

Nasal septal deviation: Associated anatomical variations and outcome of surgery

Presented by

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Abstract

Objective: Sino Nasal Outcome Test – 22 (SNOT-22) Questionnaire study was done to analyse the effectiveness of septoplasty surgery by noting the improvement of nasal symptoms & general quality of life(QOL) by means of SNOT-22 questionnaire given to patients before the surgery and 3 months after the surgery. Analysis of effectiveness of septoplasty is usually done by noting pre and post operative symptoms.

Study Design: This is a prospective study and our data analysis consisted originally of 40 patients all of them answered the SNOT-22 questions both preoperatively and postoperatively. The age group of the patients was between 18 to 47 years.

Results: In the post operative SNOT- 22, the need to blow nose, sneezing, running nose, nasal obstruction, loss of smell or taste, post nasal discharge, facial pain/pressure, difficulty in falling asleep, waking up at night lack of good night's sleep, wake up tired, reduced productivity and embarrassed improved significantly.

Conclusion: Evaluation of symptoms & findings in the patient is essential in deciding whether surgery or other treatment can be done in individual patient having nasal blockage symptoms. The results are encouraging us to use the systematic questionnaire (SNOT -22) to estimate the severity of symptoms in daily clinical practice.

Key Words: Health related quality of life, septum, SNOT -22.

Introduction

Deviated nasal septum (DNS) may be asymptomatic in an individual or may cause nasal obstruction and symptoms of rhinosinusitis like nasal discharge, facial pain, epistaxis, disturbance of smell. The pathology in sinonasal cavity can also affect the function of throat and ear and surgery of septum and sinuses is indicated in such a situation.[1]

The definitive treatment for septal deviation is nasal septoplasty, performed to improve nasal airways by correcting deviations in the nasal septum. Patients suffering from nasal obstruction are perhaps the least controversial indication for septoplasty, but it has been suggested that the evidence base for this procedure in such patients is lacking.[2]

Several studies have addressed outcomes after septoplasty using subjective or objective criteria, most being retrospective.[3,4]

There have been only a few studies that assessed the impact of nasal septal surgery (septoplasty, SMR, caudal dislocation with or without turbinectomy). on the patient's quality of life (QOL) and subjective relief of symptoms.[5]

The SNOT score was originally developed as a rhinosinusitis specific, health-related questionnaire that combines symptoms related to the nose and general health. It has been validated in this respect in 1999.[6]

A pre- assessment was made using the Sino-nasal Outcome Test. This is a single questionnaire that can quickly be completed in an out-patient setting by the patient and can be used on a regular basis. In what is effectively a quality-of-life operation, the figures generated are useful when assessing outcome. [7]

The SNOT-22 questionnaire, validated by **Hopkins et al** in 2009 is the most effective tool currently available for grading the severity and impact of clinical symptoms of CRS. It has already been adopted by many clinicians both for the assessment of CRS, but also for evaluating the outcome of treatment of nasal polyposis and in nasal septal surgery.[7,8,9]

Methodology

This study included 40 patients with nasal symptoms due to deviated nasal septum who were admitted for surgical management in ENT department, Sohag University Hospital in the period from June 2016 to May 2017.

The study was approved by the scientific and ethical committee of our institution.

Study Population: 40 patients were included in this study.

Inclusion criteria: All cases of nasal septal deviation undergoing septoplasty operation including post traumatic septal deviation.

Exclusion criteria: Cases with deviated nasal septum associated with other sinonasal pathology such as chronic sinusitis, nasal polyps, nasal allergy, tumours or granulomas.

All patients were subjected to the following:

I-Full history taking and pre operative SNOT-22.

II-ENT examination.

III-CT Nose & PNS.

IV-Septoplasty operation.

V-Post operative SNOT-22.

The SNOT- 22 Questionnaire study has been used in studies on chronic Rhinosinusitis & is also a useful tool in nasal septal surgery(7, 8). The SNOT - 22 has 22 items and was recently reported to be valid & easy to use. In the Questionnaire, patients rate each item from 0 (no problem) to 5 (problem as bad as it can be). The total maximum number of points in the SNOT-22 is thus $22 \times 5 = 110$ points. The patient is also asked to mark at maximum the five most important items. The scoring of SNOT-22 points is as mentioned below: (0= no problem, 1= very mild problem, 2= mild or slight problem, 3= moderate problem, 4= severe problem, 5= problem as bad as it can be.)

All patients had CT scan coronal cuts to identify the association of concha bullosa and the type of concha bullosa if present.

The angle of septal deviation in relation to the midline (as indicated by the crista galli) was estimated and categorized cases into three groups according to degree of septal deflection:

Group I-mild angle ($\leq 20^\circ$).

Group II-moderate angle ($21^\circ-30^\circ$).

Group III-marked angle ($>30^\circ$).

and the level of deviation in the vertical plane in relation to the nasal turbinates was identified and classified in three categories:

Category A: angle of deviation against inferior turbinate.

Category B: angle of deviation between middle and inferior turbinate.

Category C: angle of deviation against middle turbinate.

Surgical intervention:

All cases underwent septoplasty operation for correction of their deviated septum and cases with concha bullosa underwent middle turbinoplasty.

Statistics:

Data were analysed using the Statistical Package for the Social Sciences software (version 14; SPSS, Chicago, Illinois, USA), phi coefficient test to measure the

association between two variables and applying Wilcoxon Signed-Rank Test, Mann-Whitney test and Kruskal-Wallis test for nonparametric data.

Results:

This study included 40 patients with nasal septal deviation. They were 32.5% females and 67.5% males. Patients ranged in age between 18 to 47 years.[the mean age=26.52].

Comparison between pre and post operative SNOT-22 score according to all cases, development of concha, level of deviation and angle of deviation:

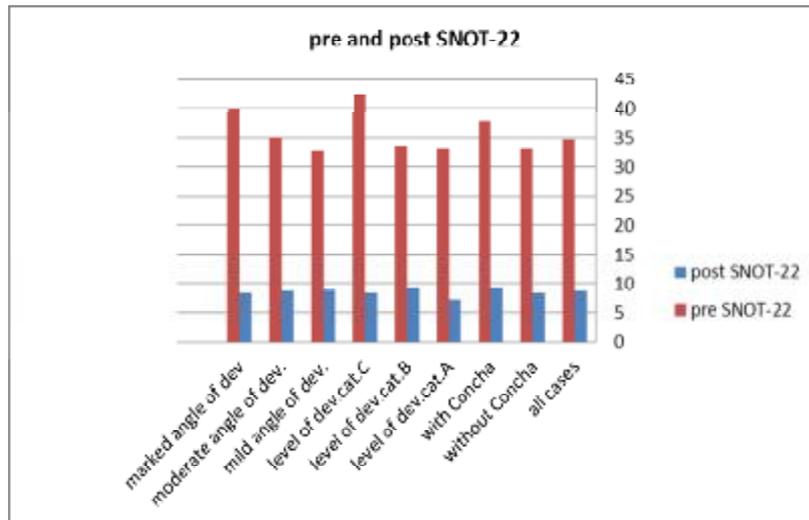
	Pre op SNOT22 Mean	Pre op SNOT22 Median	Post op SNOT22 Mean	Post op SNOT22 Median	p-value
All cases	34.875	36	8.75	8	.000
Without concha	33.04	33	8.4	7	.000
With concha	37.93333	39	9.333333	8	.001
Level of deviation cat A	33.14286	35	7.142857	6	.018
Level of deviation cat B	33.66667	34	9.259259	9	.000
Level of deviation cat C	42.33333	44	8.333333	7.5	.027
Mild Deviation	32.76471	33	8.882353	8	.000
Moderate deviation	35.17647	38	8.764706	7	.000
Marked deviation	40	42	8.333333	8	.027

pre and post SNOT-22 score.

The mean preoperative SNOT-22 score points were 34.875 (range 14 to 50). Postoperative SNOT-22 score points was 8.75 (range 2 to 25) and the difference was 26.125, (n= 40).

The table shows the mean values of pre and post SNOT- 22 items, and probability values. By comparing the means values of preoperative SNOT-22 scores and postoperative SNOT-22 scores using Wilcoxon signed rank test we found as significant improvement in SNOT-22 score (p-value =.0001)

Preoperative SNOT-22 score mean is higher when concha bullosa were present, the angle of deviation against middle turbinate (level C) and when the angle of deviation >30 (marked deviation).



Comparison between pre and post operative SNOT-22 score according to all cases, development of concha, level of deviation and angle of deviation:

Discussion

Using SNOT-22 Questionnaire we were able to measure the effect of septoplasty. The 40 septoplasty operations were performed in the period from June 2016 to May 2017 in ENT Department Sohag University Hospital. After a 3 months follow up period post operative SNOT-22 was filled by the patients and compared to the preoperative SNOT-22 score. The result revealed of the questionnaire.

In healthy populations, the mean SNOT-22 score is 9.3 and in patients, the minimally important difference is 8.9 points. We were also able to recognize that in the few items of SNOT-22 (reduced concentration, frustrated/restless, irritable, sad, fatigue, ear pain and dizziness) the p values were not significant, suggesting decreasing Health-Related Quality of Life (HRQoL). It was also noted from the study that the more nasal symptoms the lower was the health related QoL but the disease specific nasal symptoms has markedly reduced after surgery. Thus careful diagnostics & treatment of patients having nasal symptoms are important. so

before doing the surgery & for better outcome the severity of the symptoms should be assessed and the patients having only minor symptoms should not be operated on or at least the indication for septoplasty. should be very carefully discussed with the patient. So the results of this study encourage the use of a systematic questionnaire such as the SNOT-22, for patients with nasal symptoms in daily clinical practice to estimate the severity of his symptoms.[8] In the previous studies of septoplasty chronic rhino sinusitis and nasal polyposis, the decrease in symptom score was 17.0, 12.6, and 17.7, respectively. [7,8]

In this study, the mean total pre-SNOT-22 score was 34.875 & the total post SNOT score was 8.75 with a mean difference of 26.125.

Conclusion

Analysing the outcome of surgery was measure 3 months after septoplasty, the total SNOT-22 score was reduced, showing a significant improvement of nasal symptoms in SNOT-22 after

septoplasty and a significant improvement in facial pain and post nasal discharge after septoplasty.

SNOT-22 Questionnaire was very useful in knowing the severity of patient's nasal problems and helped us in evaluating and selecting the patients for surgery and in evaluating the outcome and effectiveness of surgery. It also helped us in analysing the severity of symptoms in daily clinical practice

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