

Original Article

Outcome of Septal Surgery Along with Autologous Cartilage Implant in Deviated Nasal Septum- A Study of 100 Cases in CMH Rangpur

Safi MA¹, Rahman MA², Islam MT³

- Maj Dr. Md. Abdullahis Safi**
FCPS, MCPS, DLO
HOD, ENT Dept. CMH Rangpur
Assistant Professor, Dept. of ENT
Army Medical College Rangpur
- Col Dr. Md. Ashiqur Rahman**
MPH
Commandant, CMH Rangpur
- Lt Col Dr. Md. Tarikul Islam**
FCPS
HOD, Surgery Dept., CMH Rangpur
Associate Professor, Dept. of Surgery
Army Medical College Rangpur

Correspondence to:

Maj Dr. Md. Abdullahis Safi
FCPS, MCPS, DLO
HOD, ENT Dept. CMH Rangpur
Assistant Professor, Dept. of ENT
Army Medical College Rangpur
E-mail: safi.rmc47@gmail.com
Mobile: 01769-662934



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Abstract

Introduction: Septoplasty is a surgical procedure to correct a deviated nasal septum. Septoplasty straightens the septum, allowing for better airflow through your nose. Septoplasty along with autologous septal cartilage implant enhances the effectiveness and reduce complications like nasal deformities, perforation and infections. **Objectives:** The aim of this study was to identify predictors of outcome after septoplasty with autologous septal cartilage implant in 100 patients of Combined Military Hospital, Rangpur from march 2022 to march 2024. **Methodology:** This is an observational registry analyzing data of 100 patients who underwent septoplasty with autologous septal cartilage implant at CMH Rangpur between March 2022 and March 2024. Required data regarding septoplasty and autologous septal cartilage implant and its outcomes, patients' compliance as well as post surgical complication occurring within 12 months of surgery was obtained. **Result:** Nasal obstruction had improved in 75% within 12 months after surgery. There is 12% patient experienced post operative haemorrhage. There is 2% of patients developed septal abscess and 1% showed septal perforation after surgery as well as 7% of patients complaints re-attack of nasal blockage and sinusitis after surgery. There was no nasal deformity has been reported after 12 months of surgery. **Conclusion:** Septoplasty with autologous septal cartilage implant is very effective surgical treatment offered to patients with moderate & severe nasal obstruction which is confirmed by both an improvement in nasal obstruction and patient expectations in this study. We've found this operation having less complications and better outcome in comparison to other study on primary septoplasty alone. Though there is some post operative complications in few case, it is effective and popular method for surgical treatment of nasal obstruction and septal abnormalities.

Keywords: Septoplasty, Autologous septal cartilage, Septal perforation, Nasal blockage

Introduction:

Septoplasty with nasal septal cartilage implantation is one of the main surgical procedures to solve the nasal septal problem.^{1,2} Sometimes additional turbinate surgery is also performed³. Many studies from various healthcare institutions have shown that nasal

breathing is normal in approximately 2/3 of patients who underwent septal cartilage (with or without turbinate surgery) in both short-term and long-term studies.⁴ Evaluation of objective parameters such as nasal manometry before and after surgery gave mixed results. Various factors have been identified that cause inadequate

understanding of the surgery, such as young patients and the inability to make an appointment within 1 month after surgery.⁵ The extent to which patients' preoperative nasal cavity weight assessment predicts postoperative outcomes has not previously been investigated in a large patient population. Since septal bone implantation is a procedure, it is performed by many otolaryngologists with different experience, from doctors to nasal surgeons. Therefore, when selecting patients for septoplasty, the ability to identify general determinants of events and the relationship between surgery, beyond individual surgical skills, is important.⁶

Materials and Methods:

This observation study based on the retrospective data was conducted at Combined Military Hospital Rangpur during the period between March 2022 and March 2024. Total 100 cases underwent the septoplasty and autologous septal cartilage implant surgery. Permission of the authority of ethical committee of the institution has been taken. All patients gave written permission prior this study. The surgical findings were noted in corresponding operation note register. Data of patients both male and female from age 20-55 were reviewed and analyzed. The study only included the patients who underwent septoplasty with autologous septal cartilage implant as primary procedure due to the symptoms of nasal blockage with or without rhinosinusitis aged 20 years or more. Required data regarding septoplasty with autologous septal cartilage implant and its outcomes, patients' compliance as well as post surgical complication occurring within 12 month of surgery is collected. Data thus obtained were analyzed using SPSS 16 for testing the significance of data, Pearson chi square was used as test of significance. A p - value <0.05 was considered statistically significant.

Results:

Out of total 100 patients underwent through the surgery, 63 were male and 37 were female. The age range of the patients was 20-55 years. All of them underwent the common procedure of septoplasty and autologous septal cartilage implant surgery from March 2022 to March 2024.

Only the patients with moderate and severe nasal obstruction with or without chronic sinusitis were selected for this operation.

Table-I: Showing the age group of the patients

Age Group	Number of Patients
20-30	69
30-40	20
40-50	7
50<	4
Total	100

In our study, there are 69 patients are of young age and in the age group of 20 to 30 years. Then 20 patients among total 100 are belonged to the age group of 30-40 years. 7 patients are in the 40-50 years and only 4 of them are in the 50 or more age group.

Table-II: Shown the military and non military patients under-went the surgery

Professional Group	Number of Patients
Military (Combatant)	58
Military (Retired Combatant)	7
Military (Non Combatant)	15
Non Military	20
Total	100

So we've found 58 patients of 100 are from military combatant group who are currently serving in the armed forces on the other hand only 7 patients are retired member of armed forces. There are 15 non-combatant military service holders and 20 patients who are in the non military person group including family and relatives underwent the surgery.

Table-III: Showing the number of patient's improvement, post surgical complications and recurrence of nasal obstruction among 100 patients within 12 month after surgery

Post Surgical Outcome	Number of Patients	Male	Female
Post Operative Hemorrhage	12	7	5
Septal Abscess	2	2	0
Septal Perforation	0	0	1
Nasal Deformities	0	0	0
Recurrence of Nasal Blockage/Sinusitis	7	2	5
Not Improved/Improvement Below Expectations	25	10	15
Improvement	75	53	22

Most of the patients underwent the operation are male 63% and rest of them are female 37%. Post operative hemorrhage has been seen in 12 case in which 7 male and 5 female patients. Out of 100 patients 2 male patient developed septal abscess and 1 female suffered septal perforation. There is no incidence of nasal deformity has been reported. Re-occurrence of nasal blockage and sinusitis occur in 7 patients in which 2 of them are male and rest 5 of them are female. Improvement has been achieved in 75 cases where 53 male patients and 22 female patients informed us that they are completely free of their symptoms. On the other hand 25 cases (10 male and 15 female patients) reported that they are not completely improved and their expectations of recovery after surgery have not been met.

Table-IV: Showing percentage of outcomes of surgery among the male and female patients

Post Surgical Outcome	Male (%)	Female (%)
Post Operative Hemorrhage	58	42
Septal Abscess	100	-
Septal Perforation	-	100
Nasal Deformities	-	-
Recurrence of Nasal Blockage/Sinusitis	28	72
Not Improved/Improvement Below Expectations	40	60
Improvement	71	29

In this study, improvement within 12 months of surgery mostly occur in case of male (71%) & comparatively less female (29%). So from this study male patients have shown better outcome after 12 months of surgery than female patients.

Discussion:

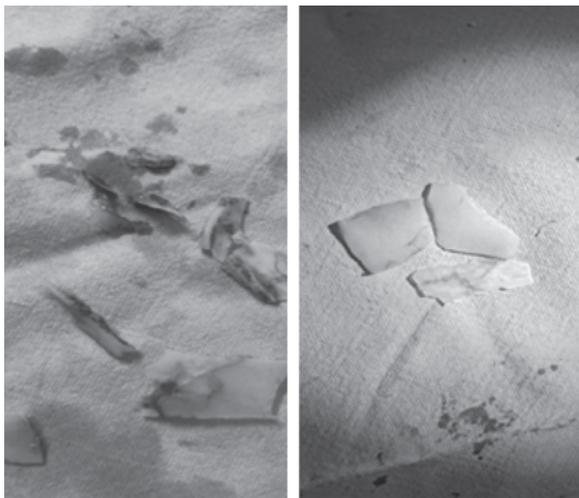
Septoplasty is a surgical procedure to correct a deviated, twisted, or curved nasal septum to provide a straight, open airway. This surgery allows the nose to fit better and breathe better. The nasal cavity of an adult is about 7 centimeters (2.5 to 3 inches) long and consists of cartilage and bone. It divides the nose into two parts, or nostrils. A deviated septum is a septum that is crooked or crooked instead of straight⁷. It can block one or both nostrils and affect the air. Nasal septum may change due to trauma, but it may also be natural. Sometimes septoplasty is combined with the use of autologous septal cartilage implants to improve both structural support and function⁸. We've performed this technique of septal cartilage implant which've been collected from the patients' own nasal septum and straighten it by cutting it's curved or twisted edges and again place it in between the mucoperichondrial and mucoperiosteal flap.

This technique is particularly beneficial for several reasons:

1. **Bio-compatibility:** Since the cartilage is derived from the patient, there is no risk of rejection or allergic reactions, which can occur with synthetic implants.
2. **Reduced Infection Risk:** Autologous tissue minimizes the risk of infection compared to foreign materials.
3. **Durability and Stability:** The use of the patient's own cartilage provides a robust and stable framework, which is crucial for maintaining the structural integrity of the nose over time.
4. **Functional and Aesthetic Benefits:** This technique not only improves nasal function by correcting airflow obstruction but also enhances the cosmetic appearance of the nose, addressing issues such as external nasal deformities such as saddle nose deformity, supratip deformity etc.

The procedure involves several steps: initial assessment and diagnosis of the deviated septum, careful harvesting of septal cartilage,

precise reshaping of the cartilage graft, and meticulous placement into the nasal structure to correct the deviation and provide support.⁹ Overall, septoplasty with autologous septal cartilage implant is a highly effective surgical intervention for patients suffering from nasal obstruction due to septal deviation.¹⁰ It offers a combination of both functional improvement and aesthetic enhancement with minimal complications.¹¹



Before and after straightening of the nasal septal cartilage



During operative procedure of septoplasty with autologous septal cartilage implant

In our study, we've found better outcome by combining septoplasty with autologous septal cartilage implant which surprisingly reduced the complications in comparison to other studies based on septoplasty alone, such as post

operative bleeding in 62% cases in a study of Hail University (Medicine Faculty), KSA. We've seen in a study conducted in UK showing 24% post operative nasal bleeding after septal surgery and there is another study conducted in Karachi, Pakistan showed in 28% cases post operative bleeding occurred after septoplasty despite anterior nasal packing.⁹ Nasal deformity is very common after septal surgery which is likely to be occur in 3.4% cases and some studies showed it may occurred in even 15-50% cases.¹² We've not been reported any case of nasal deformity after performing the operation which is mostly achieved by septal cartilage implant that provide support of the nasal tissue both skin and turbinate thus prevented nasal deformity. Performing septal cartilage implant during septoplasty or septorhinoplasty showed 100% success rate with no nasal deformity in several studies. In some cases septal perforation and septal abscess may occur⁵ but it occurred less than 10% cases as we've been reported 2 cases of septal abscess and 1 cases of septal perforation which might be caused by bacterial infection or hidden immune compromised status of patient. We promptly treated complicated case by performing revision surgery. There is studies showed that 36% patients developed recurrent rhinosinusitis after primary septoplasty.⁷ On the other hand we've been reported 7% patient developed rhinosinusitis after performing combined septoplasty with autologous septal cartilage implant and other complications were less in comparison to primary septoplasty alone.

Conclusion:

Septoplasty with autologous septal cartilage implant has proven to be a highly effective surgical intervention for correcting deviated nasal septums, offering significant benefits in both function and aesthetics. This technique leverages the biocompatibility of autologous cartilage to minimize rejection, infection risks, and enhance durability and stability. Moreover, it addresses external nasal deformities and improves airflow, contributing to better overall outcomes. Comparative studies have demonstrated reduced complications such as postoperative bleeding, septal perforation and nasal deformities when using this method, showing superior results over septoplasty alone. The observed lower incidence of complications such as nasal deformities which

is really important cosmetics concern to the patients underwent this procedure as well as reduced rate of incidence of rhinosinusitis, septal perforation and septal abscess also proved its effectiveness. Overall, this approach not only enhances nasal function but also provides cosmetic improvements with a minimal risk profile, making it a preferable option for patients suffering from nasal obstruction due to nasal septal deviation.

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