



Subjective and Objective Assessment of Outcome in Nasal Polyposis after Functional Endoscopic Sinus Surgery

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Abstract

Introduction: Nasal polyposis is chronic inflammatory disease of sinus and nasal mucosa leading to oedematous polyp protruding in nasal cavity. Anterior rhinoscopy, Nasal Endoscopy and CT scan form mainstay of diagnosis. . Surgical management (FESS) is considered for patients who have failed to respond to maximal medical treatment and for those with complications.

Materials & Methodology: A total of 50 patients were included in this study. The Lund-Mackay CT scan score recorded. Pre-operative Nasal Endoscopy Score and Pre-operative NOSE score was recorded. This score was analysed with Post-operative Nasal Endoscopy Score and Post-operative NOSE score at 6 months and 12 months.

Results: Both NOSE score and Nasal Endoscopy Score showed statistically significant improvement between Pre-operative and Post-operative 6 months score. However no statistically significant improvement between Post-operative 6 months score and Post-operative 12 months score. The Pre-operative CT Scan score had poorly positive correlation with Pre-operative Nasal Endoscopy Score. The Pre-operative Nasal Endoscopy Score correlated negatively with Preoperative NOSE score.

Conclusion: The CT scan score, Nasal Endoscopy Score and NOSE score need to interpreted together to get a comprehensive picture of spectrum of disease and helps maximally in patients undergoin FESS.

Keyword: Nasal polyp, FESS, Nasal Endoscopy Score, NOSE.

Introduction

Nasal polyposis is chronic inflammatory disease of sinus and nasal mucosa leading to oedematous polyp protruding in nasal cavity. It is a subgroup of Chronic Rhinosinusitis and is associated with asthma, aspirin intolerance. Nasal polyps are best thought of as 'chronic rhinosinusitis with nasal

polyps' (CRSwNP), and European guidelines define these conditions clinically as:

(i) Inflammation of the nose and paranasal sinuses associated

with two or more symptoms, one of which should be nasal blockage/obstruction/congestion or nasal discharge:

- +/- Facial pain/pressure

- Reduction or loss of smell and either
- (ii) Endoscopic evidence of
 - polyps and/or
 - Mucopurulent discharge from the middle meatus or oedema, mucosal obstruction primarily in the middle meatus and/or
- (iii) CT changes
 - Mucosal changes within the osteomeatal complex and/or sinuses.

In general, patients with nasal polyps will present with various symptoms that have generally persisted over months to years, progressing from mild nasal congestion with a watery rhinorrhoea to a persistent nasal obstruction associated with hyposmia or anosmia, as well as a thicker post nasal discharge and very occasionally headaches. Anterior rhinoscopy, Nasal Endoscopy and CT scan form mainstay of diagnosis. Endoscopic and CT-based staging systems are used to determine the extent of disease within the nose and sinuses, and facilitate both medical communication and evaluation of therapeutic responses. Medical treatment consists of mainly Intranasal Steroids and Systemic steroids improving air flow, reducing polyp size and decrease recurrence. Surgical management is considered for patients who have failed to respond to maximal medical treatment and for those with complications. Functional endoscopic sinus surgery (FESS) aims to improve sinus ventilation and drainage as well as removing polyps. Patients being treated for polyp disease derive the greatest benefit from functional endoscopic sinus surgery, and those whose main preoperative symptom is nasal obstruction or headache report higher benefit. Our study was aimed at reviewing subjective and objective improvement after FESS.

Table III: NOSE score

Criteria	Not a Problem	Very Mild Problem	Moderate Problem	Fairly Bad Problem	Severe Problem
Nasal Congestion or Stiffness	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/ exertion	0	1	2	3	4

Materials and Methodology

A total of 50 patients with Nasal polyposis was included in our study. The inclusion criteria was Nasal polyposis, age > 18 years, absence of comorbidities, Failed Maximal Medical Therapy, Histopathologically confirmed polyposis post-operatively. Revision cases were excluded.

All patients were clinically evaluated with anterior rhinoscopy and nasal endoscopy by same otorhinolaryngologist pre and post operatively.

Table I : Nasal Endoscopy Score

Criteria	Score
Polyp	0= absence of polyp 1= polyp in middle meatus 2= polyp beyond middle meatus
Oedema	0= absent 1= mild 2= severe
Discharge	0= no discharge 1= thin, clear discharge 2= thick, purulent discharge
Scarring	0= absent 1= mild 2= severe
Crusting	0= absent 1= mild 2= severe

Table II: Pre-operative Lund-Mackay CT Scan score

SINUS	LEFT	RIGHT
Maxillary (0,1,2)		
Anterior Ethmoid (0,1,2)		
Posterior Ethmoid (0,1,2)		
Sphenoid (0,1,2)		
Frontal (0,1,2)		
Ostiomeatal Complex (0 or 2)		
Total		

0= no opacification ; 1= partial opacification ; 2= total opacification
For Ostiomeatal complex: 0= not obstructed, 2= obstructed

CT scan was evaluated by radiologists who was blinded about patient characteristics.

The patients were asked to fill up the NOSE questionnaire pre- operatively and post operatively at 6 and 12 months after surgery.

The patients had their control visits on postoperative days 7, 14 and 28, and then these visits were on monthly basis. Other than regular postoperative nose toilet by saline, intranasal

corticosteroid therapy was prescribed to all patients for 3 months. endoscopic score through three time periods (pre-surgery, 6 and 12 months after the surgery) were analyzed.

Results

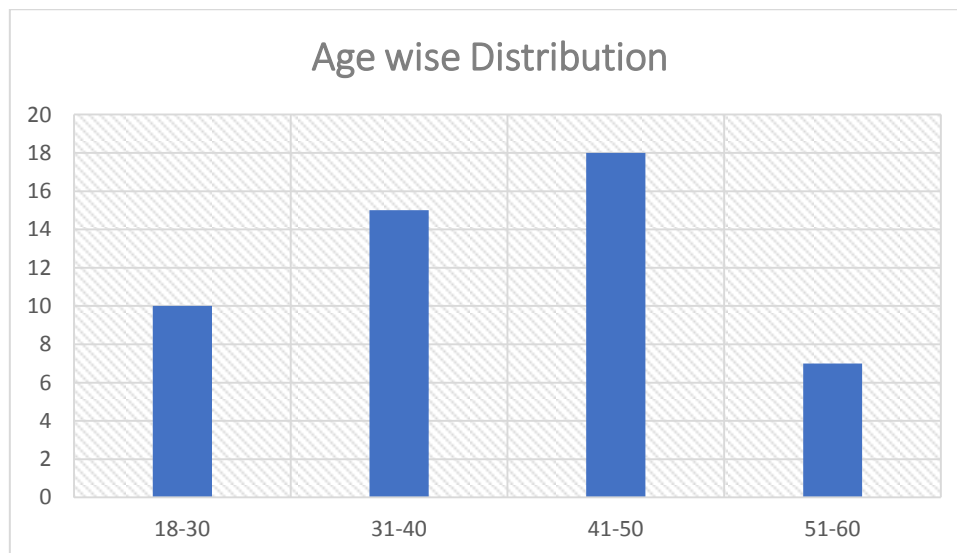


Fig I: Age wise Distribution

The Mean age is 46.9±14.6 years. Majority patients belonged to 41-50 years age group (Fig I). Only 34% of population were females and 66% were males (Fig II).

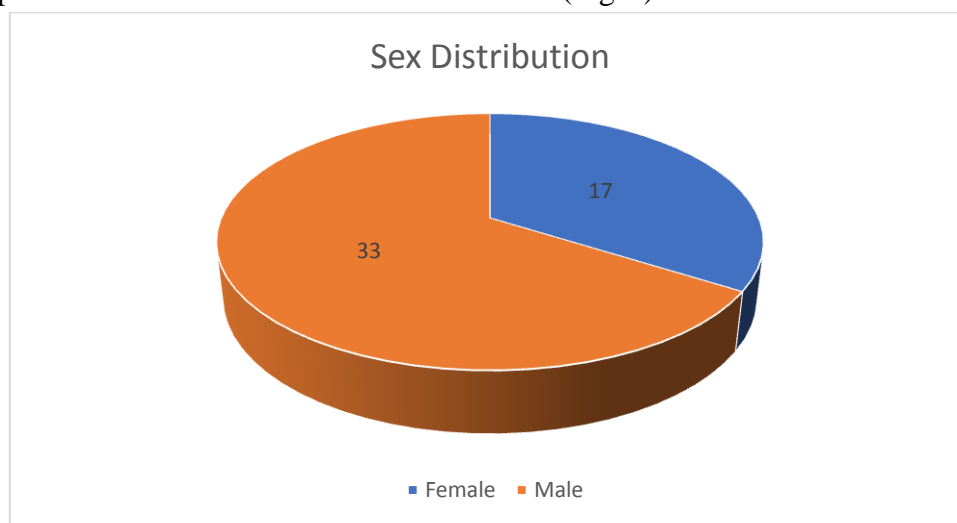


Fig II: Pie chart showing sex distribution

The Mean CT Scan Score was 18.2±1.70

Table IV: NOSE score

Statistics	Pre-operative	Post-Operative (6 months)	Post-operative(12 months)
Mean	63.8	27.52	25.72
SD	3.87	4.98	4.92

The Pre-operative and 6 months post-operative scores were statistically significant with Post-operative score being lower (p<0.0001) (Table IV).

The 6 months post-operative and 12 months post-operative score was not statistically significant (p= 0.2047) (Table IV).

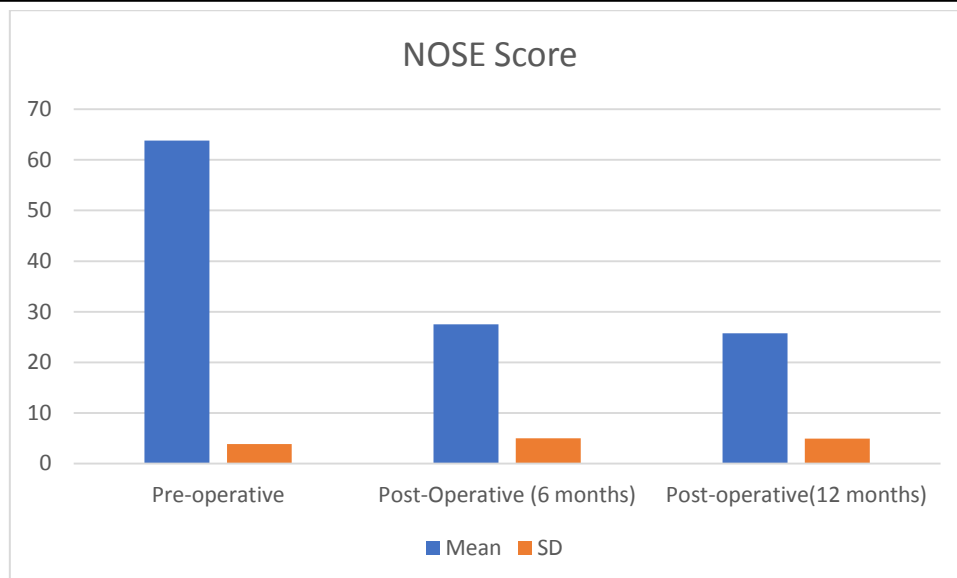


Fig III: NOSE Score

Table V: Nasal Endoscopy Score

Statistics	Pre-operative	Post-Operative(6 months)	Post-operative(12 months)
Mean	6.24	2.76	2.24
SD	1.64	1.12	1.33

The Pre-operative and 6 months post-operative scores were statistically significant with 6 months post-operative score being lower ($p < 0.0001$). (Table V)

The 6 months post-operative and 12 months post-operative score was not statistically significant ($p = 0.1414$). (Table V)

The Pre-operative CT Scan score had poorly positive correlation with Pre-operative Nasal Endoscopy Score ($r = 0.026$)

The Pre-operative Nasal Endoscopy Score correlated negatively with Preoperative NOSE score ($r = -0.6939$).

Discussion

The mean age was 46.9 ± 14.6 years in our study. In a study by Djukic et al^[1] mean age was 48.0 ± 14.3 years and males were affected more than females similar to our study. In another study^[2] mean age was 46.3 ± 14.9 with males more than females being affected by nasal polyposis.

Our mean CT scan score was 18.2 ± 1.70 . Various studies have obtained mean CT scan score 18.3 ± 4.8 ^[1], 11.8 ± 6.36 ^[3], 10.9 ± 6.9 ^[2] and 13.2 ± 0.8 ^[4].

The NOSE score was statistically significant between pre-operative and post-operative 6 months. However it was not significant between 6 months post-operative and 12 months post-operative. In a study similar significant improvement in NOSE score was obtained^[2]. This study was the first to evaluate the NOSE scale as an outcome measure for nasal blockage in the CRS population. The NOSE scale significantly improved in both the CRSsNP and CRSwNP subgroups following endoscopic sinus surgery, although a direct relationship with improved olfaction was not demonstrated. However, olfactory impairment in CRS is very complex than just a conductive/obstructive problem and can explain the lack of relationship with the NOSE scale^[2].

Regardless of excellent subjective results of treatment, Kennedy et al.⁵ pointed that residual disease was recorded endoscopically in 44.9 % of patients after mean follow-up of 18 months. Robinson et al.^[6] reported that 57–74 % of patients with the chronic rhinosinusitis after FESS manifested improvement of endoscopic score. Nair et al.^[7] emphasized a significant

improvement of endoscopic score in patients with the CRS 1 year after operation, but also a tendency of score increase in NP subgroup. In our study Nasal endoscopic Score improved significantly at 6th post-operative months but not at 12th post-operative months.

Ryan et al.^[8] correlated symptomatology, endoscopic, and radiological criteria in CRS patients and found poor correlation but found subjective impaired sense of smell to be correlating closely with abnormal endoscopic findings. Kenny et al.^[9] correlated smell sense with radiological findings only and found it significant. Significant correlation of olfactory scores with each of CT, endoscopic, and subjective scores both before and 3 months after sinus surgery^[3].

Pre-operative CT scan score correlated with Preoperative Endoscopy Score^[10]. No correlation between Endoscopy score and pre or post-operative symptoms score^[10]. This is consistent with the body of available literature showing mismatch between subjective and objective findings. Similar findings were seen in our study.

Rosbe et al.^[11] investigated whether symptoms and endoscopic grade could be predicted by CT scan. For patients with objective findings on imaging and endoscopy, nasal obstruction and postnasal drainage were the most likely to correlate, and headache and facial pain were the least likely. The study by Stankiewicz and Chow^[12] showed endoscopy to be a good predictor of CRS only if nasal polyps, purulence, or edematous mucosa was present.

The possibility that endoscopy could be used not only for diagnostic purposes, but also as a predictor of future recurrence and need for surgery, was raised by Kennedy et al^[13] These authors confirmed that endoscopy and CT grades often do not correlate with preoperative symptom scores.

Conclusion

FESS performed in our patients resulted in significant improvement as assessed by Nasal

Endoscopy Score and NOSE symptom score. CT scan cannot provide adequate prediction of Symptomatic involvement and Nasal Endoscopy score did not correlate with NOSE symptom Score. Hence CT scan score, Nasal Endoscopy Score and NOSE score should be evaluated together to get comprehensive picture of Clinical Scenario when patients are planned to undergo FESS.

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