Original Research

LIMITED ENDOSCOPIC SEPTAL SURGERY (LESS) - PILOT STUDY OF A NOVEL TECHNIQUE

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ABSTRACT

Background: Septoplasty is a commonly performed procedure in otorhinolaryngology. Septoplasty can be performed by the traditional trans nasal trans speculum (TNTS) technique or endoscopically. Limited Endoscopic Septal Surgery (LESS) is a further evolution of endoscopic septoplasty, where the dissection is limited to the area of deviation/ spur. Such limited dissection minimizes complications. This study was conducted to evaluate this novel technique.

Objective: To compare the pre and postoperative quality of life of patients undergoing limited endoscopic septal surgery using a subjective questionnaire.

Methods: This is a pilot study. 76 symptomatic patients with nasal septal deviation were selected during the period November 2021 to May 2023. Preoperative symptom score was assessed using Nasal Obstruction Symptom Evaluation questionnaire (NOSE) and was recorded. All patients underwent the surgery and were discharged as per institutional protocol. Each patient was called for follow-up after a week and were examined endoscopically. They were called for a second follow up after three months. Postoperative scoring was done at this point.

Results: The mean preoperative NOSE score was 67±17 SD out of 100. Three months postoperatively this decreased to 30±16 SD. This was statistically significant. Our complication rate was 3%.

Conclusion: Limited endoscopic septal surgery reduces complications and shortens the time for healing - we were able to discharge all our patients on the second postoperative day and only one patient had intra and postoperative complications.

Keywords: Limited Endoscopic Septal Surgery (LESS), NOSE Score, Septal Surgery.

INTRODUCTION

Septoplasty is a commonly performed procedure in Otorhinolaryngology, owing to the high prevalence of nasal obstruction due to septal deviation. Septoplasty can be performed by the traditional trans nasal trans speculum (TNTS) technique or endoscopically (using an endoscope). TNTS has a complication rate of 3 - 30%.[1] First attempts at septoplasty date back to ancient Egypt, where broken nose was treated by external fixation and plugging each nostril with grease coated linen to stabilize the nasal septum.[2,3] Killian described the importance of assessing the subperichondrial plane.[4]

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Endoscopic septoplasty is a surgical procedure, allowing endoscope guided removal/ correction of deviated parts of the nasal septum.

This technique was described by Lanza et al and Stammberger.[5] Localized and limited dissection technique is a further advancement in endoscopic septoplasty. In this novel technique, dissection is limited to the area of pathology (deviation/ spur). Limited dissection is expected to decrease complications, faster healing and reduce morbidity. We evaluated this novel technique in this pilot study.

Assessing the outcome of surgery for nasal airway obstruction is always a challenge. The clinical indication for surgery is based on the patient's subjective feeling and less on examination findings or the surgeon's assessment. Outcome measurement by objective methods like rhinomanometry, acoustic rhinometry and other methods frequently does not correlate strongly with a patient's subjective feeling of patency.

Surgeons have increasingly focused on patient reported outcome measures to measuring tool for

assessing the efficacy of endoscopic septoplasty. The NOSE (Nasal Obstruction Symptom Evaluation) survey is a brief, validated, disease-specific instrument developed by Stewart et al,[6] consisting of five questions concerning subjective assessment of the nasal obstruction within the past one month (Table 1). Each question can be answered using a five point scale from 0 [not a problem] up to 4 [severe problem]. After adding all values and multiplying the score with 5, severity of patient symptoms can be scaled to range from 0 to 100.

	Not a problem	*Very mild problem*	*Moderate problem*	*Fairly bad problem*	*Severe problem*
Nasal stuffiness	0	1	2	3	4
Nasal blockage or obstruction	0	1	2	3	4
Trouble breathing through my nose	0	1	2	3	4
Trouble sleeping	0	1	2	3	4
Unable to get enough air through my nose during exercise or exertion	0	1	2	3	4

Table 1: Nose Questionnaire

MATERIALS AND METHODS

This study was during the period of November 2021 to May 2023. The study was conducted after obtaining required approvals from the institutional review board and ethics committee. (IEC/2022/03/263) Seventy six symptomatic patients with septal deviation were included. All patients were given intranasal corticosteroids and decongestants as the initial line of medical management.

All patients above 18 years of age who remained symptomatic post medical treatment were taken for the study. Patients with a previous history of septal surgeries and nasal trauma were excluded. A complete ENT clinical examination was done in all patients.

Preoperative symptom score was administered using Nasal Obstruction Symptom Evaluation questionnaire (NOSE) -Table 1 and recorded. All patients underwent Limited Endoscopic Septal Surgery (LESS) under general anesthesia and were discharged on the second postoperative day after removing the nasal pack. Each patient was called for review the following week and an endoscopic nasal examination was performed. They were then called for a follow-up after three months. At this point, NOSE was administered again and post-operative scoring was recorded. Demographic data, intraoperative blood loss, postoperative complications, preoperative and postoperative NOSE score[7] were all recorded systematically using a proforma.

RESULTS

Seventy six symptomatic patients with nasal septum deviation were included in the study. Age ranged from 18 to 55 years with a mean age of 28 years ±SD (Figure 1). The male to female ratio was 2.6:1.

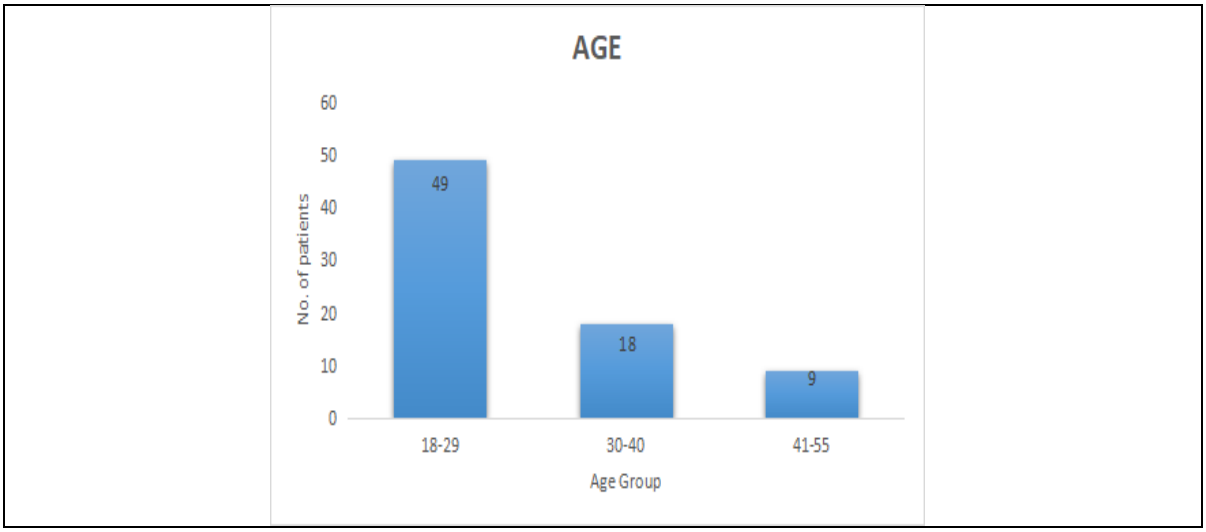

Figure 1: Age Distribution Of Patients

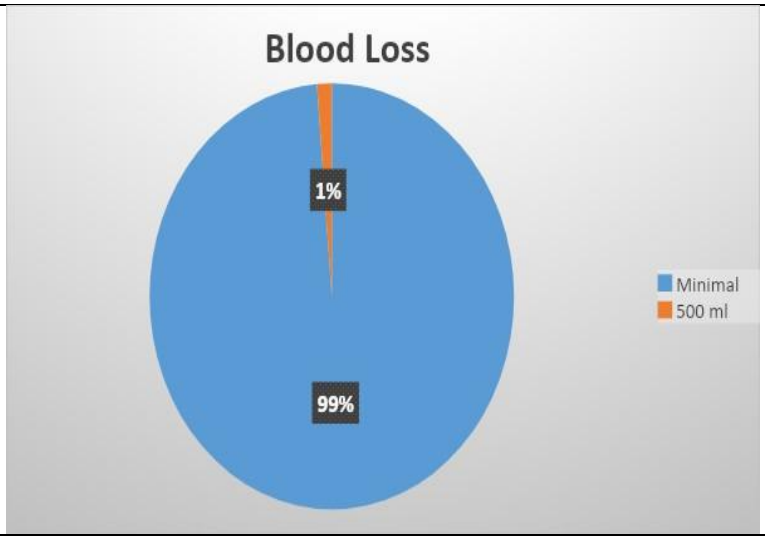

Figure 2: Intraoperative Blood Loss

Complication (intraoperative and postoperative) occurred only in a single patient, making a rate of 3%. This was a septal flap tear and septal perforation both of which occurred in the same patient. This patient also had significant blood loss of 500 ml (figure 2 & 3) Figure 3 (Intra and postoperative complications).

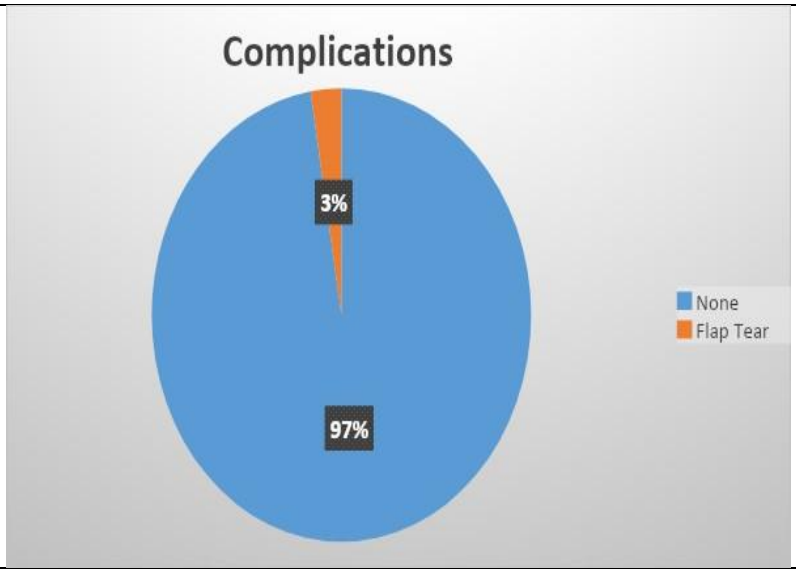

Figure 3: Intra And Postoperative Complications

The average preoperative NOSE score was 67, which reduced to 30 postoperatively (Table 2 & Figure 4).

Variables	N	Mean ± SD	p value
preoperative symptom score	76	67± 17	<0.001
post-operative symptom score	76	30.3± 16.2	

Table 2: Paired t test

Since p value is <0.001, we conclude that the NOSE score of patients who underwent less invasive endoscopic septoplasty (LESS) significantly reduced postoperatively.

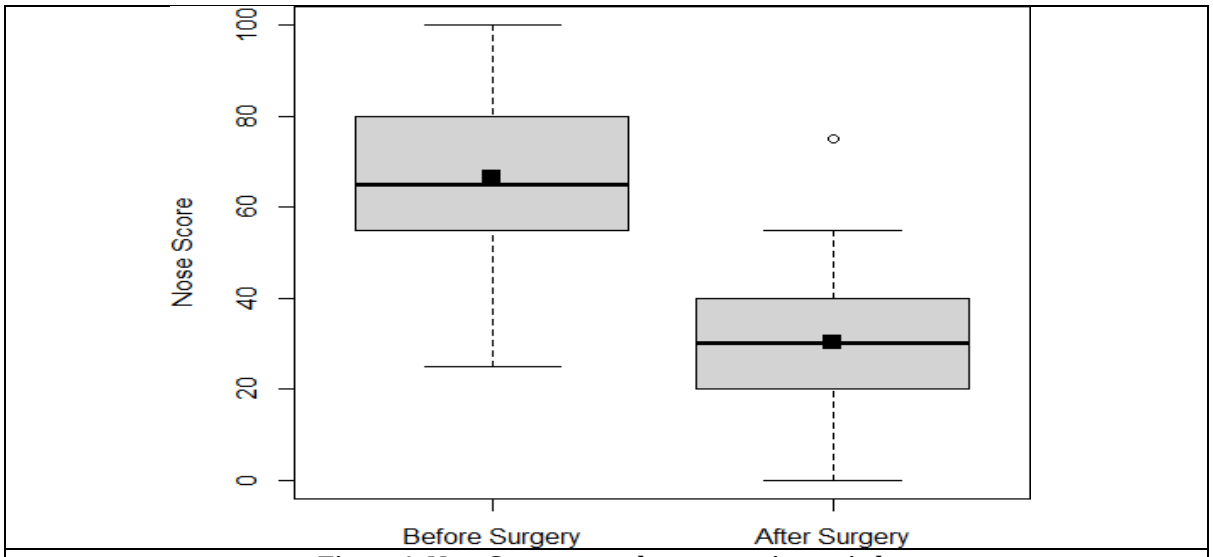

Figure 4: Nose Score pre and postoperative period

DISCUSSION

Around 86.6% of the normal population have nasal septum deviation[8] and it can lead to multiple symptoms including nasal obstruction, headache, obstructive sleep apnoea, hyposmia & rhinosinusitis. Apart from affecting the quality of life, it also adds to the morbidity by contributing to obstructive sleep apnoea. The prevalence of Obstructive sleep apnoea (OSA) is 4.39 times higher in the nasal septum deviation group compared with the control group.[8] Obstructive sleep apnoea has been associated with a higher risk of hypertension, diabetes and cardiovascular disease.[9] Nose is the first and major route that air passes through on its way to the lung. Nasal septum deviation will affect the laminar airflow .Doing septoplasty reduces the static nasal airway resistance and thereby improving the symptoms of OSA. Continuous Positive Airway Pressure (CPAP) remains the most successful method of alleviating the symptoms of OSA. In patients with low CPAP adherence and septal deviation, septoplasty is known to increase compliance to CPAP.[10]

Septoplasty is one of the commonly performed ENT surgeries. Septoplasty can be performed by the Trans nasal Trans speculum technique or using Endoscope. The traditional trans nasal trans speculum septoplasty is performed under direct vision using the nasal speculum. This technique may not always give as good results especially in cases of posterior septal deviations due to narrow field of vision and poor illumination. By the advent of Nasal telescopes, the number of endoscopic septoplasties have increased. Endoscopic surgery was initially performed for sinus pathologies only. Now it is gradually pervading into septal surgeries also. Limited endoscopic septal surgery is an evolution of the endoscopic septoplasty. By the use pathology (septal spur/deviation). This can help in faster healing, lesser complications and better symptomatic improvement. We were able to discharge all our patients on the second postoperative day itself. On the first postoperative visit in one week, we examined the nose endoscopically - the flap site was healthy, with no synechiae or septal hematoma formation. In comparison to the complications encountered in the conventional septoplasty, our study found only 3% complication rate in limited endoscopic septal surgery. In a study conducted by Sandeep Kaushik,[11] the complication rates for conventional septoplasty is significantly higher compared to endoscopic septoplasty. The known complications from a septal surgeries are hemorrhage, mucosal tear, hematoma synechiae, residual deviation and septal perforation. Severity of nasal obstruction is assessed by the Nasal Obstruction Symptom Evaluation Questionnaire (NOSE). In Our study the NOSE score had significantly reduced in the third month of follow up visit. The average preoperative NOSE score was 67±17, which reduced to 30.3±16.2 third month postoperative visit. One patient in our series had per operative bleeding amounting up to 500 ml, but the remaining patients had only negligible loss. The same patient had flap tear during surgery and a septal perforation was detected at follow up Nasal endoscopy.

CONCLUSION

Adaptation of newer techniques and improvisation of available technologies will improve the morbidity and quality of life of the patients. Our study shows that using the limited dissection technique in the endoscopic septal l surgeries is such an improvement over the regular endoscopic septal surgeries. This can improve the morbidity and healing time for the patient. However a larger multicentric study may be beneficial to establish the reproducibility of this pilot study.

Ethics approval and consent to participate
The study was conducted after obtaining required approvals from the institutional review board and ethics committee. (IEC/2022/03/263) and consent was taken from each of the patients.

Consent for Publication: Not applicable.

Availability of Data and Materials: The datasets during and or analyzed during the current study available from the corresponding author on reasonable request.

Competing Interests: The authors declare that we have no competing interests.

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Author's Contributions" GT and JP Performed the surgeries and JP collected the data and analyzed.
Acknowledgments: Not applicable

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