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Outcome of Septoplasty Surgeries Performed in the Adult-A Descriptive Cross-Sectional Study

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Abstract: ***Introduction:*** Nasal obstruction, commonly caused by deviated nasal septum (DNS), significantly affects quality of life and is frequently encountered in otolaryngology. Septoplasty, a functional surgical procedure to correct DNS, aims to improve airflow and relieve symptoms such as nasal blockage, recurrent sinusitis, and snoring. While the effectiveness of septoplasty in improving nasal function and patient satisfaction is well established, complications like bleeding, perforation, and residual deviation can occur. Diagnostic tools include rhinoscopy, nasal endoscopy, and CT scans. In Bangladesh, though septoplasty is widely performed, outcome-based research is scarce, particularly in resource-constrained settings with variable access and follow-up care. ***Objectives:*** The present study aims to assess the consequences of septoplasty surgeries performed in adults at a tertiary care hospital. ***Methods:*** This hospital-based descriptive cross-sectional study was conducted over 12 months from January to December 2023 in the Department of Otolaryngology at Bangabandhu Sheikh Mujib Medical University, Shahbag, Dhaka, Bangladesh, enrolling 45 adult patients undergoing septoplasty. Participants were selected using purposive sampling based on inclusion and exclusion criteria. Data were collected using a structured sheet covering demographics, clinical features, type of septal deviation, diagnostic tools, surgical details, outcomes, and complications. All surgeries followed standardized protocols, and postoperative assessments were done on Day 7 and at 1 month using the Visual Analog Scale (VAS). Data were analyzed using SPSS v26 and Microsoft Excel 2023 with descriptive statistics. ***Results:*** Among 45 adult patients undergoing septoplasty, the majority were males (68.89%) and aged 26–35 years (44.44%). All patients presented with nasal obstruction; 37.78% had left-sided, 33.33% right-sided, and 28.89% bilateral obstruction. Common associated symptoms included nasal discharge (57.78%) and recurrent sinusitis (42.22%). Anterior rhinoscopy was used in all cases, with nasal endoscopy in 71.11% and CT in 42.22%. Most surgeries (80%) used general anesthesia. Postoperatively, nasal obstruction scores improved from 7.8 ± 1.1 to 1.2 ± 0.8 at one month. Symptomatic improvement was reported by 93.3% of patients. Complications were minimal, with 73.33% experiencing none. ***Conclusion:*** Septoplasty is a safe and effective procedure for treating nasal septal deviation in adults, providing significant symptom relief and minimal complications. Careful preoperative evaluation, skilled surgical technique, and proper postoperative care are essential for optimal outcomes.

Keywords: Septoplasty, Deviated Nasal Septum, Nasal Obstruction, Surgical Outcomes.

Research Paper

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INTRODUCTION

Nasal obstruction is a common complaint encountered in otolaryngology outpatient departments and can significantly impact a patient's quality of life, sleep quality, and overall health. One of the leading anatomical causes of chronic nasal obstruction is a deviated nasal septum (DNS), which refers to the displacement of the nasal septum from the midline. Deviations may be congenital or acquired due to trauma,

and can result in impaired airflow, increased nasal resistance, mucociliary dysfunction, and predisposition to sinus infections [1,2]. Septoplasty, a surgical procedure to correct DNS, is among the most frequently performed procedures in otolaryngology practice. The surgery aims to straighten the nasal septum by removing or reshaping the deviated portion, thus relieving nasal obstruction and improving nasal airflow [3]. Unlike rhinoplasty, which is primarily aesthetic, septoplasty is functional, with the primary goal of symptom relief. Indications for septoplasty include persistent unilateral or bilateral nasal obstruction not responsive to medical therapy, recurrent sinusitis, snoring, and, in some cases, epistaxis or headache attributed to contact points [4]. DNS is highly prevalent in the adult population. Various studies have reported different prevalence rates, ranging from 20% to 79% depending on the population studied and diagnostic methods used [5]. In a survey conducted by Mladina et al., it was observed that different types of septal deformities can result in varying levels of clinical symptoms, with anterior deviations being more symptomatic than posterior ones [6]. Diagnostic evaluation is typically conducted through anterior rhinoscopy, nasal endoscopy, and occasionally radiologic imaging such as computed tomography (CT) for complex deviations or associated sinus pathologies [7]. The effectiveness of septoplasty in improving nasal obstruction has been well established. Numerous studies have shown significant postoperative improvement in subjective symptoms and objective airflow measures. For example, Stewart et al. demonstrated that patients undergoing septoplasty reported substantial improvements in nasal obstruction scores postoperatively, as measured by validated scales such as the Nasal Obstruction Symptom Evaluation (NOSE) score and Visual Analog Scale (VAS) [8]. Moreover, septoplasty has shown high levels of patient satisfaction, with most patients experiencing long-term symptom relief and improved quality of life [9]. Despite being a relatively safe procedure, septoplasty is not without complications. Postoperative issues may include bleeding, infection, septal perforation, adhesion (synechiae), and recurrence or residual deviation [10]. Meticulous surgical technique, postoperative care, and patient selection play vital roles in minimizing complications and maximizing outcomes. The use of nasal packing, additional procedures such as turbinoplasty, and postoperative follow-up protocols are also key determinants of success [11]. In Bangladesh and other developing countries, access to specialized otolaryngologic care varies across urban and rural populations, and there is limited literature evaluating surgical outcomes in the local context. Although septoplasty is commonly performed in tertiary care hospitals in Bangladesh, there is a lack of standardized outcome assessments; especially in resource-limited settings where follow-up is inconsistent. As such, there is a need for descriptive data to evaluate the demographics, symptom patterns, surgical characteristics, postoperative outcomes, and complications in these populations. The present study aims to assess the consequences of septoplasty surgeries performed in adults at a tertiary care hospital.

MATERIALS AND METHODS

This study was designed as a hospital-based descriptive cross-sectional study, conducted to evaluate the clinical outcomes and complications of septoplasty surgeries performed in adult patients. The study was carried out in the Department of Otolaryngology at Bangabandhu Sheikh Mujib Medical University, Shahbag, Dhaka, Bangladesh. This center caters to a large number of urban and rural patients with ENT disorders. The study was conducted over 12 months, from January to December 2023. Over the period, a total of 45 adult patients who fulfilled the eligibility criteria and completed postoperative follow-up were enrolled using purposive sampling.

Inclusion Criteria

- Patients aged 18 years or above
- Diagnosed with a deviated nasal septum causing chronic nasal obstruction
- Underwent septoplasty (with or without inferior turbinate reduction)
- Provided informed written consent for participation

Exclusion Criteria

- Patients with nasal tumors, nasal polyposis, or acute sinus infections
- Patients who underwent concomitant rhinoplasty or endoscopic sinus surgery
- Individuals with a previous history of nasal surgeries
- Incomplete follow-up or loss to follow-up

Data Collection Tool

Data were collected using a pre-designed structured data collection sheet, which included the following parameters, Demographic details (age, sex, residence), Clinical history and presenting symptoms (nasal obstruction, discharge, epistaxis, snoring, recurrent sinusitis), Type and location of septal deviation (anterior, posterior, C-shaped, S-shaped), Diagnostic investigations (anterior rhinoscopy, nasal endoscopy, CT scan), Surgical details (anesthesia type, duration of surgery, nasal packing, additional procedures), Postoperative outcomes (symptom improvement, VAS score), Complications (bleeding, infection, adhesions, residual deviation). Patient satisfaction and willingness to recommend surgery

Outcome Measures

- **Primary Outcome**:
- Postoperative **symptomatic improvement** in nasal obstruction was assessed using the **Visual Analog Scale (VAS)** and subjective patient feedback.
- **Secondary Outcomes**:

- **Postoperative complications** (e.g., bleeding, septal perforation, synechiae)

Data Collection Procedure

Experienced ENT surgeons performed all surgeries under standard operative protocols. Patients were assessed preoperatively and postoperatively at Day 7 and 1-month follow-up. Data were collected through clinical examination, patient interviews, and follow-up documentation. Postoperative symptom relief was recorded using the VAS (0 = no obstruction, 10 = complete obstruction).

Data Analysis

Data were entered and analyzed using Microsoft Excel 2023 and SPSS version 26.0. Descriptive statistics such as frequencies, percentages, means, and standard deviations were used to summarize categorical and continuous variables. Graphical representations (bar charts and pie charts) were used to illustrate key findings. No inferential statistics were applied due to the descriptive nature of the study.

RESULTS

The present study evaluated the outcomes of septoplasty surgeries performed in 45 adult patients. As shown in Table 1, the majority of participants were aged between 26 and 35 years (44.44%), and males comprised 68.89% of the sample. All patients (100%) presented with nasal obstruction (Table 2), with obstruction being unilateral in most cases left-sided in 37.78% and right-sided in 33.33% and bilateral in 28.89%. Other common symptoms included nasal discharge (57.78%), recurrent sinusitis (42.22%), and snoring (31.11%). Preoperative assessment (Table 3) revealed that anterior rhinoscopy was universally used (100%), while nasal endoscopy and CT scans were performed in 71.11% and 42.22% of cases, respectively. The most common septal deviations were anterior (33.33%) and S-shaped (26.67%). Surgical details (Table 4) showed that general anesthesia was preferred in 80% of surgeries, with nasal packing used in 84.44% and turbinate reduction performed in 26.67% of cases. The mean surgery duration was 50.3 ± 10.4 minutes, and the average hospital stay was 2.4 ± 1.2 days. As reported in Table 5, patients experienced significant symptomatic relief, with the mean nasal obstruction score improving from 7.8 ± 1.1 preoperatively to 1.2 ± 0.8 at one month postoperatively. Symptomatic improvement was reported by 93.3% of patients, with an average return to regular activity within 6.1 ± 2.5 days. Postoperative complications were minimal (Table 6), with 73.33% experiencing none; the most common issues were bleeding (8.89%) and synechiae (6.67%).

Table 1: Demographic Profile of the Study Participants (n = 45)

Variables	Frequency (n)	Percentage (%)
Age Group (in years)		
18–25	10	22.22
26–35	20	44.44
36–45	9	20.00
>45	6	13.33
Sex		
Male	31	68.89
Female	14	31.11

Table 2: Clinical Characteristics of the Participants (n = 45)

Clinical Feature	Frequency (n)	Percentage (%)
Nasal Obstruction	45	100.00
Side of obstruction: Left	17	37.78
Side of obstruction: Right	15	33.33
Bilateral	13	28.89
Nasal Discharge	26	57.78
Epistaxis	11	24.44
Recurrent Sinusitis	19	42.22
Snoring	14	31.11
History of Trauma/Surgery	8	17.78

Table 3: Preoperative Assessment (n = 45)

Variables	Frequency (n)	Percentage (%)
Type of Septal Deviation		
Anterior	15	33.33
Posterior	9	20.00
S-shaped	12	26.67
C-shaped	6	13.33
Others	3	6.67
Diagnostic Tools Used		
Anterior Rhinoscopy	45	100.00
Nasal Endoscopy	32	71.11
CT Scan	19	42.22

Table 4: Surgical Details of Participants (n = 45)

Surgical Parameter	Frequency (n)	Percentage (%)
Local Anesthesia	9	20.00
General Anesthesia	36	80.00
Nasal Packing Used	38	84.44
Additional Procedure Done (Turbinate Reduction)	12	26.67
Mean Duration of Surgery	50.3 ± 10.4 mins	
Mean Hospital Stay	2.4 ± 1.2 days	

Table 5: Postoperative Outcomes (n = 45)

Outcome Parameter	Mean ± SD
Mean Nasal Obstruction Score (Pre-op)	7.8 ± 1.1
Mean Score on Day 7 Post-op	3.4 ± 1.5
Mean Score at 1 Month Follow-up	1.2 ± 0.8
Patients Reporting Symptomatic Improvement	42 (93.3%)
Mean Time to Normal Activity	6.1 ± 2.5 days

Table 6: Postoperative Complications (n = 45)

Complication	Frequency (n)	Percentage (%)
Bleeding	4	8.89
Infection	2	4.44
Septal Perforation	1	2.22
Adhesions/Synechiae	3	6.67
Residual Deviation	2	4.44
No Complication	33	73.33

DISCUSSION

Nasal septal deviation is a common structural abnormality leading to nasal obstruction, affecting both quality of life and nasal physiology. Septoplasty remains the standard surgical treatment aimed at correcting the deviated septum to restore nasal patency and improve airflow. The present study provides valuable insights into the demographic profile, clinical characteristics, surgical practices, and postoperative outcomes associated with septoplasty among adults in a tertiary care hospital setting. The demographic distribution in this study showed a male predominance (68.89%), consistent with findings by Gandomi et al. (2010), who reported that males are more frequently affected by nasal septal deviation, possibly due to higher exposure to trauma and anatomical predisposition [12]. The most represented age group was 26–35 years (44.44%), aligning with other studies suggesting that younger adults are more likely to seek surgical correction due to increased awareness of functional and cosmetic concerns [13]. Clinically, nasal obstruction was the most universal presenting symptom (100%), followed by nasal discharge (57.78%) and recurrent sinusitis (42.22%). These findings support previous research by Gandomi, which emphasized nasal obstruction as the primary indication for septoplasty [14]. The presence of unilateral obstruction was more common than bilateral, reflecting the typical asymmetrical nature of septal deviation. Preoperative assessments employed in this study namely anterior rhinoscopy (100%), nasal endoscopy (71.11%), and CT imaging (42.22%) demonstrate a balanced approach between clinical evaluation and radiological confirmation. Previous study supports the use of nasal endoscopy as a valuable adjunct to rhinoscopy for detailed visualization of the septum and associated

anatomical anomalies [15]. The anatomical types of deviation observed anterior (33.33%), S-shaped (26.67%), and posterior (20%) are consistent with classifications described in previous anatomical studies [6]. These variations influence the complexity of the surgical approach and the likelihood of symptom resolution. The high prevalence of anterior deviations in this study aligns with the areas most vulnerable to trauma and developmental anomalies. Surgical intervention was predominantly performed under general anesthesia (80%), which is common practice for patient comfort and surgical control. Nasal packing was used in 84.44% of patients postoperatively, similar to the practices outlined in a review by Bhattarai et al. (2023), which noted its efficacy in hemostasis and septal support. However, it may cause discomfort [16]. Turbinate reduction was an additional procedure in 26.67% of cases, highlighting its role in enhancing surgical outcomes when inferior turbinate hypertrophy contributes to obstruction [17]. Postoperative outcomes showed significant improvement, with nasal obstruction scores decreasing from 7.8 ± 1.1 preoperatively to 1.2 ± 0.8 at one-month follow-up. This is comparable to the outcomes reported by Stewart et al. (2004), who demonstrated that septoplasty leads to statistically significant improvements in nasal obstruction scores and patient satisfaction [8]. Additionally, 93.3% of patients in our study reported symptomatic improvement, reinforcing the efficacy of the procedure. The mean time to resume regular activity was 6.1 ± 2.5 days, indicative of the relatively short recovery period post-septoplasty, a finding that corresponds with studies conducted in similar hospital-based settings [4]. The mean duration of surgery (50.3 ± 10.4 minutes) and hospital stay (2.4 ± 1.2 days) reflect procedural efficiency and effective perioperative care. Complication rates were low in this study, with bleeding (8.89%) and adhesions (6.67%) being the most common. This aligns with previous reports suggesting a complication rate between 5% and 15% following septoplasty [18]. Septal perforation occurred in only one patient (2.22%), demonstrating the low risk when meticulous surgical techniques are applied. Notably, 73.33% of patients experienced no complications, supporting septoplasty's reputation as a safe procedure when performed by skilled hands.

Limitation of the study:

While the study presents strong evidence regarding the effectiveness and safety of septoplasty, it is not without limitations. The sample size was relatively small (n=45), and long-term follow-up data were not collected beyond one month. Future studies should consider a multicenter design with larger cohorts and longer follow-up durations to assess the durability of symptomatic improvement and detect delayed complications.

CONCLUSION

In conclusion, this study reaffirms septoplasty as a highly effective and safe surgical intervention for nasal septal deviation in adults. It results in significant symptomatic relief with minimal complications and short recovery times. A comprehensive preoperative assessment, meticulous surgical execution, and appropriate postoperative care are crucial for optimizing outcomes. These findings contribute to the growing body of evidence supporting septoplasty's role in improving nasal function and overall patient quality of life.

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