The Journal of Laryngology & Otology

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Is septoplasty required whenever anterior septal deviation is present?

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Abstract

Objective. Post-operative success and patient satisfaction were assessed following septoplasty for mild to severe anterior septal deviation.

Methods. The study included patients with an anterior nasal septal deviation in the form of a 'C' shape and close to the nasal valve in the anterior septal area. Deviation severity was classified as severe (group 1), moderate (group 2) or mild (group 3). Open or closed septoplasty procedures were performed. All patients were surveyed twice using the Nasal Obstruction Symptom Evaluation scale and the 36-Item Short Form Health Survey.

Results. The mean Nasal Obstruction Symptom Evaluation score for group 1 was 15.58 ± 2.34 prior to surgery and 6.61 ± 3.29 following surgery. The corresponding pre- and post-surgery scores in group 2 were 11.9 ± 2.82 and 6.3 ± 3.03, respectively. In group 3, these values were 8.28 ± 2.63 and 7.12 ± 3.18, respectively. The mean 36-Item Short Form Health Survey physical function value for groups 1 and 2 increased after surgery; in group 3, this value decreased after surgery, but the result was not statistically significant.

Conclusion. Septoplasty is very successful for treating moderate or advanced deviations, but great care should be taken when employing septoplasty for mild deviations.

Main Article

Dr. Nihat Susaman takes responsibility for the integrity of the content of the paper

Cite this article: Susaman N, Çetiner H. Is septoplasty required whenever anterior septal deviation is present? *J Laryngol Otol* 2023;**137**: 404–407. https://doi.org/10.1017/S0022215122001505

Accepted: 12 December 2021
First published online: 22 June 2022

Key words:
Nasal Obstruction; Health Surveys; Breathing; Nasal Surgical Procedures; Otorhinolaryngology

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Introduction

Nasal obstruction is one of the most common presenting complaints in ENT clinics. A quarter of patients who present with nasal obstruction wish to investigate surgical options, such as septoplasty.[1] The characteristic symptoms associated with septal deviation are nasal obstruction, snoring, apnoea syndrome and mouth breathing.[2] Septoplasty can improve patient satisfaction and quality of life in those with septal deviation, whilst also reducing the need for medication.[3]

When septoplasty is being discussed with patients, examination findings are often key. If clinicians rely too heavily on their preconceptions, successful results may not be achieved. It is probably beneficial to support findings from the patient's history and current symptoms with nasal examination results.[4] Anterior septal deviations play a greater role in increasing nasal resistance than do posterior deviations. Therefore, in patients who have nasal obstruction and a posterior septal deviation, other factors that may contribute to obstruction (e.g. allergies, conchal hypertrophy) should also be carefully investigated.[5]

Surgical decisions are more readily taken in patients with an anterior septal deviation. However, many septoplasties are unwarranted, as the indications for surgery are not completely fulfilled. We evaluated the appropriateness of septoplasty in patients with anterior septal deviation; specifically, we used questionnaires to evaluate the pre- and post-operative quality of life and nasal passage patency in patients suffering from anterior septal deviation of varying severity.

Materials and methods

This retrospective case–control study was conducted in the Otorhinolaryngology Department of the Faculty of Medicine at Fırat University, Elazığ, Turkey, according to the principles of the Declaration of Helsinki. Ethics committee approval was obtained from the Fırat University Non-Invasive Research Ethics Committee (dated 2 January 2020, approval number: 2020/01-19).

Patients

At our clinic, for several years, patients with a nasal breathing issue have been thoroughly evaluated by measures including the Nasal Obstruction Symptom Evaluation ('NOSE') scale and the 36-Item Short Form Health Survey ('SF-36'). Therefore, this study used a retrospective design. The files of patients who underwent septoplasty between January 2013 and December 2017 were reviewed. All these patients had undergone pre-operative paranasal sinus computed tomography and endoscopic examination. Only those patients with an anterior nasal septal deviation in the form of a 'C' shape and close to the nasal

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valve within the anterior septal area – classified as septal deviation type 1–2 according to Mladina's classification scheme for nasal septal deviation – were included.[6]

The distance between the midline and the lateral nasal wall was taken as the reference measurement. Three groups were then distinguished based on nasal septal deviation severity: in severe deviations (i.e. group 1), the nasal patency was less than one-third of the reference measurement; (2) in moderate deviations (group 2), the nasal patency was between one-third and two-thirds of the reference measurement, and (3) in mild deviations (group 3), the nasal patency exceeded two-thirds of the reference measurement.

Group 1 (severe deviation) ($n = 31$) consisted of 17 males and 14 females, with a mean (± standard deviation (SD)) age of 31.61 ± 9.29 years. Group 2 (moderate deviation) ($n = 40$) comprised 21 males and 19 females, with a mean age of 30.65 ± 8.80 years. Group 3 (mild deviation) ($n = 32$) consisted of 16 males and 16 females, with a mean age of 29.75 ± 8.90 years.

Exclusion criteria

Exclusion criteria were applied and any patients affected by the following issues were not included in the study: allergy; sinonasal surgery; nasal trauma within the last year; use of topical decongestant; septal perforation; rhinosinusitis, with or without nasal polyp formation; and concha bullosa.

The size of the inferior turbinate was classified in terms of four grades based on its position in the total nasal airway space as visualised on nasoendoscopic assessment, as follows: grade 1 – the inferior turbinate occupied 0–25 per cent of the total airway space; grade 2– 26–50 per cent; grade 3– 51–75 per cent; and grade 4– 76–100 per cent.[7] A compensatory inferior conchal hypertrophy with a grade 3–4 inferior turbinate on the contralateral side of deviation that was decreasing nasal airway space was another exclusion criterion. Additionally, a patient with grade 2 inferior conchal hypertrophy on the deviation side was not included in this study.

Methods

All operations performed on patients in the study had been undertaken by the same two ENT specialist doctors (authors NS and HÇ), using either open or closed septoplasty as the surgical technique. A silicone nasal pack was placed bilaterally and removed an average of 3–4 days later.

All patients were surveyed twice: prior to surgery and at six months after the operation. The Nasal Obstruction Symptom Evaluation scale (Table 1)[8] and the 36-Item Short Form Health Survey were completed at these appointments. The values obtained at the two time points were then compared statistically.

Statistical analysis

The data obtained in the study were analysed using SPSS statistical software version 9.0 for Windows (SPSS, Chicago, Illinois, USA). The paired samples t-test was used for analysis. A value of $p < 0.05$ was considered statistically significant.

Results

Wound healing took a mean (± SD) of 9 ± 2.36 days after surgery. There were no complications, except for a single case of septal haematoma, which was successfully managed with drainage followed by nasal packing and antibiotic administration. Open septoplasty was performed on nine patients in group 1 (severe deviation) and three patients in group 2 (moderate deviation). All the other patients underwent closed septoplasty.

Nasal Obstruction Symptom Evaluation scores

The mean (± SD) Nasal Obstruction Symptom Evaluation pre- and post-operative scores were: 15.58 ± 2.34 and 6.61 ± 3.29 ($p < 0.001$) in group 1; 11.9 ± 2.82 and 6.3 ± 3.03 ($p < 0.001$) in group 2; and 8.28 ± 2.63 and 7.12 ± 3.18 ($p = 0.026$) in group 3. The pre- and post-operative Nasal Obstruction Symptom Evaluation subscale scores for all groups are shown in Figure 1.

Short Form Health Survey results

The mean (± SD) physical function value of the 36-Item Short Form Health Survey increased from 68.06 ± 10.13 to 86.29 ± 7.29 following surgery ($p < 0.001$) in group 1, it increased from 71.37 ± 7.84 to 81.62 ± 7.37 post-operatively ($p < 0.001$) in group 2, but decreased from 78.59 ± 9.00 to 77.96 ± 8.50 after surgery in group 3, although the latter finding was not statistically significant ($p = 0.572$).

The mean (± SD) general health perception value of the 36-Item Short Form Health Survey increased from 64.19 ± 8.37 to 78.38 ± 10.35 following surgery ($p < 0.001$) in group 1, it increased from 70.62 ± 6.22 to 76.12 ± 6.64 post-operatively ($p < 0.001$) in group 2, but decreased from 73.28 ± 8.48 to 72.81 ± 8.32 after surgery in group 3, although this latter finding lacked statistical significance ($p = 0.609$).

Table 1. Nasal Obstruction Symptom Evaluation scale

Over the past 1 month, how much of a problem were the following conditions for you? Please circle the most correct response					
Condition	Not a problem	Very mild problem	Moderate problem	Fairly bad problem	Severe problem
1. Nasal blockage or obstruction	0	1	2	3	4
2. Nasal stuffiness	0	1	2	3	4
3. Trouble breathing through my nose	0	1	2	3	4
4. Trouble sleeping	0	1	2	3	4
5. Unable to get enough air through my nose during exercise or exertion	0	1	2	3	4

https://doi.org/10.1017/S0022215122001505 Published online by Cambridge University Press

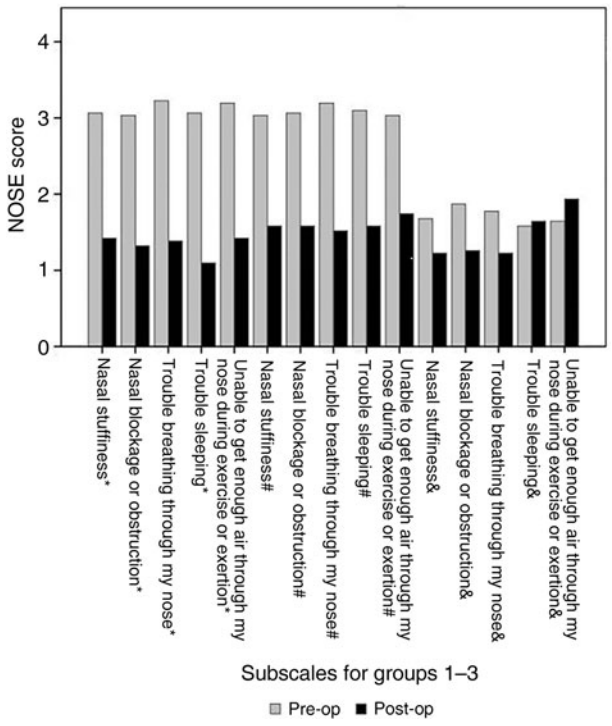


Fig. 1. Pre-operative (pre-op) and post-operative (post-op) Nasal Obstruction Symptom Evaluation (NOSE) subscale scores for all groups. * = group 1 (severe deviation); # = group 2 (moderate deviation); & = group 3 (mild deviation)

Discussion

Septoplasty is very successful for treating moderate or advanced nasal septal deviations, but great care should be taken when advising on septoplasty for mild deviations, to avoid unnecessary surgical intervention. Although, on average, the Nasal Obstruction Symptom Evaluation scale values for group 3 (mild deviation) indicated a statistically significant improvement in recovery after surgery, the 36-Item Short Form Health Survey physical function and general health perception values revealed no statistically significant differences, and there was a non-significant worsening in the post-operative period compared to the pre-operative period.

Paranasal sinus computed tomography, nasal endoscopy and nasopharyngoscopy performed pre-operatively are important for determining the most accurate approach. Sixty per cent of patients with septal deviation have compensatory conchal hypertrophy, but only 25 per cent complain of nasal congestion.[9] In another study, 40 per cent of patients with high septal deviation also suffered from other nasal pathology, such as concha bullosa.[10] Of patients with nasal obstruction, 70.5 per cent improved following septoplasty.[11] An objective standard with which to evaluate success rates after septoplasty is currently lacking. In Sundh and Sunnergren's study,[12] which evaluated the early and long-term success rates of septoplasty, the results indicated that surgery was successful in the short term, but this trend was reversed over the long-term. It is noteworthy that no pre-operative factors in that study (including age, gender, revision intervention, trauma, allergies or rhinometric obstruction) had any demonstrable effect on long-term satisfaction with septoplasty.[12]

The Nasal Obstruction Symptom Evaluation scale, which can be used to evaluate septoplasty outcomes, alongside acoustic rhinometry and questionnaires, was originally developed by Stewart and colleagues.[8] This tool is valuable in determining the efficacy of septoplasty because it yields results consistent with physical examination and computed tomography findings.[13] Acoustic rhinometry and rhinomanometry studies have also been reported in several meta-analyses to give accurate and objective results when measuring the success of septoplasty.[14]

Several studies in the literature have observed that the results of acoustic rhinometry on the side of the deviation in anterior septal deviations are consistent with survey findings.[15,16] In many studies, rhinomanometry values obtained in nasal obstruction cases are reported to closely match subjective evaluation findings, as revealed by surveys.[17,18] It is therefore evident that many factors are of value in evaluating the success achieved by septoplasty. Considering that even post-operative time has a role in determining how successful septoplasty is perceived to be, it is reasonable to evaluate patients at the end of a six-month period, as in our study. Surveys such as the Nasal Obstruction Symptom Evaluation scale and 36-Item Short Form Health Survey are subjective measures, but patient satisfaction is, of course, also a subjective assessment.

We aim to obtain the best surgical outcome, and so it is important to use a suitable surgical approach, which can be an open or closed technique. In some patients with a severe anterior septal deviation, an open septoplasty technique similar to an open rhinoplasty approach was mandatory, as a closed septoplasty technique might have resulted in failure. It was difficult to declare that treatment for every patient with a severe anterior septal deviation resulted in a straight septum, even if an open septoplasty technique was used. This renders it impossible to create a pure population at the post-operative period. Nevertheless, it is clear that septoplasty was beneficial in this group, even if we did not have a homogeneous post-operative patient population. The other compromising issue might be the lacking of an objective assessment method for nasal patency, but, as mentioned before, as many objective measurements have been shown to correlate with the surveys, that issue might be ignored.

In our study, we took care to create as homogeneous a group of patients as possible. For example, patients with sleep apnoea, a condition which may also be related to weight, or patients with known allergies, were excluded from the study. The rationale for the exclusions is that other treatments, such as those for weight reduction or anti-allergic therapy, have a potential effect on nasal obstructive symptoms, which could confound the results if such individuals were included. In our study, the average Nasal Obstruction Symptom Evaluation scale scores were significantly improved in all three groups after surgery, but the improvement in group 3 (mild deviation) was less apparent than in the other groups. The mean values for physical function and general health perception (parameters of the 36-Item Short Form Health Survey) showed significant improvements after surgery in groups 1 and 2 (severe and moderate deviation), whereas there was no statistical difference after surgery in group 3. Moreover, these values appeared non-significantly worse in group 3 in the post-operative period.

- Nasal obstruction is one of the most common presenting ENT complaints
- Surgical decisions are more readily taken in patients with anterior nasal septum deviation
- Anterior septal deviations are more likely than posterior deviations to extend into the internal nasal valve area
- This study investigated the appropriateness of septoplasty for anterior septal deviations using questionnaires

Septoplasty is performed frequently by ENT specialists, but its indications are wide, in part because of unreliable objective

https://doi.org/10.1017/S0022215122001505 Published online by Cambridge University Press

tests. Although the physical examination as performed by the surgeon is important, symptomatic complaints and patient perception play a greater role in decision-making regarding treatment. Anterior septal deviations are more likely than posterior deviations to extend into the internal nasal valve area. Septoplasty is very successful for treating moderate or severe nasal septal deviations, but great care should be taken when considering employing septoplasty for mild deviations.

Competing interests. None declared

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