CENTRAL ASIAN JOURNAL OF MEDICAL AND NATURAL SCIENCES
https://cajmns.centralasianstudies.org/index.php/CAJMNS
Volume: 06 Issue: 03 | July 2025 ISSN: 2660-4159

Article

Surgical Innovations in Septoplasty: Patient Outcomes and Satisfaction

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Abstract: A frequent surgical technique used to enhance airway function is septoplasty, which corrects a deviated nasal septum. There are advancements in surgical methods that might affect patient satisfaction and results. Over a 12-month follow-up period, this study intends to assess the efficacy of various surgical advancements in septoplasty as well as their influence in patient satisfaction and health outcomes. 85 people obtaining septoplasty participated in a cross-sectional study. Information about pre-existing symptoms, demographics, intraoperative measurements, and postoperative outcomes, such as pain, complications, quality of life, which was measured through the SF-36 questionnaire, along with patient satisfaction levels, were gathered. The study showed notable improvements in overall quality of life (mean SF-36 score of 80.5) and nasal blockage (82%). After surgery, the majority of patients (65%) expressed great levels of satisfaction. According to logistic regression, comorbidities and advanced age were associated with worse outcomes. Improved satisfaction and outcomes for patients are the result of surgical advancements in septoplasty. In order to improve the treatment of patients, this study emphasizes the significance of personalized methods for surgical interventions and points to the necessity of continuous surgical technique improvement.

Keywords: Septoplasty, Surgical Innovations, Patient Outcomes, Satisfaction, Quality of Life, and Comorbidities

Citation: Raheem, A. M, Surgical Innovations in Septoplasty: Patient Outcomes and Satisfaction. Central Asian Journal of Social Sciences and History 2025, 6(3), 1093-1100.

Received: 20th Feb 2025
Revised: 04th Mar 2025
Accepted: 11th Mar 2025
Published: 19th Mar 2025

1. Introduction

One of the most common surgical techniques in otolaryngology is septoplasty, which is mainly used to improve airway function and reduce nasal obstruction by realigning the deviated nasal septum [1]. Patients with obstructive sleep apnea, persistent nasal congestion, and other nasal diseases brought on by a deviated septum are frequently candidates for the operation [2]. Septoplasty was used for more than a century, and as surgical methods and technology have advanced, it has undergone tremendous change [3]. Conventional treatments have been revolutionised by recent advances, such as endoscopic approaches as well as laser techniques, which promise to enhance results while minimising problems. Most of the population has some degree of nasal issues, making nasal blockage and related symptoms quite common [4]. Extensive dissection as well as manipulation of the nasal tissues are the main components of traditional septoplasty techniques, which can occasionally lead to longer recovery periods and more discomfort following surgery. To improve nasal septal alignment while protecting adjacent tissues, innovations including the application of minimally invasive procedures have demonstrated promise in lowering these problems. Even while surgical procedures have advanced, there are not many thorough studies examining how these developments affect patient-centred outcomes, especially in terms of satisfaction levels after surgery and general quality of life. Knowing these results is essential for educating medical professionals about the efficacy of these novel approaches, which will eventually direct

clinical practice and personalise patient treatment [5]. The purpose of this study is to analyse patient outcomes and satisfaction with various advances in septoplasty procedures over a 12-month follow-up period by evaluating pre-existing symptoms, quality of life, post-operative pain, complications, intra-operative measurements, and demographics [6].

2. Materials and Methods

Eighty-five patients who had septoplasty in a tertiary care facility in Al-Diwaniyah, Iraq, between January 2024 and January 2025 were included in this cross-sectional research. Patients between the ages of 18 and 65 who had severe nasal obstruction from a deviated septum were eligible to participate; patients who had recently undergone nasal surgery or had serious comorbidities that would hinder their recuperation were not. Prevalence of symptoms prior to operation, laboratory results (complete blood count and nasal function tests), and demographic data (age, sex, comorbidities, smoking status, and income levels) were all collected. Every patient had a typical surgical technique, which may be either endoscopic or conventional septoplasty, based on the patient's characteristics and the surgeon's decision [7]. At one week, one month, and twelve months following surgery, postoperative evaluations were carried out. A visual analog scale was used to quantify pain, complications such as infections or septal hematomas were tracked, and the SF-36 questionnaire was used to gauge quality of life. A self-reported satisfaction survey was used to measure patient satisfaction at the 12-month follow-up. SPSS version 22.0 was used to conduct the statistical analysis [8]. Demographic information was compiled using descriptive statistics, and associations between patient attributes and results were found using logistic regression.

3. Results

According to outcomes in Table 1, the mean age for 34.5 years (SD ± 12.3) in our study suggests that the patient population is rather young, which may imply that functional nasal symptoms are more common in this age range. A tendency typically seen in otolaryngology, where males may exhibit nasal obstructive symptoms more frequently, is shown in the ratio of 59% male to 41% female [9]. The significance of evaluating coexisting medical disorders that may impact surgical results and recovery is shown by the incidence of 29%. There are noteworthy percentages of current smokers (12%) and past smokers (18%).

Table 1: Demographic Characteristics.

Characteristic	*Outcome, 85 {%}*
Age (Mean ± SD)	34.5 ± 12.3 Years
Sex (Male; Female)	50:35 (59%:41%)
Other Comorbidities	25 (29%)
Smoking Status	10 (12%) Current, 15 (18%) Former
Income Status ($)	<400$: 20 (24%), 400 – 600 $: 35 (41%), > 600 $: 30 (35%)

As shown in **Table 2**, the average hemoglobin and white blood cell levels were within normal ranges, while 82% of patients demonstrated normal nasal function tests, indicating suitability for septoplasty [10].

Table 2: Laboratory Outcomes.

Items	**85{%}**
Average Hemoglobin Level	14.3 ± 1.2 g/dL

Average White Blood Cell Count	6.5 ± 1.2 x10^9/L
Function tests normal	70 (82%)

Regarding the distribution of symptoms, the high incidence with nasal obstruction (88%) supports the idea that surgery should be considered in this population [11]. Notably, nasal obstruction has a significant adverse effect on quality of life, as evidenced by face discomfort (53%) and diminished sense of smell (35%).

The preoperative symptoms indicate nasal obstruction was most common, experienced by 88% of patients, with other symptoms including facial pain, post-nasal drip, and reduced smell (see **Table 3**).

Table 3: Distribution of Symptoms Prevalence.

Symptoms	**Prevalence (%)**
Nasal obstruction	75 (88%)
Facial pain	45 (53%)
Post-nasal drip	40 (47%)
Reduced sense of smell	30 (35%)

According to the study's findings, the incidence of a deviated septum (65%) is consistent with typical clinical presentations, but nasal polyps as well as hypertrophic rhinitis only appear in smaller percentages and may need to be treated concurrently with medication or surgery [12].

Further insight into etiology is provided in **Table 4**, which shows that 65% had a deviated septum, with smaller percentages suffering from polyps and hypertrophic rhinitis.

Table 4: Distribution of Causes Prevalence.

Causes	Prevalence (%)
Deviated Septum	55 (65%)
Nasal Polyps	15 (18%)
Hypertrophic Rhinitis	10 (12%)
Other	5 (6%)

Diagnostic evaluations revealed differences in symptom severity, particularly in nasal clearance and pain levels, which are detailed in **Table 5**.

Table 5: Diagnosis Outcomes.

Variables	**Outcomes 85 {%}**
Unclogging Nose	2.67 ± 0.47
Degree of Pain in Face	1.46 ± 1.11
Rhinitis Condition	1.42 ± 1.11

Regarding surgical interventions, **Table 6** summarizes the types of techniques applied, with 41% undergoing endoscopic septoplasty, a minimally invasive method [13].

Table 6: Types of Surgical Innovations Used in Septoplasty.

Types	**Outcomes 85 {%}**
Traditional Septoplasty	30 (35%)
Endoscopic Septoplasty	35 (41%)
Laser-Assisted Techniques	20 (24%)

41% of endoscopic septoplasty procedures are a result of improvements in surgical methods that improve visibility and lessen damage, which promotes healing. Surgical outcomes found overall duration of surgery (mean ± sd) was 47.5 ± 14.5 min, overall blood loss (mean ± sd) was 100 ± 20 ml, overall length of stay in hospital was 0.8 ± 0.4 days, anesthesia used included general with 60% while local with 40%, and mortality rate with 0% of total patients [14].

Operative metrics, such as duration of surgery, blood loss, hospital stay, and anesthesia type, are comprehensively reported in **Table 7**.

Table 7: Intraoperative Outcomes.

Outcome	Outcomes 85 {%}
Overall Duration of Surgery (Mean ± SD)	47.5 ± 14.5 min
Overall, Blood Loss (Mean ± SD)	100 ± 20 mL
Overall Length of Stay in Hospital, days	0.8 ± 0.4
Anesthesia Used	General: 60% Local: 40%
Mortality Rate	0 {0%}

A high percentage of postoperative light discomfort (71%) suggests that pain control procedures are working. It is especially reassuring because just 6% of people have severe discomfort [15].

Postoperative pain levels remained low, with 71% of patients experiencing only mild pain, according to **Table 8**.

Table 8: Post-operative Pain.

Pain Score (0-10)	Outcomes 85 {%}
Mild Pain (0-3)	60 (71%)
Moderate Pain (4-6)	20 (24%)
Severe Pain (7-10)	5 (6%)

Complications were relatively uncommon, with infection and hematoma being reported in a minority of patients, as described in **Table 9**.

Table 9: Post-operative Complications.

Complications	Outcomes 85 {%}
Infection	5 (6%)
Hematoma	3 (4%)
Nasal Obstruction Recurrence	6 (7%)
No Complications	71 (83%)

High ratings for general health (81.0) and physical function (80.5) highlight the success of the procedure by showing positive effects on patients' general well-being [16].

Postoperative quality of life improved across all SF-36 domains, most notably in general health and physical function, as presented in **Table 10**.

Table 10: Quality of Life (SF-36 Questionnaire).

Parameter	Score (Mean ± SD)
Physical Function	80.5 ± 10.2
Role Physical	75.0 ± 12.5
Bodily Pain	78.5 ± 11.0
General Health	81.0 ± 9.5

A good response of surgical outcomes is demonstrated by the 89% of patients who reported satisfaction (65% very satisfied and 24% satisfied), which is crucial for continuous improvements in clinical practice [17].

The study also assessed satisfaction, with 89% of patients reporting satisfaction, most being very satisfied (see **Table 11**).

Table 11: Satisfaction Levels Post-Surgery.

Satisfaction Level	Outcomes 85 {%}
Very Satisfied	55 (65%)
Satisfied	20 (24%)
Neutral	5 (6%)
Dissatisfied	5 (6%)

Relevant variables of preoperative risk stratification are shown by the odds ratios for age, smoking, and comorbidities; the correlation with higher income can direct the distribution of health resources [18].

Regression analysis revealed significant risk associations with age, smoking, and comorbidities, and a protective factor linked to higher income (see **Table 12**).

Table 12: Logistic Regression Analysis of Risk Factors.

Factors	**Odds Ratio (95% CI)**
Age	1.02 (1.01-1.05)
Smoking	1.5 (1.1-2.0)
Comorbidities	2.0 (1.3-3.0)
Higher Income	0.8 (0.5-1.0)

Table 13 outlines the correlation between postoperative symptoms and satisfaction, revealing that relief from nasal obstruction and improvements in quality of life were strongly correlated with patient satisfaction [19].

Table 13: Correlation of Post-operative Symptoms and Satisfaction.

Symptoms	**Satisfaction Correlation (r)**
Nasal Obstruction	-0.76
Facial Pain	-0.65
Quality of Life	0.8

Follow-up data at 12 months post-surgery showed 76% full recovery, while long-term complications were rare, as displayed in **Table 14**.

Table 14: Follow-up Outcomes within 12 Months.

Variables	**Outcomes 85 {%}**

Fully Recovery	65 (76%)
Partial Recovery	15 (18%)
No Improvement	5 (6%)
Long-term complications	2 (2%)

4. Discussion.

In order to add to the growing body of literature on this common nasal surgical procedure, the current study sought to assess the efficacy of surgical improvements in septoplasty with relation to patient outcomes and satisfaction [20]. The study, which involved 85 participants, showed a high degree for overall patient satisfaction following surgery and highlighted notable reductions in symptoms, including nasal congestion and face discomfort that are frequently linked to nasal obstruction. The problems associated with a deviated septum can be considerably reduced by septoplasty, as previous study has repeatedly shown [21]. Similar success rates, showing an 80% reduction in nasal obstruction after traditional septoplasty procedures, were reported in a groundbreaking study conducted in the United States [22]. According to different studies, surgical discomfort and recuperation delays might be significant, particularly among elderly people. About 82% for our participants experienced improvement from nasal blockage, which is consistent with other research's findings [23]. This supports the effectiveness of septoplasty, but our findings also point to the importance of surgical advancements in improving patient outcomes and experiences. The advantages in minimally invasive methods, especially endoscopic treatments, in septoplasty have been the subject of a Spanish research [24]. In comparison to conventional techniques, endoscopic septoplasty resulted in fewer rates of complications and lower pain scores, according to a Brazilian research [25]. Our study showed a tendency toward better patient satisfaction and quality of life for patients undergoing novel procedures, even if it did not show a statistically significant difference of results between endoscopic and conventional approaches [26]. This implies that although the basic results might not differ much, the total experience—and hence. In relation to surgical procedures, the importance of patient-centered outcomes, including satisfaction and quality of life, has gained popularity recently. According to a study done in Italy [27], surgical technique, along with patient happiness, are directly correlated. Less intrusive techniques were found to improve overall patient experience by reducing postoperative discomfort and speeding up recovery. Our data support these conclusions since the recorded 65% satisfaction rate for our participants reflects well to the possibility of surgical innovation to enhance patients' postoperative experiences [28]. Remarkably, our research showed that worse surgical outcomes were linked to age and the existence of comorbidities. This conclusion is consistent with research conducted in Germany [29] that found that patients with pre-existing diseases and those who were older had a greater incidence of complications and longer recovery durations [30]. Otolaryngologists must comprehend these demographic factors because they highlight the need for individualized surgical techniques that take the patient's medical history and current condition into account. In order to maximize results for the demographic differences seen in the patient groups that are currently in place, this becomes especially important.

5. Conclusion

According to this study, surgical innovations for septoplasty greatly improve patient outcomes and result in high levels of satisfaction after the procedure. The necessity for ongoing innovation and assessment in surgical procedures is highlighted by the fact that most patients report relief of nasal obstruction along with a noticeable improvement in their quality of life. In addition, by identifying variables like age and comorbidities that

affect patient outcomes, healthcare providers may more effectively customize surgical techniques. This study emphasizes the value of individualized treatment and continuous technique improvement in septoplasty to optimize patient outcomes, which will eventually enhance patient happiness and healthcare delivery.

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