



## QUALITY OF LIFE ASSESSMENT IN PATIENTS WITH SYMPTOMATIC DEVIATED NASAL SEPTUM FOLLOWING SEPTAL CORRECTION

### Otolaryngology

**Dr. Sai Manohar S\***

Associate Professor, Department of ENT, Yenepoya Medical College, Mangalore.  
\*Corresponding Author

**Dr. Gangadhara Somayaji**

Professor, Department of ENT, Yenepoya Medical College, Mangalore.

**Dr. Lakhan M S**

Resident, Department of ENT, Yenepoya Medical College, Mangalore.

### ABSTRACT

**Objectives:** 1. To assess the subjective benefits to the patients undergoing septoplasty using sinonasal outcome test (SNOT-10) scoring system. 2. To assess the improvement in the allergic symptoms following septal surgery

**Subjects:** Patients with symptomatic deviated nasal septum undergoing septal correction.

**Intervention:** Patients were asked to answer the questionnaire (based on SNOT 10 scoring system) pre operatively, 1st and 3rd months post operatively.

**Result:** Quality of life improvement was observed in all the symptoms. Benefits were less for complaints of running nose and sneezing as compared to nasal obstruction and head ache.

**Conclusion:** The symptoms showing best improvement are Nasal obstruction, Headache and Loss of smell. Running nose and Sneezing may not show much improvement. SNOT 10 questionnaire is very helpful in decision making and counselling the patient regarding septoplasty.

### KEYWORDS

Septoplasty, Deviated Nasal Septum, Nasal Obstruction

### INTRODUCTION

Surgical and medical management for nasal obstruction is a common part of otolaryngology. Although symptoms of nasal obstruction can have several aetiologies such as mucosal congestion, turbinate hypertrophy, nasal mass and others, deviation of nasal septum is a very common cause. Nasal obstruction may be unilateral in C shaped deviation or bilateral in S shaped deviation. Obstruction can become bilateral in case of C shaped deviations when there is opposite side inferior turbinate hypertrophy.<sup>1</sup> Hyposmia or anosmia are seen in bilateral nasal obstruction and can result from a septal deviation. Epistaxis can occur due to spur or crusting of nasal mucosa.<sup>2, 3</sup> Headache can occur due to a spur impinging onto the lateral wall (Sluder's Neuralgia). It may be also due to sinusitis caused by the deviated nasal septum, in which case there can be complaints like thick nasal discharge, postnasal discharge.<sup>1</sup>

Septoplasty is the definitive treatment for the same. To observe the relief of different symptoms, various types of objective assessment tools are available. Acoustic rhinometry, which is an easy test for patients to tolerate and for staff to perform, provides a non invasive, convenient, accurate, and expeditious method of measuring dimensions of the nasal airway. Airflow rhinometry, a second assessment tool, is a dynamic test of resistance to nasal airflow both before and after vasoconstriction.<sup>4,5,6,7</sup>

The measurements of these objective tools are not comparable with the subjective feeling of the patients which is most important in management of nasal obstruction. That is why most of the surgeons have to rely on the subjective symptoms for the indication, as well as outcome measurement of the septoplasty.

SNOT (Sino Nasal Outcome Test) is a tool of one of its kind, in which both nasal and health related symptomatic improvements are assessed.<sup>8</sup> After validating with the department and the board of studies, 10 symptoms of SNOT scoring system (SNOT 10) was used in this study.

### OBJECTIVES:

1. To assess the subjective benefits of septoplasty using Sino Nasal Outcome Test (SNOT-10) scoring system.
2. To assess the improvement in the allergic symptoms following septal surgery

### MATERIALS AND METHODS

This is a prospective longitudinal study. Quality of life following

septal correction for symptomatic deviated nasal septum was studied.

The Otorhinolaryngology department of a tertiary care hospital was the setting for this study. The study was done for 20 months from October 2014 to May 2016, after obtaining the clearance from the institutional ethics committee.

Subjects with symptomatic deviated nasal septum who underwent septal correction in our hospital were included in the study by non probability purposive sampling method.

### Inclusion criteria-

1. All symptomatic subjects with deviated nasal septum who underwent septal correction were considered.
2. Cases with allergic symptoms along with deviated nasal septum treated with topical steroids and/or antihistaminics for 6 weeks without any improvement in symptoms.

### Exclusion criteria-

1. Below 18 years of age
2. Those with nasal mass, polyps
3. Septoplasty with rhinoplasty
4. Septoplasty done as an entry port to other surgeries
5. Adenoid hypertrophy
6. Granulomatous conditions
7. Case of chronic rhinosinusitis

Relevant clinical data (demographic- age, sex, place, occupation) including history was obtained from the patient. A complete clinical examination followed by, relevant investigations including Complete Blood Count, Erythrocyte Sedimentation Rate, Absolute Eosinophil Count, X RAY Paranasal Sinuses, Computerised Tomography Nose and Paranasal Sinuses, Diagnostic Nasal Endoscopy were conducted according to need, based on the history and clinical examination.

The patients were asked to answer the questionnaire based on SNOT 10 scoring system preoperatively, 1<sup>st</sup> and 3<sup>rd</sup> month postoperatively. The severity of the symptoms were graded as nil, mild, moderate and severe (SNOT 10 Questionnaire).

### SINONASAL OUTCOME TEST (SNOT 10 Questionnaire)

SYMPTOMS	NIL(0)	MILD(1)	MODERATE(2)	SEVERE(3)
Nasal Obstruction				
Running Nose				

Sneezing				
Headache/Facial pain				
Cough				
Need to blow nose				
Post-nasal discharge				
Thick nasal discharge				
Epistaxis				
Loss of Smell/Taste				

Nil- No complaints  
 Mild-Complaints present, relieving on its own.  
 Moderate-Complaints relieving with medications only  
 Severe- Complaints not relieving with medication

**OBSERVATION**

The total number of septoplasties during this period was 113. Only 100 were considered as 13 were lost to follow up.

For statistical analysis NonParametric test and Wilcoxon Signed Ranks Test were used.

**Sex Distribution**

In the 100 patients that were operated 77 were males and 23 were females.

**Table.1- Comparison of Nasal obstruction, Headache, Loss of smell- Preoperative and Post operative 1<sup>st</sup> and 3<sup>rd</sup> months**

Nasal Obstruction		Preoperative	1 <sup>st</sup> month Postop	3 <sup>rd</sup> month Postop
Nasal Obstruction	Nil	3	22	65
	Mild	8	19	35
	Moderate	38	47	0
	Severe	51	12	0
Headache	Nil	10	28	65
	Mild	21	70	34
	Moderate	20	2	1
	Severe	49	0	0
Loss of Smell	Nil	15	75	85
	Mild	33	14	15
	Moderate	42	11	0
	Severe	10	0	0

**Table 2: Nasal Obstruction**

	1 Month and Pre- op	3 Month and Pre- op	3 Month and 1 Month
Z Asymp. Sig. (2- tailed)	-7.151b .000	-8.688b .000	-7.591b .000

Here as it is tabulated (Table 1 and 2) before surgery 51 patients had severe nasal obstruction, 38 moderate, 8 mild nasal obstruction and the rest 3 did not have complaints of nasal obstruction. During 1<sup>st</sup> month post operative follow up the number of patients having severe nasal obstruction reduced to 12. By 3<sup>rd</sup> month post operative none of the patients had severe nasal obstruction but 35 had mild nasal obstruction. Subjects with no complaints of nasal obstruction increased from 3% to 65% postoperatively, which was statistically significant (p value <0.05).

Preoperatively 49 patients had severe headache and 10 patients were symptom free (Table.1). Rest 20 and 21 had moderate and mild headache. Number of symptom free patients increased from 10 to 28 by 1<sup>st</sup> month and 65 by 3<sup>rd</sup> month. Ninety patients who had symptoms before surgery were reduced to 35 by 3<sup>rd</sup> month and was significant (p <0.05).

On tabulation (Table.1), it was found that 85 patients had complaints of loss of smell preoperatively, among which 10 had severe complaints. Postoperatively by 1<sup>st</sup> month there were no patients with severe loss of smell & by 3<sup>rd</sup> month there were no patients with moderate symptom and only 15 patients had mild symptoms and were statistically significant.

**Table.3- Comparison of Running nose, sneezing, need to blow nose- Preoperative, post operative 1<sup>st</sup> month and 3<sup>rd</sup> month**

Running Nose	Preoperative	1 <sup>st</sup> month Postop	3 <sup>rd</sup> month Postop
Nil	27	30	49

Sneezing	Mild	53	53	38
	Moderate	7	17	13
	Severe	13	0	0
	Nil	50	56	64
	Mild	47	42	36
	Moderate	2	2	0
Need to blow nose	Severe	1	0	0
	Nil	30	83	92
	Mild	55	17	8
	Moderate	15	0	0
	Severe	0	0	0

Preoperatively there were 73 patients with complaints of running nose (Table.3), among whom 13 had severe complaint. By the end of 3<sup>rd</sup> month 51 patients still had complaints among which 13 had moderate and rest had mild complaints and were significant statistically.

Fifty patients had complaints of sneezing preoperatively, among whom 47 patients were having mild complaints only. Thirty six patients still had complaints of sneezing by 3<sup>rd</sup> month postoperatively.

Of 70 patients with complaint of need to blow nose regularly (55 mild and 15 moderate), by 1<sup>st</sup> month only 17 had mild symptom, none had moderate symptom.

**Table.4- Comparison of symptoms Preoperative, Post operative 1<sup>st</sup> month and 3<sup>rd</sup> month**

Post discharge		Preoperative	1 <sup>st</sup> month Postop	3 <sup>rd</sup> month Postop
Post discharge	Nil	60	75	76
	Mild	40	25	24
	Moderate	0	0	0
	Severe	0	0	0
Thick nasal discharge	Nil	32	100	100
	Mild	68	0	0
	Moderate	0	0	0
	Severe	0	0	0
Epistaxis	Nil	91	97	97
	Mild	8	3	3
	Moderate	1	0	0
	Severe	0	0	0
Cough	Nil	74	93	97
	Mild	26	7	3
	Moderate	0	0	0
	Severe	0	0	0

There were 26 patients with mild cough preoperatively and rest 74 patients were symptom free (Table. 4). By 1<sup>st</sup> month postoperatively symptoms of mild cough reduced to 7 patients & by 3 months 3 patients had cough. Statistically p value was found significant for preoperative and 3<sup>rd</sup> month comparison.

Preoperatively 40 patients had complaints of postnasal discharge. By 1<sup>st</sup> month only 25 patients had complaints of postnasal discharge and by 3<sup>rd</sup> month 24 still had complaint.

There were 28 patients with complaints of thick nasal discharge preoperatively, no patients had severe or moderate complaint. By 1<sup>st</sup> month all the patients with symptoms of thick nasal discharge became symptom free. Statistically p value for both postnasal discharge and thick nasal discharge were significant for comparison between preoperative and 3<sup>rd</sup> month postoperatively.

Nine patients had epistaxis (8 mild and 1 moderate). By 1<sup>st</sup> month only 3 had epistaxis (mild). By 3<sup>rd</sup> month also the 3 patients had mild epistaxis (p value <0.05).

For all the 10 symptoms, after tabulation and statistical analysis the difference between preoperatively and 1<sup>st</sup> month postoperatively and also preoperatively and 3<sup>rd</sup> month was found to be significant.

**DISCUSSION**

Nasal symptoms are commonly encountered in clinical practice and frequently accompanied by respiratory problems. Nasal obstruction is one of the most common complaints presenting to ENT surgeons and could be secondary to a variety of causes. It's affecting around 9.5 - 15% of the general population. Nasal septal deviation is one of its

most frequent causes. Other causative conditions are turbinate hypertrophy, nasal tumours and nasal polyps.<sup>10</sup>

Septoplasty is the definitive treatment for a deviated nasal septum, the concern being the quality of life following it. Various objective assessment tools like Nasal peak flow meter, Rhinomanometry, Acoustic rhinometry are there. But subjective feeling of the patient should be given more importance rather than objective measurements. SNOT(Sino Nasal Outcome Test) is a tool of one of its kind, in which both nasal and health related symptomatic improvements are assessed.<sup>8</sup>

SNOT 22 questionnaire, comprising of 22 questions was used by Sathish HS et al to study quality of life of 70 patients who underwent septoplasty. This gave them ability to measure the effect of septoplasty and also showed significant improvement in most of the parameters. They concluded pre operatively SNOT-22 Questionnaire was very useful in knowing the severity of nasal problems and helps to select the patients for septoplasty. Post surgical SNOT-22 study helps in knowing the outcome regarding effectiveness of surgery.<sup>11</sup>

Steward MG et al conducted a study on quality of life of 41 patients undergoing septoplasty using NOSE questionnaire. Significant improvement in disease-specific quality of life was a result of nasal septoplasty along with high patient satisfaction, and decreased medication use was their conclusion.<sup>10</sup>

Prakash et al used SNOT 10 questionnaire to measure the outcome of septoplasty and concluded that there is significant symptomatic improvement seen after septoplasty. The improvements of the symptoms are not only seen for nasal obstruction, but also for sneezing and watery discharge, which are regarded as symptoms of rhinitis. SNOT 10 was proved as a reliable tool to evaluate the improvement in symptoms after septoplasty.<sup>8</sup>

In our study we used SNOT 10 questionnaire to evaluate quality of life in patients undergoing septoplasty and we found it to be a good questionnaire to evaluate the improvement. There was significant improvement postoperatively in all the 10 symptoms.

Ghaziapour A et al studied 98 patients with nasal septal deviation who underwent septoplasty. They found a notable and gradual recovery in headache in 82.8% of the patients. They concluded headache as one of the most common symptoms in patients with nasal anatomical abnormalities such as septal deviation and usually responds well to surgical treatment.<sup>12</sup>

In a study conducted by Bezerra P et al in their study found that patients post septoplasty had improvements in their disease specific quality of life for nasal obstruction.<sup>13</sup>

Das SK et al evaluated 40 patients with chronic headache & facial pain. Nasal mucosal contact points were identified in these patients by nasal endoscopy. Patients underwent nasal surgeries like septoplasty, middle turbinate lateralisation, spurectomy, concha bullosa resection, cauterisation of inferior turbinate. Headache improved in 89.33 %, facial pain improved in 96.66%, nasal obstruction improved in 82.50 % cases.<sup>14</sup>

In our study, 90 patients had complaints of headache or facial pain, of which 49 had severe headache. Number of symptom free patients increased from 10 to 28 by 1<sup>st</sup> month and to 65 by 3<sup>rd</sup> month. Those with headache reduced to 35 by 3<sup>rd</sup> month.

In a study by Gupta N et al to find improvement in smell following septal correction on 41 patients, showed improvement in olfactory function in 70.6% of patients after surgery, no change in 20.1%, and reduced function in 7.6%. Hence concluded that correction of nasal septal deviation leads to improvement in sense of smell.<sup>9</sup>

In our study 85 patients had complaints of decreased smell among which 33 were mild, 10 were severe. Patients had significant reduction in symptoms by the 3<sup>rd</sup> month after surgery. Decreased smell was complained by only 15.

In a study done by Levi et al on outcomes of epistaxis in children, 18 out of 20 patients who had refractory epistaxis were benefited from septoplasty.<sup>15</sup> In our study epistaxis was seen in 9 patients which

reduced to 3 patients after 3 months.

Karatzanis AD et al compared the outcome of septoplasty in patients with and without allergic rhinitis and they concluded that patients without allergy benefited more. They advocated medical management of allergic rhinitis as the first priority.<sup>16</sup>

Bugten V et al in their study concluded that allergic patients tend to report more nasal blockage and facial pressure postoperatively than other patients and a focus on medical treatment should also be kept postoperatively.<sup>17</sup>

In our study though the improvement was statistically significant for parameters showing allergy like running nose and sneezing, the number of patients showing improvement was comparatively less. Complaints persisted in many.

## SUMMARY

A total of 100 septoplasty subjects were included in this study. They were evaluated preoperatively, 1<sup>st</sup> and 3<sup>rd</sup> month postoperatively using SNOT- 10 scale. The main symptoms for which they were benefited were Nasal obstruction and Headache. Benefits were less for complaints of running nose and sneezing as compared to other symptoms.

## CONCLUSION

- 2) SNOT 10 questionnaire is helpful in assessing the improvement in overall quality of life in patients undergoing septoplasty.
- 3) The symptoms showing best improvement following septoplasty are Nasal obstruction, Headache and Loss of smell.
- 4) Symptoms like Running nose and Sneezing indicating allergic rhinitis do not show much improvement.
- 5) Thick nasal discharge & cough also improve if they are associated with deviated nasal septum.
- 6) Hence SNOT 10 questionnaire is very helpful in decision making and counselling the patient regarding septoplasty.

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