

ORIGINAL ARTICLE

Does nasal septal surgery improve quality of life?

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Abstract

Conclusion. In addition to functional ameliorations we have shown that septoplasty creates a long-lasting improvement in quality of life in patients with nasal septal deviation. **Objectives.** The goal of this study was to evaluate whether nasal septal surgery alters patients' quality of life. **Patients and methods.** This 7-year retrospective study was undertaken in an otolaryngology center. A total of 600 patients who underwent septoplasty with or without turbinectomy in the past 7 years for the indication of septal deviation, were mailed a questionnaire to assess their quality of life after surgical intervention. The questionnaire with 24 items was summarized into 7 subscales (overall medical state, nasal symptoms, accompanying symptoms, sleep, practical problems, emotions and social life). A visual analog scale was provided to measure the patients' general feelings related to their nasal disease. **Results.** In all, 285 patients (47.5%) responded. Analysis of the questionnaire showed an improvement in all disease-specific subgroups.

Keywords: Nasal septal deviation, septoplasty, health-related quality of life

Introduction

Nasal obstruction is a common problem and as a result surgery of the nasal septum is a frequently performed procedure. Various pharmacological and surgical therapies focus on nasal airway obstruction. The impact of this problem is corroborated by the fact that 5 billion US dollars are spent annually on medication to relieve the symptoms of nasal airway obstruction [1]. Hypertrophy of the inferior turbinate(s) can also cause symptomatic nasal obstruction. A variety of surgical methods for turbinectomy are well known. Most frequently the inferior portion is resected [2].

A number of studies have tended to objectify the severity of nasal obstruction using rhinomanometry, acoustic rhinometry and nasal peak flow. In the majority of cases these measures do not correlate with patients' perceptions of obstruction [3,4]. This discrepancy between objective results of measurement and subjective perception demands for a new measuring instrument. Several studies have addressed outcomes after septoplasty; most of

them were performed with a small number of patients. Despite the variety of study methods applied, previous investigations have demonstrated that septoplasty is generally beneficial in treatment of nasal obstruction [5].

Today, health-related quality of life (HRQL) research is gaining increasing importance in clinical assessment [6,7]. Quality of life (QOL) can be more formally defined as: 'the extent to which one's usual or expected physical, emotional and social well-being are affected by a medical condition or its treatment' [8]. This definition incorporates the two widely accepted aspects of QOL: subjectivity and multi-dimensionality [9].

QOL represents a subjective appraisal of the impact of illness or its treatment on patients' well-being. Individual patients with the same objective health status can report dissimilar QOL due to unique differences in expectations and coping abilities [10]. As a result, QOL must be measured from the individual's point of view rather than that of outside observers.

Besides objective symptoms HRQL studies include a wide spectrum of daily life activities such as social activities and practical and emotional problems as well as general feelings. Only the HRQL study can detect the disease-related impact on patients' daily lives. Based on the above-mentioned implications there is generally a need for a specific HRQL questionnaire for patients who have undergone septoplasty.

The trend in QOL research is to combine generic and disease-specific instruments, in order to fully cover important areas that may influence QOL [11]. Hence, we designed an instrument to determine QOL after nasal septal surgery. The design of the questionnaire was based on the Glasgow Benefit Inventory (GBI). We added the Health-Related Quality of Life Questionnaire Rhino surgery (HRQL) to make our questionnaire more specific and more sensitive in detecting changes in QOL after nasal septal surgery [12,13].

In this study we evaluated the benefit of septoplasty and turbinectomy for patients' QOL.

Patients and methods

Study design

The study was performed in a retrospective manner at our institution and included 650 patients (468 men, 182 women) who had undergone nasal septal surgery over the last 7 years. The mean age on the day of surgical intervention was 39.1 years (range 18–76 years).

All subjects were evaluated after surgery. Data were collected by mail. All patients received a letter explaining the study and a questionnaire with a postage prepaid return envelope. In all, 285 of 600 patients (47.5%) replied and answered the questionnaire correctly.

Patients

All patients were treated in the period between January 1996 and December 2003. Inclusion criteria were as follows: 18 years and older, diagnosis of nasal airway obstruction (NAO) requiring surgery as defined by the presence of septal deviation and/or turbinate hypertrophy as assessed by the treating otolaryngologist. Exclusion criteria were: sinonasal malignancy, septoplasty performed with concurrent sinus surgery, rhinoplasty or sleep apnea surgery, prior septoplasty or rhinoplasty, history of chronic sinusitis, septal perforation, genetic disorders, chronic diseases, nasal trauma and pregnancy. The initial diagnosis, including the indication for a septoplasty, was made by several different ENT surgeons with varying degrees of experience.

Treatment. Septoplasty was defined as an open surgical procedure with the goal of straightening the crooked portions of the septum. The standard technique was a Cottle approach [14]. Deviated portions of the septum were removed entirely. The cartilaginous parts were adjusted and re-implanted. All procedures were undertaken with the patients under general anesthesia. Internal splints and packing were mandatory. Nasal packing was removed 2 days after surgery, and splints were removed 7–10 days after the intervention.

Turbinectomy was defined as a surgical procedure on the inferior nasal turbinate intended to decrease its size [2].

The surgical procedure was performed after obtaining informed consent.

Patients stayed in hospital for 3 days. The first postoperative control and removal of nasal splints was performed on day 7–10 after surgery in the outpatient clinic.

QOL measures

Two standardized and validated HRQL questionnaires, the Glasgow Benefit Inventory (GBI) and the Health-Related Quality of Life Questionnaire Rhino surgery (HRQL) were the basis for the questionnaire for nasal septal surgery patients [12,13,15–17]. In previous clinical studies both proved to be reproducible, valid, and responsive. A visual analog scale (0–10) was provided to measure the patients' general feelings related to their nasal disease.

The questionnaire consists of 7 subscales (overall medical state, nasal symptoms, accompanying symptoms, sleep, practical problems, emotions, and social life) with a total of 24 items. A translated version of the questionnaire is shown in Appendix 1.

Statistical analysis

Descriptive analysis of the data was done analyzing mean, standard deviation, and frequency. The reliability was checked by confirmatory testing with Cronbach's alpha. scores for statistical measurements with Cronbach's alpha range from 0 (showing no reliability) to 1 (showing perfect reliability).

Differences between patients according to the time since surgery (< 2 years and >2 years earlier) were analyzed with the χ^2 test and by the Mann–Whitney U test for quantitative data. Statistical significance was defined as $p < 0.05$. SPSS for Windows 12.0 software (Microsoft, Chicago, IL, USA) was used for all analyses.

Results

The questionnaire was sent to 650 patients, of whom 285 (47.5%) responded. For 82.8% of patients, the time between their surgery and the mailing of the questionnaire was >2 years. According to Fischer et al. we performed a retrospective assessment to provide information that is different from serial change data, being more sensitive and correlating more accurately with patients' satisfaction [18].

The questionnaire was divided into the following subgroups: general health outcome, nasal symptoms, attendant symptoms, sleep, practical problems, emotional and social experience. The mean for overall medical state was 3.41 ± 0.69 . The mean score for nasal symptoms was 3.21 ± 0.71 . For accompanying symptoms and sleep the mean was 3.16 ± 0.53 and 3.25 ± 0.68 , respectively. We found a mean score of 3.39 ± 0.73 in the subgroup practical problems and a mean of 3.16 ± 0.49 in the emotions subscore. The mean for social life was 3.11 ± 0.47 . Results of the disease-specific subscales are shown in graphic form in Figure 1. The mean success rate averaged 7.12 on a scale of 1–10.

We divided the follow-up period into two groups: the first group had 1–2 years follow-up and the second group had >2 years follow-up. There were no statistically significant differences between patients whose surgery took place in the last 2 years and patients whose surgery took place >2 years earlier. The mean total score showed no significant difference between the first group, i.e. $3.17 (SD \pm 0.48)$ and $3.25 (SD \pm 0.51) (p = 0.655)$.

The mean general health subscore was $3.32 (SD \pm 0.73)$ for group one, and $3.43 (SD \pm 0.68)$ for group two ($p = 0.636$). In the first group the mean subscore for social life was $3.11 (SD \pm 0.42)$ compared to $3.11 (SD \pm 0.48)$ in the second group ($p = 0.958$). The mean subscore for nasal symptoms was $3.11 (SD \pm 0.72)$ in group one and $3.23 (SD \pm 0.74)$ in

group two ($p = 0.358$) (Figure 2). For accompanying symptoms, the mean was $3.08 (SD \pm 0.49)$ in the first group and $3.17 (SD \pm 0.53)$ for the second group ($p = 0.358$). In the first group the mean score for the sleep subscale was $3.15 (SD \pm 0.76)$ versus $3.27 (SD \pm 0.66)$ in the other cohort ($p = 0.191$). The mean subscores for practical problems were $3.27 (SD \pm 0.76)$ compared to $3.40 (SD \pm 0.73) (p = 0.908)$. For the subscore emotion, the mean was $3.11 (SD \pm 0.38)$ in group one compared to $3.17 (SD \pm 0.51)$ in the second group ($p = 0.435$). Graphic presentation of the general score in these groups is shown in Figure 3. Cronbach's alpha as a measure of internal consistency reached values between 0.6 and 0.75. Results of the subscales are shown in Table I. The analysis of the questionnaire showed an improvement in all disease-specific subgroups. A particular amelioration was found in the following disease-specific subgroups: overall medical state, practical problems, sleep, and nasal symptoms. A clear advantage in overall life and sleep is the result of the surgery. Furthermore a remedy for practical problems, such as using less medicine and handkerchiefs, could be accomplished. A strong amelioration of nasal obstruction appears after nasal septal surgery.

Discussion

Septal surgery is one of the most common otorhinolaryngological procedures performed throughout the world. There is little evidence that this procedure provides any subjective benefit to the patient. Although several studies have assessed the impact of surgical intervention using objective methods, such as nasal airflow, there have been few studies regarding the impact of nasal septal surgery on patients' QOL [19]. Nowadays outcome research is increasingly becoming a major concern in clinical investigation, particularly in socio-economic regard and in search of objective measurement as a necessity of evidence-based medicine. The major aim of this study was to invent an objective instrument to measure the HRQL impact of nasal septal surgery on patients with nasal septal deviation. Kramer et al. aimed to measure the therapeutic effect of nasal surgery on HRQL by interviewing the patients twice, preoperatively and 3 months after surgical intervention [13]. Because of the lack of patient compliance, only approximately 59% of the participating patients were willing to attend the second interview, which was mandatory in other studies [13,16,17,20].

Therefore, we favor a one-time questioning of each patient who underwent nasal septal surgery. In addition, we reported the same results in the disease-

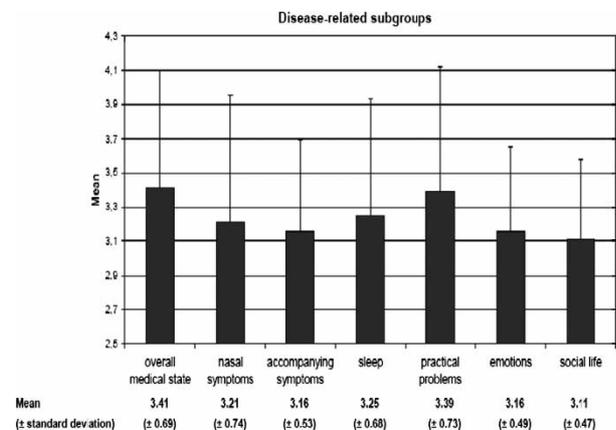


Figure 1. Mean and standard deviation (shown as whiskers) of the disease-related subgroups.

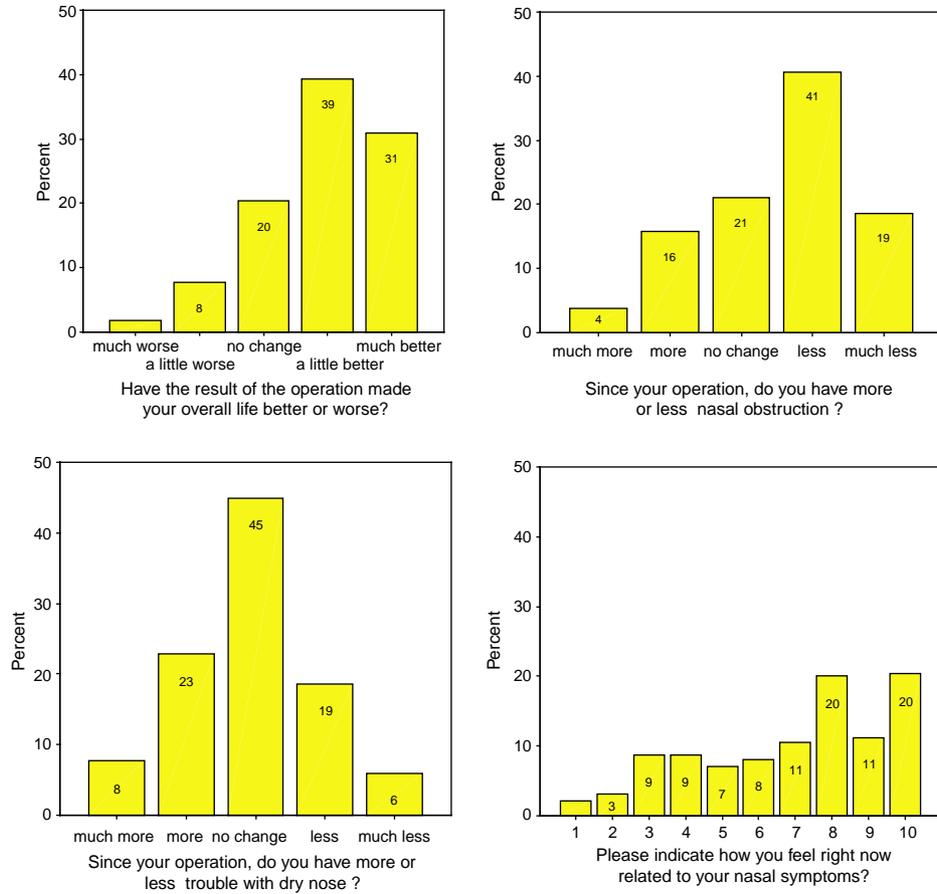


Figure 2. Results for overall life and nasal symptoms.

related subgroups (practical problems, sleep, and nasal symptoms).

The study was performed in a retrospective manner. The questionnaire was mailed to 600 patients. The response rate of 47.5% was very high. The time of intervention had no statistical

effect on the outcome. This finding suggests that nasal septal surgery creates a long-lasting effect on patients' disease-specific QOL and underlines the enduring effect of septoplasty and turbinectomy. This fact is confirmed by nearly identical results from Kramer et al. and Arunachalam et al., who questioned patients 6 weeks and 3 months after surgical intervention [13,20].

The major problem in nasal septal surgery is the absence of correlation between objective postoperative results and patients' perceptions [3,4].

We found a significant improvement in nasal symptoms, sleep, practical problems, and overall medical state. An outstanding improvement could

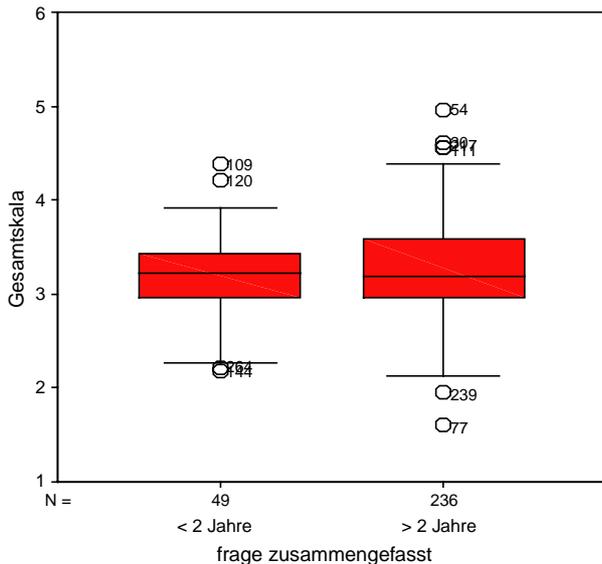


Figure 3. General score in relation to follow-up.

Table I. Structure of subscales and reliability.

| Subscale | n | No. of items | Internal consistency |
|-----------------------|-----|--------------|----------------------|
| Overall medical state | 285 | 3 | 0.65 |
| Nasal symptoms | 285 | 4 | 0.62 |
| Accompanying symptoms | 285 | 4 | 0.62 |
| Sleep | 285 | 3 | 0.66 |
| Practical problems | 285 | 3 | 0.68 |
| Emotions | 285 | 4 | 0.68 |
| Social life | 285 | 3 | 0.74 |

be seen in relief of nasal airway obstruction. A postoperative benefit was achieved in sleep problems. The majority of patients reported an improvement in sleep dysfunction. This is not only an amelioration of patients' QOL but also an important socio-economic aspect, especially in consideration of the fact that optimization of QOL is the primary goal in surgery of functional failures [1].

The survey shows a positive influence of the subgroup designated practical problems arising from septoplasty. Patients who underwent surgery reported a significant amelioration in overall life. The subgroups of emotion, social life, and accompanying symptoms did not show a change after surgery. The nasal septal surgery not only influences the functional situation but also the subjective sensations and subsequently the patients' QOL. This helps to justify the cost of surgical intervention. Furthermore, a HRQL study could be useful in assessing internal quality. Recurrent evaluations optimize the technical and economic aspects of surgical interventions.

An optimal surgical outcome as defined by an advancement in QOL could help to reduce costs evolving from loss of productivity at work [21,22]. Further studies with special attention on this topic could help to elucidate this effect.

This survey underlines the importance of septoplasty in treating obstructive upper airway disorders caused by septal deviation. It not only improves objective criteria but most importantly the patients' QOL and overall well-being.

Conclusions

HRQL questionnaire can help to detect the benefit of nasal septal surgery on patients' QOL. We have demonstrated the therapeutic benefit of our intervention by a one-off questioning of the patients. Postoperative improvement in disease-specific subgroups overall medical state, practical problems, sleep, and nasal symptoms could be achieved.

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Appendix 1: Health-related quality of life questionnaire

1. Overall medical state (Questions 2, 4, 14)

2. Have the results of the operation made your overall life better or worse?
14. Since your operation, do you have to visit your general practitioner more or less often?
20. Since your operation, do you feel more or less uncomfortable about your medical problems?

2. Nasal symptoms (Questions 4, 12, 22, 25)

- 4. Since your operation, do you have more or less nasal obstruction?
- 12. Since your operation, do you have more or less trouble with runny nose?
- 22. Since your operation, do you have more or less trouble with dry nose?
- 25. Please indicate on the vertical line how you feel right now related to your nasal symptoms.



Very good

Very bad

3. Accompanying symptoms (Questions 7, 9, 16, 21)

- 7. Since your operation, do you have a reduced sense of smell?
- 9. Since your operation, have you been troubled by poor concentration?
- 16. Since your operation, have you been troubled by chronic cough?
- 21. Since your operation, do you have more or less headache?

4. Sleep (Questions 5, 11, 17)

- 5. Since your operation, do you have more or less sleep problems?
- 11. Since your operation, do you have more or less snoring problems, obstruction?

- 17. Since your operation, do you have more or less problems with dry mouth during the night/on awakening?

5. Practical problems (Questions 3, 15, 19)

- 3. Does the outcome of your operation influence your daily life?
- 15. Since your operation, do you have more or less inconvenience of having to carry tissues or handkerchiefs?
- 19. Since your operation, do you have to take more or less medication for your nose?

6. Emotions (Questions 6, 10, 18, 23)

- 6. Since your operation, have you felt more or less optimistic about the future?
- 10. Since your operation, do you have more or less self-confidence?
- 18. Since your operation, do you feel better or worse about yourself?
- 23. Since your operation, do you feel more or less irritable?

Social life (Questions 8, 13, 24)

- 8. Since your operation, do you have more or less embarrassment when with a group of people?
- 13. Since your operation, have you found it easier or harder to deal with company?
- 24. Since your operation, have you been more or less inclined to withdraw from social situations?

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