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Impact of nasal septum surgery on sinonasal symptoms in patients with nasal septum deviation

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ORIGINAL ARTICLE

Impact of nasal septum surgery on sinonasal symptoms in patients with nasal septum deviation

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Abstract

Objectives: **The nasal septum is an important physiological and support structure of the nose. Nasal septal deviation is common in population and reported to be between 18.8 and 57.6%. In this study we aimed to evaluate the impact of nasal septal surgery on sinonasal symptoms using preoperative and postoperative sinonasal outcome test (SNOT-22) questionnaire as a subjective measure for the disease and improvement.**

Patients and methods: **We had 40 patients presented with nasal complaints due to deviation of the nasal septum to whom septal correction was performed. Preoperative and 3-month postoperative SNOT-22 were compared.**

Results: **A highly significant difference was found between the means of preoperative and postoperative SNOT-22 score to all patients ($P = 0.001$).**

Conclusions: **SNOT-22 questionnaire was so helpful tool in determining the severity of preoperative nasal symptoms due to septal deviation and how they improved after surgical intervention.**

Keywords: Deviation, Nasal obstruction, Nasal septum, Outcome, Sinonasal outcome test 22

1. Introduction

Deviation of the nasal septum is a common encountered clinical condition in our practice. It usually happens due to developmental disturbances of the nasal septum and/or related structures such as the maxillary crest, premaxilla, and vomer. In addition, nasal trauma in early infancy or childhood, mouth breathing, and other environmental and genetic factors were implicated [1–3].

Deviated nasal septum may not cause any symptoms or may result in nasal obstruction and rhinosinusitis symptoms as nasal discharge, facial pain, epistaxis, and olfactory impairment. Moreover, it has an impact on ear and throat function. Surgery of the nasal septum is indicated in these situations [4]. The standard treatment for septal deviation is septoplasty, which is done to improve air passages by straightening the nasal septum. Although nasal blockage is the least controversial reason for septoplasty, there are still additional reasons that need supporting data [5]. In this work we evaluate the impact of nasal septal surgery on sinonasal symptoms using preoperative and 3-month postoperative sinonasal outcome test (SNOT-22) questionnaire as a subjective method for evaluating the severity of symptoms and their improvement.

2. Patients and methods

Our study included 40 patients with nasal symptoms due to deviation of the nasal septum who visited our Department of Otorhinolaryngology, and septoplasty was planned for them. A detailed written consent was obtained from all participants. Patients with other sinonasal pathology such as chronic rhinosinusitis, nasal polyposis, allergic rhinitis, neoplasms, or granulomas were excluded. All patients were subjected to history taking, preoperative SNOT-22 questionnaire (the Arabic translated and validated form) [6]. Thorough general and ENT examination, CT scans were revised to estimate the degree of nasal septal deviation

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according to the angle of septal deviation in relation to the medline (as marked by the crista galli). Patients were divided into three groups according to degree of septal deviation.

Group A-mild angle (≤20°). Group B-moderate angle (21°–30°). Group C-marked angle (>30°). Postoperative SNOT-22 questionnaire was obtained 3 months after septoplasty.

2.1. Statistical analysis

We used Statistical Package for the Social Sciences software (SPSS for windows, 2007, version 16. 0. Chicago (USA): SPSS Inc.). Mean ± SD was used for quantitative data. Wilcoxon signed-rank test, Mann–Whitney test, and Kruskal–Wallis test were used for nonparametric variables.

3. Results

Among the study population ($n = 40$), 13 (32.5%) patients were females and 27 (67.5%) patients were males. Their ages ranged between 18 and 47 years with the mean age of 26.52 years. Forty five (45%) of patients reported definite history of trauma. Mild septal deviation was detected in 17 (42.5%) of patients, 17 (42.5%) patients showed moderate deviations and six (15%) patients had marked deviations (Table 1).

Table 1. Degree of nasal septal deviation.

Degree of septal deviation	Frequency	Percent
Mild deviation	17	42.5
Moderate deviation	17	42.5
Marked deviation	6	15
Total	40	100

The mean preoperative SNOT-22 score points were 34.8 (range, 14–50). Postoperative SNOT-22 score points was 8.7 (range, 2–25) and the difference was 26.12.

We found a highly significant difference ($P = 0.001$) between the means of preoperative and postoperative SNOT-22 score for all patients (Fig. 1).

We compared the medians of both preoperative and postoperative SNOT-22 score to the three groups according to the angle of deviation (mild, moderate, and marked), and we found insignificant difference ($P = 0.367$, 0.981 respectively) (Fig. 2).

As regard facial pain, the preoperative mean score points was 2.625 (range, 0–4), whereas postoperative score was 1.15 (range, 0–3) and the difference was 1.3.

A highly significant improvement in the postoperative facial pain scores was detected ($P = 0.001$).

Concerning postnasal discharge, the mean preoperative score was 2.775 to all cases (range, 1–4). Postoperative score was 1.425 (range, 0–3) and the difference was 1.35 ($n = 40$).

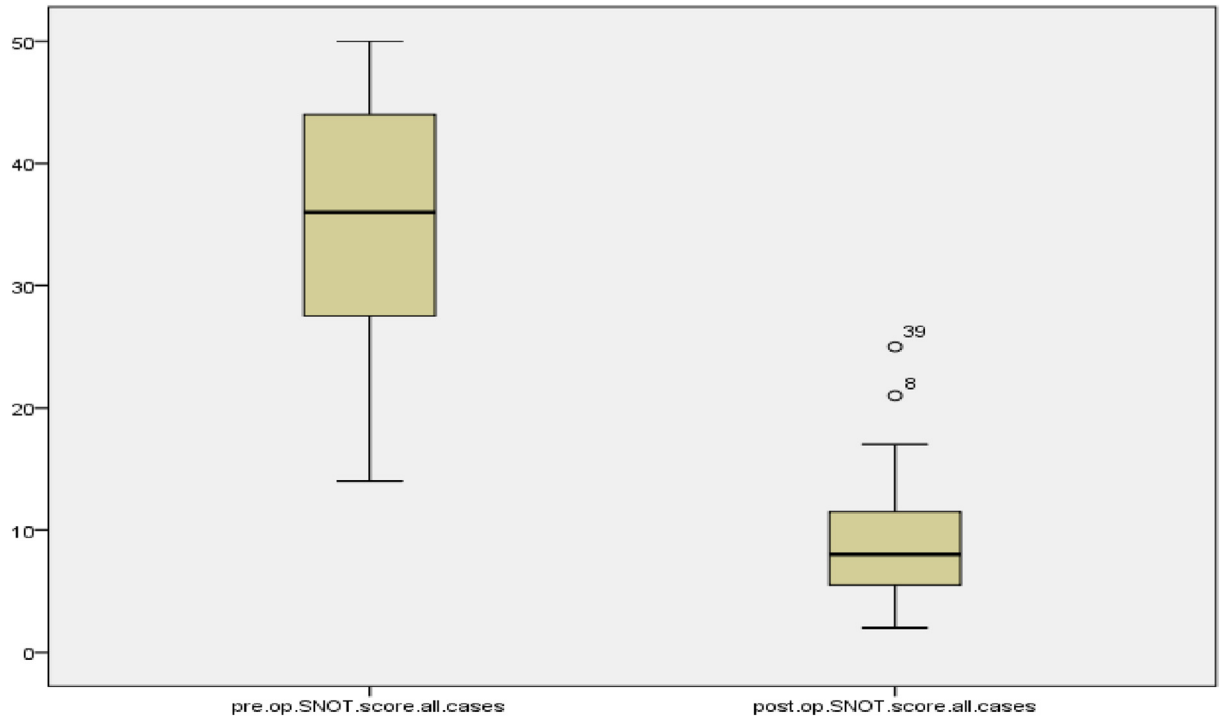

Fig. 1. Comparison between SNOT-22 preoperative score and postoperative score to all cases.

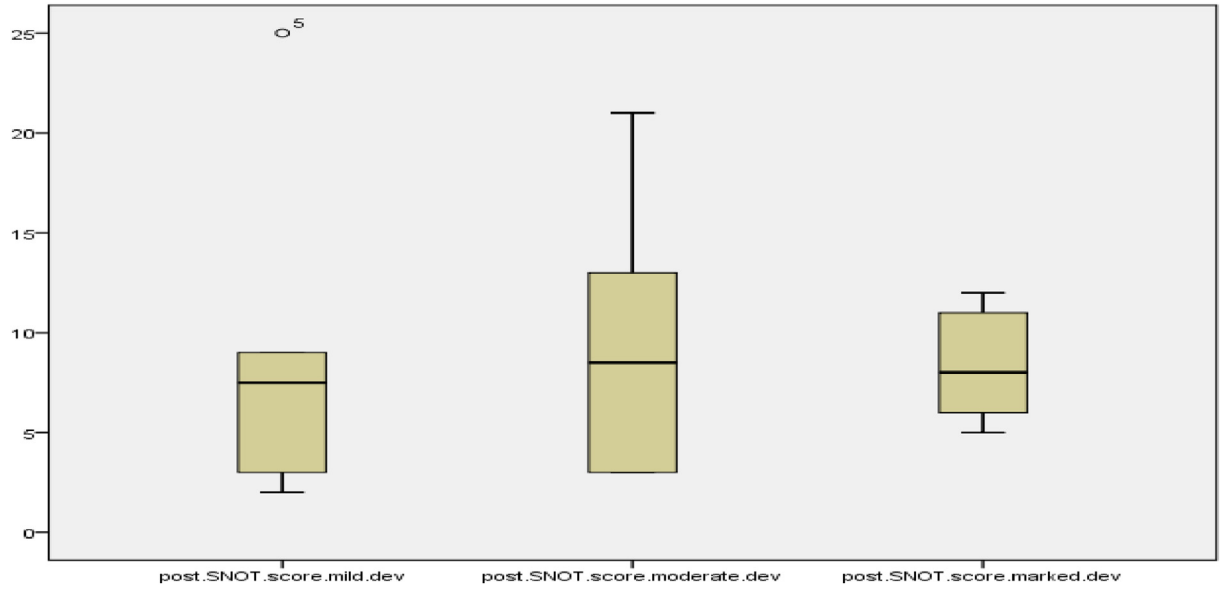

Fig. 2. Comparison between postoperative SNOT score of the angle of deviation groups (mild, moderate, and marked).

By comparing the means values of preoperative post nasal discharge scores and postoperative post-nasal discharge scores we found a significant improvement in postnasal discharge score ($P = 0.001$).

4. Discussion

The surgical outcomes after septoplasty have been discussed in several studies [6–8]. SNOT-22 score was initially created as a questionnaire for people with rhinosinusitis that include both nasal and general health symptoms [8–10].

In this work, we used the Arabic validated translated version of SNOT-22 [6].

The mean SNOT-22 score in healthy populations is 9.3. In patients, the minimally important difference is 8.9 points [10]. Our study showed that the disease related nasal symptoms have been markedly improved after surgery. Owing to these results, careful diagnosis and treatment of patients with nasal symptoms are crucial. Those symptoms should be very carefully discussed with the patient.

In the previous studies using SNOT-22 scores for assessing outcomes after septoplasty, chronic rhino sinusitis, and nasal polyps, the decrease in symptom score was 17.0, 12.6, and 17.7, respectively [10,11].

In this study, the mean total pre-SNOT-22 score was 34.875 and the total post-SNOT score was 8.75 with a mean difference of 26.125 ($P = 0.001$).

In order to authenticate our results we used objective data to categorize the severity of septal deviations according to the degree of deviation from the midline as indicated by the position of the crista galli as seen in coronal CT scans.

By comparing mean values of preoperative facial pain scores and postoperative facial pain scores using we found a significant improvement in facial pain score ($P < 0.05$). Those results have come in agreement with previous study by Stammberger and Wolf [12] who stated that primary headache might be due to nasal anatomic variants and mucosal contact.

In addition, our results had come in agreement with a study performed in 1996 and reported 30 patients with headache improved after septoplasty [13].

However, migraine and sinus headache (a headache with sinonasal origin) are frequently mistaken. To further comprehend the function of nasal pathology and autonomic activation in migraine and rhinogenic headaches, extensive research and clinical studies are required [14,15].

As regard the postnasal discharge scores, we found a highly significant improvement in postnasal discharge score ($P = 0.001$). These results came in agreement with some authors who reported that septal deviation disturbs mucociliary clearance, which returns to normal after septoplasty [16].

There were some limitations of this work including absence of control group, relatively small sample size and lack of long-term follow up.

5. Conclusion

Through evaluating our results 3 months after septoplasty, the total SNOT-22 score was lower, indicating a considerable reduction in patients' complaints as measured by SNOT-22 as well as a significant decrease in facial pain and postnasal discharge.

SNOT-22 questionnaire was so helpful tool in determining the severity of preoperative nasal symptoms due to septal deviation and how they improved after surgical intervention.

Ethics information

This study has been approved by our Medical Research Ethics Committee (Registration number; Soh-Med-23-06-12PD).

Conflicts of interest

None declared.

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