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CORELATION OF OUTCOMES FOLLOWING BILATERAL ENDOSCOPIC SINUS SURGERY USING SNOT-10 AND LUND- KENNEDY SCORE

ABSTRACT:

Objectives:

To compare pre-operative and post-operative Sinonasal outcome test-10 (SNOT-10) score and to evaluate the co-relation between post-operative Lund-Kennedy and SNOT-10 score following bilateral endoscopic sinus surgery.

Materials and Methods:

This was a prospective, observational study conducted in Ganeshman Singh Memorial Academy of ENT-Head & Neck Studies, Tribhuvan University Teaching Hospital, Kathmandu, Nepal from August 2016 to August 2017. Thirty one cases of chronic rhinosinusitis with or without nasal polyposis were included in the study. SNOT-10 was used to record the pre and postoperative scores and compared using paired t-test. Lund Kennedy score was used postoperatively. Both score system were correlated using Karl Pearson correlation coefficient.

Results:

Our study could not yield statistically significant corelation between post-operative Lund-Kennedy and SNOT-10 score. However, there was a significant improvement in post-operative SNOT-10 score compared to pre-operative score.

Conclusion:

Various emotional and psychological factors may affect the patient reported symptom score which might be the reason for this failure of co-relation. Thus, a combined symptomatic and endoscopic scoring system should be developed to assess the outcomes following endoscopic sinus surgery.

Keywords: Endoscopic Sinus Surgery, Lund Kennedy Score, Sinonasal Outcome Test-10

INTRODUCTION

Rhinosinusitis is a group of disorders characterized by inflammation of the mucosa of the paranasal sinuses. Chronic rhinosinusitis has a global prevalence of around 10.9% with significant impairment in health related quality of life.¹ Multimodality treatment for cases with chronic rhinosinusitis with or without sinonasal polyposis includes medical treatment and functional endoscopic sinus surgery. Outcomes following surgery is usually determined by post-operative healing which is affected by various factors which in turn affects the quality of life of the patient.

Various scoring systems have been put forth so far to evaluate the effectiveness of the treatment in cases with CRS with or without polyposis. Most of them are subjective and vary with interpreting surgeons. No single scoring system is usually effective in predicting the outcomes of surgery as cases with good healing on endoscopic evaluation may have poor symptomatic outcomes and cases with good symptomatic relief might not have relatable endoscopic findings.

This study compares the outcome of pre and post surgery using SNOT-10 and co-relates the post-operative SNOT-10 and post-operative Lund-

Kennedy score. The aim of our study is to correlate post-operative outcomes between SNOT-10 and Lund Kennedy score following bilateral endoscopic sinus surgery and to compare pre and post-operative SNOT-10 score following bilateral endoscopic sinus surgery.

MATERIAL AND METHODS

This study is a prospective comparative study which was conducted in Ganesh Man Singh Memorial Academy for ENT- Head and Neck Studies, Institute of Medicine, Kathmandu, Nepal. The duration of study was 12 months from August 2016 to August 2017. The inclusion criteria were patients of all gender with age more than 15 years and chronic rhinosinusitis with or without nasal polyp requiring bilateral FESS. Patients with previous history of sinus surgery were excluded from study.

All cases meeting the inclusion criteria presenting throughout the study duration were included. Cases meeting the inclusion criteria were admitted from OPD. Pre-operative SNOT-10 score was taken on day prior to surgery.² Bilateral endoscopic sinus surgery was performed by a single faculty. Following surgery, nasal pack were placed in bilateral nasal cavities, which were removed on second post-operative day, and patient was discharged on third post-operative day. Oral steroids and antifungals were prescribed as per need and diagnosis and douching was advised to all of the patients. Patients were followed up on third post-operative week when post-operative SNOT-10 score and Lund -Kennedy endoscopic score were taken.^{2,3} The data analysis was done using SPSS version 21. We considered p -value <0.05 as statistically significant.

RESULTS

Total of 37 patients who fulfilled the inclusion criteria were included in the study. Six cases could not be followed up. Our final sample size was 31. Twenty-one patients were male and ten were female. The age range was from 18 to 66 years with the mean age of 35.9 years. Most of our patients were at their 3rd and 4th decades of life with M: F ratio of 2:1. The pre-operative and post-operative scores by SNOT-10 and post-operative Lund Kennedy score and their comparison has been shown below in tabular form (Table 1, 2 & 3).

Statistical analysis of the results was done by SPSS software version 21 and means and standard deviation of scores were compared by using paired t test as well as Karl Pearson correlation coefficient.

There was overall improvement in all symptom scores using SNOT-10 post-operatively (Table 1). The most improved symptom of all was nasal obstruction and need to blow nose following the surgery. Total pre SNOT-10 mean score was 12.77 with S.D of 4.507 and total post SNOT-10 mean score was 2.45 with S.D. of 2.392. Difference in total pre and total post SNOT 10 mean scores were found to be 10.323 with S.D. of 5.016 at 95% confidence interval using paired t test. The results were statistically significant with p value <0.05 (Table 2).

Total Lund-Kennedy score on post-operative evaluation was 45 with mean score of 1.45 and S.D. of 1.588 and total post SNOT-10 score was 76 with mean score of 2.45 and S.D. of 2.392.

Karl Pearson correlation coefficient between post LK and post total SNOT-10 was calculated as -0.222 and mean scores were not statistically significant (Table 3).

Table 1: Pre and post-operative SNOT-10 score in patients with CRS with or without polyposis following bilateral endoscopic sinus surgery (n=31)

Symptoms	SNOT -10 Score	
	Pre-operative	Post-operative
Nasal obstruction	80	10
Need to blow nose	77	9
Sneezing	42	12
Running nose	51	6
Post nasal drip	18	1
Thick nasal discharge	25	3
Headache/Facial pressure	20	12
Loss of smell/Taste	57	19
Lack of goodnight sleep	12	4
Wake up tired	12	2
Total score	396	76

Table 2: Comparison of pre and post-operative mean SNOT-10 score in patients following bilateral endoscopic sinus surgery(n=31)

SNOT-10 Score	N	Mean	S.D.	p-value
Pre-operative	31	12.77	4.507	<0.05
Post-operative	31	2.45	2.392	

Table 3:Karl Pearson correlation coefficient between total post Lund Kennedy and total post SNOT-10 score in patients following bilateral endoscopic sinus surgery (n=31)

Post-operative Scoring system	N	Total score	Mean	Std. Deviation	p-value
Lund Kennedy	31	45	1.45	1.588	>0.05
SNOT-10	31	76	2.45	2.392	

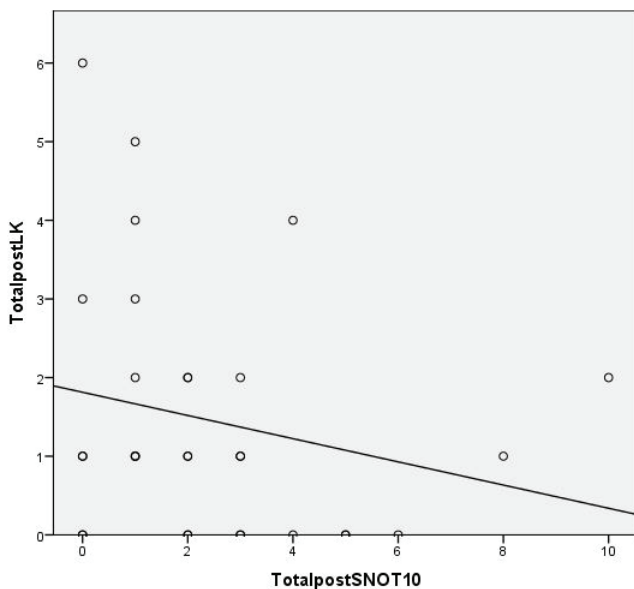


Fig. 1:Scattered plot showing correlation between total post LK and total post SNOT-10 in patients undergoing bilateral endoscopic sinus surgery (n=31)

DISCUSSION

There are numerous scoring systems for assessing the outcomes following endoscopic sinus surgery with different results in favor of either endoscopic or symptomatic scoring system. In our study, we compared pre and post-operative SNOT-10 symptom score and also assessed the correlation between the postoperative outcomes using commonly used Lund Kennedy endoscopic scoring and SNOT-10 score on 3rd post-operative

week following functional endoscopic sinus surgery.

More than one third of the patients(38.7 %) in our study were from middle age groups(30-45 years) with male:female ratio of 2:1. Epidemiological studies done on nasal polyposis by Bettega et al: and Settupane et al showed similar sex predilection.^{4,5} However, the disease prevalence was more in patients in their 5th decade of life.

Sinonasal outcome test is one of the patient reported outcome measures. It measures both sinonasal symptoms and general quality of life parameters. There are various SNOT scores based on number of symptoms analysed e.g. SNOT-10, SNOT-16, SNOT-22 etc. In our study, we used SNOT-10 score. There was a statistically significant post-operative improvement in SNOT-10 score. Psaltis et al in their study found similar results using SNOT-22 score.⁶ Similarly, Bradley et al in their study on 113 adults found a significant reduction in SNOT-20 scores as early as 3 months after surgery.⁷ Acharya et al in their prospective study on outcomes of functional endoscopic sinus surgery for chronic rhinosinusitis in 30 patients found a statistically significant improvement in post-operative SNOT-10 score compared to pre-operative score. However, two psychosocial symptoms; concentration and misery didn't show significant improvement.⁸

Lund Kennedy scoring system is one of the endoscopic measures to assess the outcomes following endoscopic sinus surgery. When we co-related this score with SNOT-10 score, the results didn't yield statistical significance. One of the reasons for this lack of co-relation could be the parameters measured in symptom score can be vague and vary individually. Mace et al in their study, showed a positive co-relation between Lund Kennedy system and the nasal symptom sub-score but not the functional and emotional sub-score.⁹ In contrast to our study, Psaltis et al in their study have shown a positive correlation between SNOT-22 symptom score and LK score in post-operative patients.⁶

One of the limitations of our study was a short-term follow up, which could have affected our results as complete mucosal healing may take upto 3 months post-operatively or more. Another limitation was a very small sample size with which we cannot generalize our outcomes.

CONCLUSION

Endoscopic sinus surgery for CRS with or without nasal polyps has a favourable outcome with improvement seen in symptomatic score using SNOT-10. Although endoscopic scoring system like Lund Kennedy score can be used to assess post-operative outcomes, its findings cannot be co-related with generalized symptomatic outcomes of the patient. Presence of emotional and functional parameters in symptom score system may be the reason for lack of correlation between endoscopic and symptom score system. So, a combined scoring system including both symptomatic scores and endoscopic scores will be beneficial to evaluate the post-operative outcomes following endoscopic sinus surgery

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