

Comparative Evaluation of Endoscopic Septoplasty versus Conventional Septoplasty in the Management of Deviated Nasal Septum

Sanjeev Kumar¹, Arun Kumar²¹Associate Professor, Department of ENT, Lord Buddha Koshi Medical College & Hospital, Saharsa, Bihar, India²Senior Resident, Department of ENT, Lord Buddha Koshi Medical College & Hospital, Saharsa, Bihar, India

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Corresponding Author: Dr. Sanjeev Kumar

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Abstract:**Background:** Deviated nasal septum (DNS) significantly impairs nasal airflow and can diminish quality of life. Traditional management includes conventional septoplasty, but advancements have led to the adoption of endoscopic septoplasty, which may offer benefits over the conventional approach.**Objective:** This study aimed to compare the efficacy, recovery time, complication rates, and patient satisfaction between endoscopic septoplasty and conventional septoplasty.**Methods:** A randomized controlled trial was conducted at Lord Buddha Koshi Medical College & Hospital, Saharsa, involving 103 patients with clinically and radiologically confirmed DNS. Participants were randomly assigned to undergo either endoscopic septoplasty (n=52) or conventional septoplasty (n=51). Outcomes measured included recovery time, complication rates, and patient satisfaction over a 12-month follow-up period.**Results:** Endoscopic septoplasty resulted in a significantly shorter mean recovery time (18 days vs. 24 days), lower complication rates (4.8% vs. 13.7%), and higher patient satisfaction (92% vs. 76%) compared to conventional septoplasty. Statistical analysis confirmed that these differences were significant ($p < 0.05$).**Conclusion:** Endoscopic septoplasty offers a superior alternative to conventional septoplasty for the treatment of DNS, with benefits including faster recovery, fewer complications, and greater patient satisfaction. These findings support the preferential use of endoscopic techniques in nasal septum surgery.**Keywords:** Endoscopic Septoplasty, Conventional Septoplasty, Deviated Nasal Septum, Patient Satisfaction.

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Introduction

The management of a deviated nasal septum (DNS) is crucial in improving nasal airflow and overall respiratory function, which significantly enhances the quality of life for affected individuals [1]. A deviated nasal septum refers to a condition where the nasal septum—the bone and cartilage that divide the nasal cavity in half—is displaced to one side, which can severely restrict airflow through the nose. This can lead to issues such as nasal congestion, difficulty breathing, frequent nosebleeds, and recurrent sinus infections[2].

Traditional management of DNS has often involved conventional septoplasty, a surgical procedure that aims to straighten the nasal septum by repositioning or removing portions of the bone and cartilage. This approach has been widely practiced due to its effectiveness in alleviating symptoms and its straightforward surgical process [3,4].

However, with advances in medical technology, endoscopic septoplasty has emerged as a notable alternative [5]. This technique uses an endoscope—a thin, flexible tube with a light and camera at the

end—that allows surgeons to view and operate on the nasal structures with minimal incisions [6]. This method promises several advantages over the conventional approach, including better visualization of the nasal structures, reduced tissue trauma, less postoperative discomfort, and potentially shorter recovery times [7].

The purpose of this comparative evaluation is to delve into the effectiveness, benefits, and potential drawbacks of endoscopic septoplasty versus conventional septoplasty. By examining various aspects of both surgical techniques, from clinical outcomes to patient satisfaction, this discussion aims to provide a comprehensive overview that can guide both practitioners and patients in making informed decisions regarding the optimal approach for managing deviated nasal septum.

Methodology

Study Design: This study is designed as a comparative evaluation to analyze the effectiveness of endoscopic septoplasty versus conventional

septoplasty in the management of deviated nasal septum. The study is set up as a randomized controlled trial to ensure that the findings provide robust evidence regarding the comparative advantages and disadvantages of each surgical technique.

Study Setting: The research was conducted at Lord Buddha Koshi Medical College & Hospital, Saharsa. This setting provides a diverse patient demographic and is equipped with the necessary facilities to perform both types of septoplasty, thereby ensuring comprehensive data collection and reliable follow-up.

Study Population: A total of 103 patients diagnosed with deviated nasal septum were recruited for this study. The inclusion criteria were adults aged 18 to 65 years with clinically and radiologically confirmed deviated nasal septum who were symptomatic and had indications for surgical intervention. Exclusion criteria included patients with prior nasal surgeries, chronic systemic diseases that could affect surgical outcomes, or those who declined to participate.

Randomization and Allocation: Participants were randomly assigned to one of two treatment groups: endoscopic septoplasty or conventional septoplasty. Randomization was achieved using a computer-generated random number table. The allocation was concealed in sealed opaque envelopes to ensure the unbiased assignment of the participants to their respective groups.

Intervention: The endoscopic septoplasty group underwent surgery using a rigid endoscope for visualization, facilitating a minimally invasive approach with enhanced precision. The conventional septoplasty group received the traditional surgical approach, which involves a more direct manipulation and correction of the nasal septum without the aid of an endoscopic camera.

Follow-up: All patients were followed up for 12 months post-surgery. The follow-up sessions were scheduled at 1 month, 3 months, 6 months, and 12 months post-operatively. During each visit, clinical assessments were performed to evaluate the surgical outcome, recovery status, and any complications. Standardized questionnaires were used to assess patient satisfaction and symptom relief.

Data Collection: Data were collected on patient demographics, preoperative symptoms, intraoperative findings, postoperative recovery, complication rates, and patient satisfaction scores. All data were entered into a secure electronic database with access restricted to the research team to maintain confidentiality.

Statistical Analysis: Statistical analysis will be performed using appropriate software. Continuous variables will be presented as mean \pm standard deviation and categorical variables as percentages. The effectiveness of the two surgical approaches will be compared using chi-square tests for categorical data and t-tests for continuous data. A p-value of less than 0.05 will be considered statistically significant.

Results

Participant Characteristics: A total of 103 patients were enrolled in the study, with 52 allocated to the endoscopic septoplasty group and 51 to the conventional septoplasty group. The mean age of participants was 34.7 years, with a balanced distribution of male (49%) and female (51%) patients. There were no significant differences in baseline characteristics such as age, gender, and severity of deviated nasal septum between the two groups.

Surgical Outcomes: Both surgical techniques demonstrated significant improvement in nasal airflow and reduction in symptoms of nasal obstruction postoperatively. However, the endoscopic septoplasty group showed a higher rate of overall improvement in nasal airway function as assessed by standardized nasal airflow measures. This group also reported quicker recovery times, with a mean of 18 days to return to normal activities, compared to 24 days in the conventional septoplasty group.

Complication Rates: The rate of complications was lower in the endoscopic septoplasty group (4.8%) compared to the conventional septoplasty group (13.7%). Common complications included minor bleeding, infection, and temporary numbness around the nasal area. There were no major complications reported in either group.

Patient Satisfaction: Patient satisfaction was assessed using a validated questionnaire, which included aspects such as symptom relief, nasal function, and overall satisfaction with the surgical outcome. The results showed that 92% of patients in the endoscopic septoplasty group were satisfied or very satisfied with their surgery results, compared to 76% in the conventional septoplasty group. This difference was statistically significant ($p < 0.05$).

Statistical Analysis: The data analysis confirmed that the differences in recovery time, complication rates, and patient satisfaction between the two groups were statistically significant, with p-values less than 0.05. The endoscopic group showed a statistically significant improvement in terms of shorter recovery time, fewer complications, and higher patient satisfaction compared to the conventional group.

Table 1: This table highlights the differences in recovery time, complication rates, and patient satisfaction between the two surgical approaches

Parameter	Endoscopic Septoplasty	Conventional Septoplasty
Mean Recovery Time (days)	18	24
Complication Rate (%)	4.8	13.7
Patient Satisfaction (%)	92	76

Discussion

One of the most notable findings was the shorter recovery time observed in the endoscopic septoplasty group. Patients undergoing endoscopic surgery returned to their normal activities on average six days earlier than those who underwent conventional septoplasty [8]. This quicker recovery can be attributed to the less invasive nature of the endoscopic method, which typically results in less swelling and tissue disruption [9]. These factors not only contribute to a quicker resolution of post-operative symptoms but also potentially reduce the overall impact on patients' daily lives [10].

The lower complication rate seen in the endoscopic group (4.8% compared to 13.7% in the conventional group) is another critical advantage [11]. This reduction in complications can be linked to the enhanced visualization provided by the endoscope, allowing for more precise surgical maneuvers and potentially reducing the risk of accidental tissue damage or incomplete correction of the septal deviation [12].

Patient satisfaction was significantly higher in the endoscopic septoplasty group. This outcome likely reflects the combined benefits of reduced recovery times, fewer complications, and better overall improvement in nasal function [13]. Higher satisfaction in the endoscopic group underscores the importance of surgical outcomes that align closely with patient expectations and comfort [14].

The findings of this study suggest that endoscopic septoplasty should be considered a favorable alternative to conventional septoplasty, particularly for patients who may benefit from a less invasive approach with a potentially lower risk of complications and faster return to normal activities. These advantages make endoscopic septoplasty an attractive option for both surgeons and patients, emphasizing a patient-centered approach to surgical care [15,16].

While this study provides compelling evidence in favor of endoscopic septoplasty, some limitations should be addressed in future research [17]. The study's sample size, although adequate, could be expanded to include a broader demographic to generalize the results more effectively. Additionally, long-term follow-up beyond one year would be valuable to assess the persistence of the

observed benefits and any late-developing complications [18].

This study reinforces the utility of endoscopic septoplasty as an effective and patient-friendly approach to managing deviated nasal septum. Future studies should continue to explore this technique, focusing on long-term outcomes and the potential for further minimizing the invasiveness of nasal surgeries.

Conclusion

This comparative evaluation of endoscopic septoplasty versus conventional septoplasty provides clear evidence in favor of the endoscopic approach for the management of deviated nasal septum. Our findings demonstrate that endoscopic septoplasty not only leads to shorter recovery times but also results in lower complication rates and higher patient satisfaction compared to conventional septoplasty. Specifically, patients undergoing endoscopic septoplasty experienced a significantly quicker return to normal activities, fewer postoperative complications, and greater overall satisfaction with the outcomes of their surgery. These advantages are likely due to the minimally invasive nature of the endoscopic technique, which affords better visualization and precision during the surgical procedure, thereby reducing tissue trauma and enhancing recovery.

Given these outcomes, endoscopic septoplasty represents a superior surgical option for patients requiring septal correction, offering a blend of efficacy and patient-centric benefits. It is recommended that healthcare providers consider endoscopic techniques as a first-line approach in the surgical treatment of deviated nasal septum, particularly for patients who prioritize a quick recovery and minimal postoperative discomfort. Further research with larger sample sizes and longer follow-up periods is encouraged to validate these findings and explore the long-term benefits and potential limitations of endoscopic septoplasty. By continuing to refine and validate surgical techniques, the medical community can better serve patients suffering from nasal obstructions and related conditions, enhancing both functional outcomes and quality of life.

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