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ASSESSMENT OF PATIENT BENEFIT FROM SEPTOPLASTY WITH TURBINOPLASTY

Patients' benefits and quality of life are profoundly influencing how health services are delivered. In recent years, there has been a trend in emphasis toward subjective outcome measures. Although the effects of septoplasty are not entirely comparable, various scales have been considered to support more studies based on assessing results following functional nasal surgery. Glasgow Benefit Inventory (GBI) is a standardized patient benefit measure developed specifically for otolaryngological treatments. The aim of this study is the use of GBI to assess the impact of undergoing septoplasty with turbinoplasty on patients' quality of life after one year. This study was conducted as a retrospective observational study. Patients over eighteen years of age who obtained septoplasty concurrent with turbinoplasty for the treatment of nasal blockage at the Almaty, City Hospital No. 5, were included. GBI questionnaire (-100 to +100) was used to measure the outcomes one year after surgery. A total of 309 patients who meet the eligibility criteria volunteered to participate, 112 females (36.2%) and 197 males (63.8%). The mean age was 26 years (SD=13, range 18-76 years). A total of 87.1% of the patients reported improvement in their quality of life. Better outcomes in the perception of quality of life were observed in the younger population; these findings are consistent with current international existing literature.

Key words: septoplasty, turbinoplasty, retrospective studies, nasal blockage, quality of life, Glasgow benefit inventory.

Introduction

One of the most common clinical indications for referral to otolaryngology is nasal blockage (NB) and it is characterized as a sense of distress arising from the perception of inadequate airflow through the nose or increased air resistance [1] [2]. While NB can be caused by a variety of conditions, deviated nasal septum (DNS) and protruding turbinate constitute two major reasons. NB caused by DNS together with associated medical conditions like headache, facial pressure, or nasal discharge, has a negatively impact on patients' quality of life (QOL) [3]. Septoplasty as the third most frequent ear/nose/throat (ENT) operation is commonly performed with turbinate reduction procedures (turbinoplasty) for the treatment of nasal blockage caused by deviated nasal septum [4]. Compensatory concha bullosa or inferior turbinate hypertrophy as structural airway barriers in the nose found in 40% of patients with high septal deviation [5]. Since hypertrophy and/or hyperplasia of the conchal bone, nasal mucosa, or cavernous body may induce enlargement of the inferior turbinates, various surgical methods for reducing the size of the turbinates shouldbe considered. Physical examination as well as objective measures (rhinomanometry, acoustic rhinometry, and nasal peak flow) have always been used in the past to assess nasal airway function [6] [7] [8]. These measures do not necessarily match up with patient reports of nasal obstruction. The effectiveness of surgery depends on an accurate preoperative diagnosis. The surgeon benefits greatly from intraoperative imaging with a microscope or endoscope. Mobilization, resection/repositioning, and reconstruction/fixation are the approach's phases of the existing septoplasty process. Since pathologies of the caudal septum are responsible for septal surgery failures, some unique problems in this area, such as vertical caudal septum fractures, the absence of a caudal septum, or anterior convexities of the cartilaginous septum, are being debated [9]. Anterior nasal packing is generally performed on a routine basis after septal and turbinate surgery to prevent postoperative bleeding, septal hematoma, and nasal synechia. Transseptal sutures are also used more often, not only to avoid complications including septal hematoma and bleeding but also to close any unintended septal mucosa tears and provide additional protection for the cartilage fragments preserved in septoplasty [10]. Methodological errors in septal and turbinate surgery procedures, from the incision of anesthetic agent to the nasal packing, will lead to complications. Infections affecting either the

mid-facial region or the whole body may arise as early and late complications in the postoperative phase. Harm to the septal soft and hard tissuesand a huge reduction of turbinate may also cause postoperative and late complications [11].

Patients' interests and quality of life are profoundly influencing how health services are delivered. In recent years, there has been a trendin emphasis toward subjective outcome measures. Although the effects of septoplasty are not entirely comparable, various measures have been considered to support more studies based on assessing results following functional nasal surgery. GBI (Glasgow Benefit Inventory) is a standardized patient benefit measure developed specifically for otolaryngological treatments [12]. The GBI has previously been used to evaluate patient perceptions of rhinoplasty/ septorhinoplasty benefit [13] [14]. To date, we are only able to find a few reports that looked at the effect of nasal septal surgery on patient quality of life in Almaty, Kazakhstan. In addition, the key benefits of parallel turbinoplasty remain unclear.In the existing context, this retrospective study enables us to increase the knowledge on the use of the GBI scale for the assessment of nasal symptoms following septoplasty with turbinoplasty.

Aim

The aim of this study is the use of GBI toassess the impact of undergoing septoplasty with turbinoplasty on patients' quality of life after one year period.

Materials and Methods

This study was conducted as a retrospective observational study. Clinical records, as well asthe contact information of patients who underwent septoplasty concurrent with turbinoplasty at the City Hospital No.5 in Almaty during the period of Jan 1, 2020, and Mar 30, 2020, were provided. Only patients over eighteen years of age who obtained surgery due to nasal blockage (unilateral or bilateral) were included; patients who presented other causes of nasal obstruction such as nasal polyposis and sinusitis and endured endoscopic sinus surgery, nasal polypectomy, and rhinoplasty along with nasal septal surgery, were excluded from the study.

In addition, patients with a history of nasal trauma (since the surgery), pregnant women, patients with ongoing cancer therapy, and patients suffering from cognitive problems were also excluded from the study.

Outcomes Measures

A total of 309 patients who met the eligibility criteria for inclusion, volunteered to participate in the study. One year after the surgery, an electronic format of GBI questionnaire was prepared in the google form and was sent to the participants to assess their quality of life. The GBI is a post-intervention questionnaire and has been shown to be sensitive to changes caused by otorhinolaryngological procedures. It is an 18-item questionnaire that can be separated into three different sections: twelve questions measure changes to the overall benefit and the two other subscales each consist of three questions that evaluate changes to social support and physical wellbeing. The GBI score goes from
-100 (maximum negative benefit), 0 (no benefit), to +100 (positive benefit).

Statistical Analysis

Using SPSS Statistic software, the statistical analysis was done. Based on absolute and relative frequencies for qualitative variables, a descriptive study of the variables was performed, as well as measures of central tendency and dispersion for quantitative variables. Statistical analyses were carried out with Chi-square testing, and averages were compared using the Mann-Whitney U test and the Kruskal-Wallis test. Differences were considered significant when there was a 95% confidence interval.

Result

Data collected from 309 respondents, 112 females (36.2%) and 197 males (63.8%). The mean age was 26 years (standard deviation (SD)=13, range 18-76 years). There was no statistically significant difference between the mean ages of males (26.56 ± 13.1) and females (23.68 ± 12.1) ($p = 0.057 > 0.05$).

The median Total GBI score was 36.11 (interquartile range: 22.22 to 50.00), and in the General benefit subscale it was 37.5 (16.66 to 58.33), for Physical health it was 33.33 (16.67 to 50) and in Social support, it was

33.33 (16.67 to 66.67). A total of 87.1% of the patients reported improvement based on their Total GBI score. Improvement in subscales results is shown in Table 1.

Further, scores have been checked at men's and women's separately (figure 1). The median Total GBI score for females was 27.78 (19.44 to 47.22), with subscale scores of 29.16 (16.66 to 41.667) for general advantage, 16.67 (16.67 to 50) for physical benefit, and 16.67 (0 to 50) for social benefit.

Table 1 – Subjective Quality of Life (GBI).

Variable	Median	IQR[c]	n (%)
General benefit[a]	37.5	(16.67; 58.33)	
Improvement in general benefit[b]			270 (87.4%)
Social support[a]	33.33	(16.67; 66.67)	
Improvement in social support[b]			236 (76.4%)
Physical health[a]	33.33	(16.67; 50)	
Improvement in physical health[b]			246 (79.6%)
Total GBI	36.11	(22.22; 50)	
Improvement in total GBI[b]			269 (87.1%)

[a]GBI subscales.

[b]Corresponds to the number of subjects and percentage of the population with improvement by respective subscale.

[c]IQR: Interquartile range corresponding to interval formed from percentile 25 to 75.

The male's scores were 25 (16.67 to 47.22), 29.16 (16.66 to 41.66), 33.33 (16.67 to 50), and 33.33 (16.67 to 50), respectively. There wasno statistically significant difference between the males and females in Total advantage (p = 0.809 >0.05, two-tailed), general benefit (p = 0.967 >0.05, two-tailed), physical benefit (p = 0.922 >0.05, two-tailed), or social benefit (p = 0.589 >0.05, two-tailed), according to the Mann-Whitney U test.

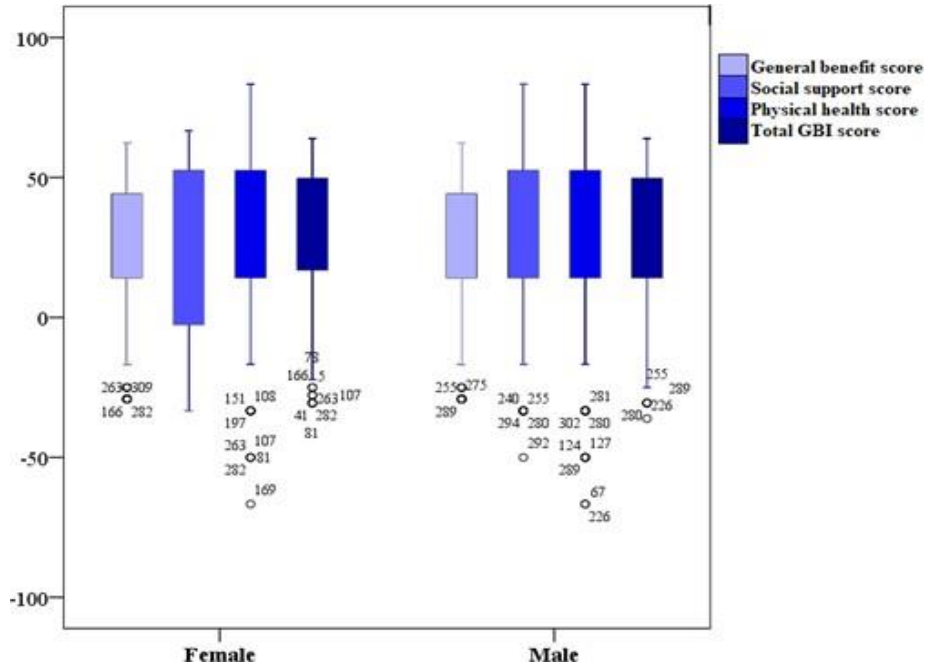

Figure 1 – Box plots show scales' scores between females and males

There was a statistically significant difference between the scales' scores regarding age groups ($p < 0.001$), according to Kruskal-Wallis H test (Figure 2). The age group 18-40 years was found to benefit the most from the surgery.

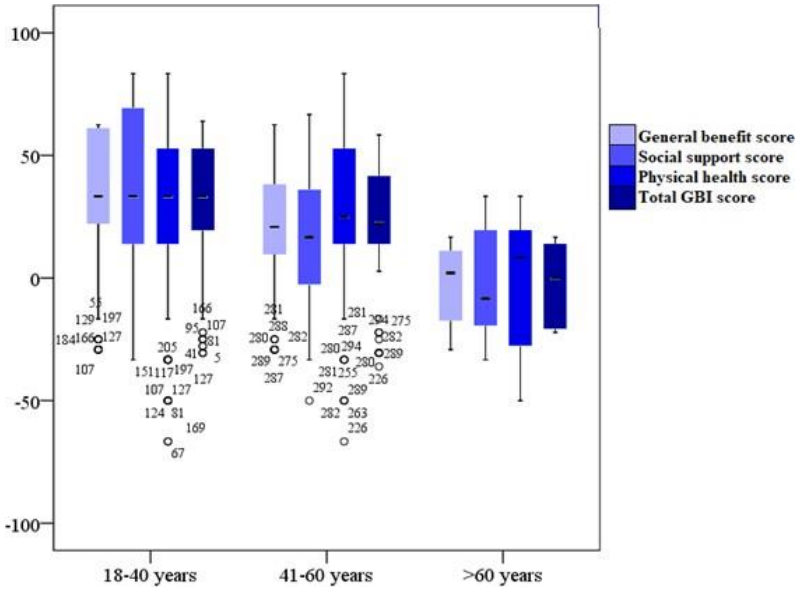

Figure 2 – Box plots show scales' scores between age groups

Discussion

The evaluation of the quality of life following certain surgical interventions, rather than objective measures that evaluate only one physical parameter, has become increasingly prevalent in recent years as part of research outcomes. In this regard, in the present study, we attempted to assess the overall improvement in quality of life after one year of septoplasty concurrent with turbinoplasty. Our assessment is based on the improvement of the initial complaints related to the quality of life since the nasal surgery.

It is essential to mention that there is still a lack of reports on the issue of assessing the quality of life. However, according to data reported by Valsamidis et al., the mean and SD of the Total GBI was 19.86±9.27, and the mean and SD of the General benefit subscale was 22.49±12.86, Physical health was 20.83±22.24, and Social support was 5.2±11.43 [15]. An indirect comparison with our study's medians differs markedly. The median Total GBI score in our sample was 36.11, representing a high increase in patients' quality of life. In our sample, the average age of patients undergoing surgery was 26 years, relatively lower to 31.5 years in Valsamidis et al. study. The increased progress in patients' status in our research may indicate that septoplasty concurrent with turbinoplasty is more beneficial to younger patients. The young patients' nasal obstruction may be more anatomically dependent, so surgery may be more effective in this population, and dynamic causes may be more relevant in older patients.

In our research, 261 (87.1%) patients reported a subjective improvement in the quality of life based on their Total GBI score. This markedly positive result represents overall progress in health status that is attributable to the septoplasty concomitant with turbinoplasty procedures. This is consistent with research previously reported in the literatureby Corredor-Rojas et al. in 2020 in Colombia [16].

It is important to acknowledge the study's limitations. The findings of our research arebased on a cross-sectional survey conducted via questionnaire. The findings are based on the experiences of patients who underwent surgery one year prior to the study date. Patients' memory of symptoms fades with time, which may have influenced the results of the observed outcomes. The implicit biases of retrospective studies, suchas memory bias with specific questions in the GBI questionnaire are recognized. However, Robinson etal. found that the number of years after surgery has little impact on the average score [17].

Conclusion

This is one of the few studies in Almaty using validated subjective scales such as the GBI questionnaire to assess the change in patients' quality of life following septoplasty with turbinoplasty. This data provides a detailed interpretation of nasal obstructive symptoms and their effect on quality-of-life perception. Good outcomes in the perception of quality of life were observed in our study. Younger patients with nasal obstruction and septal deviation were found to get the most from the surgery; these findings are consistent with current international existing reports.

Since non-anatomical causes of nasal symptoms like allergic rhinitis may be confounding variables in the relationship between surgical treatment and improvement perception, a new approach measuring allergic rhinitis in patients receiving septoplasty with turbinoplasty is needed. Additionally, it is recommended that patients be evaluated both before and after surgery in order to more precisely assess clinical progress.

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