

## Original Research Article

# Role of septoplasty in allergic rhinitis

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### ABSTRACT

**Background:** It is a prospective study of 30 cases of allergic rhinitis with deviated nasal septum presented to our hospital. Analysis is done on the basis of age and sex distribution, severity of the symptoms pre and post operatively, according to nasal obstruction symptom evaluation (NOSE) scale and allergic rhinitis control test (ARCT) questionnaire which assess the quality of life.

**Methods:** Detailed history taking and clinical examination was done. All the patients were assessed the severity of their symptoms based on a NOSE scale. An ARCT questionnaire was given to patients prior to surgery (septoplasty) and after 3 months of it.

**Results:** In study we have observed that in the age group was 20-30 years. Majority of the patients were males. The most common symptom is nasal obstruction followed by sneezing, rhinorrhea, pruritis, headache etc. The mean decrease in the NOSE score was statistically significant (before septoplasty NOSE score =14.6 and after septoplasty NOSE score=8.1). There is also improvement in quality of life which was measured by allergic rhinitis control test (ARCT) score. ARCT before septoplasty 10.2 and after 19.2.

**Conclusion:** The study shows most common combined symptoms are nasal blockage with rhinorrhoea, more affecting the age group of 18 to 30 years, males, with deviated nasal septum towards left seen more commonly. Patients of allergic rhinitis with deviated nasal septum are benefited with septoplasty, improved symptoms like nasal obstruction and stuffiness etc. and the quality of life by decrease in the severity of allergic symptoms.

**Keywords:** Allergic rhinitis, Deviated nasal septum, NOSE, ARCT

### INTRODUCTION

Allergic rhinitis is affecting between 0.8 to 39.7% of the world population in last few decades the incidence are increasing which to an extent remains under diagnosed. Allergic rhinitis is an IgE mediated type I hypersensitivity reaction which produces by exposure to certain antigens to which the patients are sensitized. It is characterized by the symptoms like nasal obstruction, rhinorrhea, sneezing and itching. Symptoms purely develop after sensitization from the antigens.<sup>1</sup>

These symptoms causes difficulty in carrying out day to day life activities and difficulty in sleep, this then lead to irritability, decrease work efficiency, day time sleepiness or fatigue and thus affects the quality of life. This has been seen in around 80% of the patients suffering from allergic rhinitis and the ones with more severity of the disease.

There are two types of allergic rhinitis: the one with frequency of episodes of <4 days per week or <4 consecutive weeks per year is considered as Intermittent

and opposite to that when it is more than that it is persistent.

It is further divided into: Mild and Moderate-severe depending upon whether it affects your day to day activity sleep etc or not. Around 75% of the patients fall under Persistent type.<sup>1</sup>

Nasal obstruction is considered as the most common complaint encountered during a rhino logical practice and the most common cause for this symptom is either allergic or deviated nasal septum or both.

Nasal Obstruction Symptom Evaluation(NOSE) score is a subjective type of tool for assessment of the severity of the symptoms in allergic rhinitis with DNS(Deviated Nasal Septum) (Table 1).<sup>2</sup> It can be considered as disease specific tool. The aim of this study is to assess the effect of septoplasty on the clinical course of allergic rhinitis with DNS and improvement in quality of life by comparing ARCT questionnaire(Allergic rhinitis control test) which was developed by ARIA(allergic rhinitis and its impact on asthma) 2007 guidelines(Table 2).<sup>3,4</sup>

**Table 1: Nose scale.**

<b>Patient's ID and date:</b>					
To the patient: Please help us in doing this little survey by providing information regarding how badly nasal obstruction affects the quality of your day to day life. Thank you!					
Over the past one month, how much of a problem were the following conditions for you? please circle the most correct response.					
	Not a problem	Very mild problem	Moderate problem	Fairly bad problem	Severe problem
Nasal congestion or stuffiness	0	1	2	3	4
Nasal Blockage or obstruction	0	1	2	3	4
Trouble breathing through my nose	0	1	2	3	4
Trouble sleeping	0	1	2	3	4
Unable to get enough air through my nose during exercise or exertion	0	1	2	3	4

**Table 2: ARCT Questionnaire.**

<b>During the last 2 weeks, has your allergic rhinitis had an effect on your professional/personal activities?</b>				
Permanently	Very often	Often	Not often	Never
1	2	3	4	5
<b>During the last 2 weeks, has your allergic rhinitis made you irritable?</b>				
Permanently	Very often	Often	Not often	Never
1	2	3	4	5
<b>During the last 2 weeks, has your allergic rhinitis disturbed your sleep?</b>				
Permanently	Very often	Often	Not often	Never
1	2	3	4	5
<b>During the last 2 weeks, have you needed to use an additional treatment not prescribed by your doctor?</b>				
>4 nights/week	2-3 nights/week	1 night/week	1-2 times only	Never
1	2	3	4	5
<b>During the last 2 weeks, how would you assess your allergic rhinitis?</b>				
Not controlled	Very slightly controlled	Somewhat controlled	Well controlled	Completely controlled
1	2	3	4	5

**Aims and objectives**

To clarify the effectiveness of septoplasty in such patients whether improving the quality of life or not by use of ARCT score.

To assess the effect of septoplasty in improvement of symptoms in such patients using NOSE score.

**METHODS**

This is a prospective type of study done in 30 patients at M. P. Shah Medical College, Guru Govind Singh Hospital, Jamnagar, Gujarat, India from April 2019 to April 2020.

Inclusion criteria included, patients having moderate to severe persistent type of allergic rhinitis with symptomatic deviated nasal septum and age above 18 to

60 years. Exclusion criteria included patients with mild allergic symptoms, below 18 and above 60 years of age, with altered coagulation profile, uncontrolled systemic disease which are contraindicated to surgeries, congenital anomaly and previously present external deviation.

The study was done after the approval by member secretary institutional ethics committee. Cases were investigated in the following manner: detailed history taken, clinical examination including general examination and local examination by anterior rhinoscopy, nasal endoscopy was done to see the side of deviation of the septum and examination of nasal mucosa. Diagnostic nasal endoscopy was done in all subjects using 4mm zero degree endoscope for evaluation of nasal anatomy of all the patients, routine blood investigation: complete blood count, coagulation profile, renal and liver function tests were also performed. Serological markers: HBsAg, HCV, HIV etc., AEC(absolute eosinophilic count): measures specifically eosinophil which increases in allergic conditions. AEC >440/mm<sup>3</sup> is considered significant. Septoplasty was performed in all these patients with preoperative fitness under all aseptic precautions. All the patients were assessed the severity of their symptoms based on a nasal obstruction symptom evaluation (NOSE) scale. An ARCT was given to patients prior to surgery and after 1 month of it and there after 3 months of the surgery. Data was collected and analysed by Mann-Whitney U test. They are divided into pre and post operative groups for comparative study.

**RESULTS**

The total no. of patients were 30(n=30). According to this study the most common age group affected was between 18 to 30 years with 15 patients in it(50%) followed by 12 patients(40%) in 30 to 40 and only 2(6.7%) in 40-50 and 1 patient(3.3%) was there in age group 50 to 60(Table 3).

**Table 3: Age groups.**

Age (in years)	No. of patient	%
18-30	15	50
30-40	12	40
40-50	2	6.7
50-60	1	3.3

The most common symptom encountered is nasal blockage. Out of 30 patients 24 patients(80%) reported complain of nasal blockage. Sneezing was the next

common since it is an allergic condition, 15 patients (50%) reported sneezing followed by rhinorrhoea in 12 patients (40%). Itching was least common and found in only 6 patients (20%) out of 30 (Table 4).

Since nasal blockage cannot be the only complain as we are dealing with allergic rhinitis and symptomatic deviated nasal septum so we have found combined symptoms (Table 5).

**Table 4: Prevalence of symptoms in allergic rhinitis.**

Symptoms	No. of patients	%
Nasal blockage	24	80
Sneezing	15	50
Itching	6	20
Rhinorrhoea	12	40

**Table 5: Combined symptoms (n=30).**

Symptoms	No. of patients
Nasal blockage, sneezing, rhinorrhoea	2 (6.6)
Nasal blockage, sneezing, itching	1 (3.3)
Nasal blockage, rhinorrhoea	9 (30)
Nasal blockage, itching	1 (3.3)
Nasal blockage, sneezing	6 (20)
Sneezing, itching	3 (10)
Sneezing	3 (10)
Nasal blockage	4 (13.3)
Nasal blockage, rhinorrhoea, itching	1 (3.3)

The mean NOSE score of 30 patients during the study was found to be 15.03 out of 20. After septoplasty there is a decrease in the score found at the 1<sup>st</sup> month of follow up which was 11.6(23%). After that patients were again called at the end of 3 months of surgery and again scoring was done. The mean NOSE score then was decreased to 8.1 out of 20, which is nearly 47% of reduction in the score (Table 6).

A similar difference in the ARCT score was found, where the mean was 10.2 out of 25 before septoplasty which had an increase of 14.6(31%) at the end of 1 month and after 3 months it increased to 19.2, which is nearly a 48% of increase in then score(Table 7).

**Table 6: Comparison of NOSE score.**

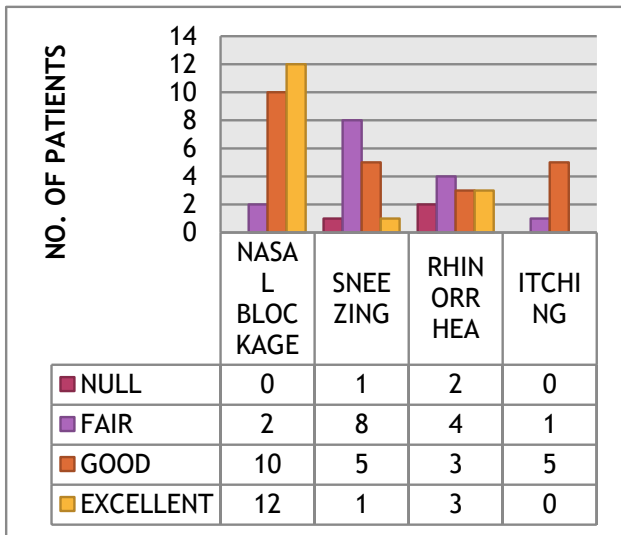
	Mean before septoplasty	Mean after septoplasty (1 month)	Mean after septoplasty (3 months)	No. of patient participated
<b>NOSE score</b>	15.03	11.6 (23%)	8.1 (47%)	30

**Table 7: Comparison of ARCT score.**

	Mean before septoplasty	Mean after septoplasty (1 month)	Mean after septoplasty (3 months)	No. of patient participated
<b>ARCT score</b>	10.2	14.6 (31%)	19.2 (48%)	30

Another analysis was done as subjective improvement in symptoms post septoplasty after 3 months. Patients were asked about the improvement as null, fair, good and excellent as a scale with their symptoms which showed the results as plotted in the chart form.

As shown in the chart septoplasty improved complain of nasal blockage excellently where as fair to good improvement with allergic symptoms such as rhinorrhoea and sneezing(Figure 1).



**Figure 1: Response of symptoms reported by patients after 3 months.**

**DISCUSSION**

The most common complaint in rhinological practice is being nasal blockage and the most common cause for that is deviated nasal septum and allergic rhinitis, its co-existence makes it more difficult for the patient to breathe and to carry out day to day activities.

In our study the most common symptom was nasal blockage (80%) followed by sneezing (50%) and rhinorrhoea (40%), combined symptoms such as nasal blockage along with rhinorrhoea (26%) was found in maximum patients followed by nasal blockage along with sneezing(20%). Similar to the study carried out by Gray LP et al.<sup>5</sup>

In our study also the males(66.7%) are more common than females(33.3%) and most common age group affecting is 18 to 30(50%) followed by 30 to 40 years

(40%) of age group. Mean age is (29.03), similar to a study carried out by Lucia et al.<sup>6</sup>

Allergic rhinitis significantly reduces quality of life, interferes with day to day activity, school, work, and results in substantial financial costs. Allergic rhinitis is common and affects 20% of the population. The prevalence of it has been increased over last three decades. Subjects with most risks are those with atopy, family history of rhinitis, first-born children and immigrants as per a study by Sly.<sup>6</sup> Treatment of allergic rhinitis consists of patients education, allergen avoidance, pharmacotherapy, immunotherapy and surgery.

For assessment we have used the NOSE scale for subjective assessment and ARCT score to assess the quality of life postoperatively. NOSE scale is a disease specific quality of life instrument for use in nasal obstruction, developed by Stewart et al.<sup>2</sup> Its major advantage is it is superior to history in evaluating the subjective symptoms in the most accurate possible way with regard to difficulty in breathing.

The statistically significant decrease in NOSE score in the allergic rhinitis with symptomatic deviated nasal septum proves that septoplasty is benefited in these patients as shown in a study by Pirilä T, Tikanto J et al.<sup>7</sup> in our study the same has been noted.

In our study we have used the ARCT (allergic rhinitis control test) questionnaire developed by Demoly P et al.<sup>3</sup> for evaluation of control of allergic rhinitis following septoplasty. It has to be appeared as sensitive to change in the state of allergy post operatively which is significant at p<0.0001.

In our study with the help of the ARCT questionnaire there is a increase in the ARCT score which shows improvement in the quality of life of the patient after septoplasty at a significant level at p<0.05.

Some investigators believe that, regardless of the magnitude of the septal deviation, surgical correction eliminates a possible contributing factor of rhinitis because after septoplasty surface area of the septum is markedly reduced as we remove the deviated septal part hence allergens get less attached to the mucosa and allergic reaction will decrease. Another theory is post operative fibrosis in the nasal mucosa leads to loss of allergic response to the allergens and exposure, thus decrease in the frequency and severity of the episodes, supported by study by Michael, Stewart et al.<sup>2,8</sup>

## CONCLUSION

The study shows most common combined symptoms are nasal blockage with rhinorrhoea, more affecting the age group of 18 to 30 years, Males, with deviated nasal septum towards left seen more commonly. Patients of allergic rhinitis with symptomatic deviated nasal septum are benefited with septoplasty. It improves symptoms like nasal obstruction and stuffiness etc. Improves the quality of life by decrease in the severity of allergic symptoms. Thus there is a subjective improvement seen in these patients which is benefited for them to carry out day to day activity as was difficult preoperatively.

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