classified according to Mladina classification which was modified by Janardhan et al. patients had Type I deformity, Patients had Type II deformity, patients had Type III deformity, patients had Type IV deformity, patients had Type V deformity, patients had Type IV deformity and patients had Type VII deformity.

Mladina classification modified by Janardhan et al	Number of patients	Percentage
Type I	3	5
Type II	6	10
Type III	4	6.7
Type IV	10	16.7
Type V	16	26.7
Type VI	10	16.7
Type VII	11	18.4

Comparison of Nose Scale Obtained Before and after 6 Months of Septoplasty:

Nose Score	Baseline (Mean ±S.D)	After 6 Months (Mean±S.D)	P value
N1	3.85 ± 0.360	0.55 ± 0.790	0.00001
N2	2.88 ± 0.585	0.98 ± 0.770	0.00001
N3	3.70 ± 0.462	0.42 ± 0.561	0.00001
N4	3.02 ± 0.725	0.63 ± 0.843	0.00001
N5	3.57 ± 0.533	0.58 ± 0.696	0.00001

On analysing the NOSE score it was observed that, at the end of 6 months of follow up period patients had significant improvement with respect to Nasal obstruction, headache, Nasal discharge, Facial pain, and hyposmia. The results were statistically significant with p value (<0.0001)

4. Discussion

A deviated nasal septum (DNS) is the most common cause of nasal obstruction. It leads to mouth breathing, snoring and external nasal deformity. It also influences the airflow dynamics of the nasal cavity and improper aeration of paranasal sinuses leading to sinusitis. Due to airflow changes, compensatory hypertrophy of the nasal mucosa on

concave side is often found⁷⁻¹⁰ Other changes which are seen due to altered air flow dynamics are disturbed mucociliary dysfunction, lymphocytic infiltration and squamous metaplasia. Although these changes are seen on both sides of nasal mucosa, but are more severe on concave side¹¹⁻¹⁴

Hence we conducted a study describe the clinical profile of deviated nasal septum and to assess the subjective efficacy of the surgical outcome of septoplasty.

In the present study Nasal obstruction was present in all the patients. 48 patients had headache. Nasal discharge was seen in 5 patients. 5 patients had Facial pain and Hyposmia was present in 5 patients.

Following septoplasty, statistically significant improvement was observed in the entire patient population with respect to 6 clinical outcome measures. Nasal obstruction (p<0.001), headache (p<0.001), Nasal discharge (p<0.001), Facial pain (p<0.001) and hyposmia (p<0.001). Thus it shows that following septoplasty, patients improved significantly and NOSE score was reduced. (Low score indicates better relief of symptoms)

A similar study conducted by B. Gandomi et al suggests that there was a significant improvement in mean Nasal Obstruction Symptom Evaluation Score after 3 months after septoplasty. The p value of <0.001 for nasal obstruction and hyposmia/ anosmia which is comparable to the present study. David. H. Harley et al concluded that surgical correction of anatomic abnormalities of the septum and turbinate resulted in predictable improvement in outcome measures with respect to headache – frequency and severity, nasal obstruction and results were statistically significant.

Hence we conclude that In patients with septal deformity, nasal septoplasty results in significant improvement in disease specific QOL and high patient satisfaction as they improve symptomatically.

5. Conclusion

Surgical correction of the obvious anatomic deviation can significantly improve clinical outcomes including nasal obstruction, headache, facial pain and nasal discharge.

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