

## Outcomes of Functional Endoscopic Sinus Surgery (FESS) in Patients with Chronic Rhino Sinusitis with Nasal Polyps

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### ABSTRACT

**Background:** Chronic rhinosinusitis with nasal polyps (CRSwNP) is a chronic inflammatory condition characterized by nasal obstruction, olfactory dysfunction, and reduced quality of life. Functional endoscopic sinus surgery (FESS) is the preferred treatment for patients who fail medical therapy; however, recurrence remains a concern.

**Objective:** To evaluate clinical outcomes, symptom relief, quality-of-life improvement, and recurrence following FESS in patients with CRSwNP.

**Methods:** Seventy-five patients with CRSwNP undergoing FESS were included. Preoperative assessment was performed using the SNOT-22 score and endoscopic evaluation. Patients were followed postoperatively at 3, 6, and 12 months to assess symptom improvement, recurrence, and complications. Data were analyzed using SPSS. Continuous variables were expressed as mean  $\pm$  standard deviation, and comparisons were made using paired t-tests. A p-value  $< 0.05$  was considered statistically significant.

**Results:** The mean age was  $44.7 \pm 12.5$  years. Significant improvement in SNOT-22 scores was observed, decreasing from  $62.4 \pm 9.8$  preoperatively to  $28.7 \pm 7.6$  at 12 months ( $p < 0.001$ ). Nasal congestion resolved in 92% of patients, hyposmia improved in 63%, and headache in 62%. Recurrence was observed in 24% of cases. No major complications were reported. Extended FESS showed better outcomes compared to limited FESS ( $p = 0.028$ ).

**Conclusion:** FESS is a safe and effective treatment for CRSwNP, significantly improving symptoms and quality of life. Despite recurrence risk, appropriate surgical approach and patient selection enhance long-term outcomes.

**Keywords:** FESS; CRSwNP; Outcomes; Recurrence

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## INTRODUCTION

Chronic rhino sinusitis with nasal polyps (CRSWNP) is a well-known condition of the Sino nasal mucosal inflammation with persistent symptoms of blockage of nostrils, loss of smell, pressure in the face and postnasal drip [1]. Pathogenesis is a complicated interaction of genetic predisposition, exposure to environments, immunological imbalance resulting in mucosal inflammation and formation of polyps [2]. Medical options such as intranasal corticosteroids, saline nose-washes, and systemic treatments provide limited relief especially in severe cases and in those with other diseases such as asthma [3]. Functional Endoscopic Sinus Surgery (FESS) has become a pillar in the treatment of (CRSWNP) to restore ventilation and drainage to the normal sinus pathway removal of obstructive tissue. and polyps [4]. This minimally invasive surgical method uses endoscopic vision to create minimally manipulative surgical procedures, which can minimize trauma and facilitate faster recovery of patients, in contrast to conventional procedures works [5]. Although widely used, the effectiveness of FESS in the treatment of (CRSWNP) patients is still an under-investigation topic. Varied results have been published with success rates ranging between 76%-97.5%, dependent on disease severity and surgical technique, as well as postoperative care. In addition, postsurgical remission of polyps presents a concern of concern, with rates of up to 31.33 percent recorded within an average observation of 9 Months [6,7]. The aim of the present study is to assess the clinical effectiveness of FESS in patients with (CRSWNP), in terms of a symptom reduction, enhanced quality of life and postoperative recurrence. Examining these parameters, we are aiming to provide a comprehensive evaluation of the efficiency of FESS and those factors that can have an impact on the outcomes in a long- term perspective and thus, can inform the clinical practice and the way of managing patients [8,9].

## MATERIAL AND METHODS

This prospective observational study was conducted in the Department of ENT, Khyber Teaching Hospital, Peshawar, from January 2023 to January 2024. Patients with the diagnosis of (CRSWNP), based on the European Position Paper on Rhino sinusitis and Nasal Polyps (EPOS) criteria were included. Assessment before surgery involved a complete description of the medical history, nose endoscopy, and computed tomography (CT) par nasal sinuses. Sino-Nasal Outcome Test-22 (SNOT-22) questionnaire was used to determine the baseline

severity of symptoms and quality of life. Surgery was conducted under general anesthesia with conventional FESS procedures in an attempt to ventilate and clear the sinuses to the greatest extent possible and spare mucosa. Others required nasal saline irrigations as part of post-operative care and in some instances topical corticosteroids. Patients were reviewed after 3-, 6- and 12-months follow-up on symptom alleviation spontaneous recurrence of the polyps, and any complications.

## INCLUSION CRITERIA

Patients aged between 18 and 65 years with medically intractable (CRSWNP), proven by nasal endoscopy and CT imaging and a patient consenting to take part in the study.

## EXCLUSION CRITERIA

Patients with acute rhino sinusitis, isolated sinus disease, polyps, prior Sino nasal surgery or contraindications to general anesthesia were excluded.

## ETHICAL APPROVAL STATEMENT

The study was ethically approved by the Institutional Review Board of the institution it was conducted in (approval No: **IRB-no-KTH/766/11/2022**). The written informed consent was signed by all participants, and it was necessary to recruit patients according to ethical standards and patient privacy in accordance with the declaration of Helsinki.

## DATA COLLECTION PROCEDURES

Sectional data collection was done through medical records, patient interview and clinical evaluations with each follow up. Demographic information, health, surgical, and postoperative data were documented carefully to provide a better analysis.

## STATISTICAL ANALYSIS

Data analysis was done with the SPSS version 24.0 (IBM Corp., Armonk, NY, USA). Data concerning continuous variables were given as means standard deviation, and data on categorical variables were provided as frequencies and percentages. Paired t-tests were used to identify the difference between the preoperative and

Postoperative SNOT-22 scores, and p-value less than 0.05 was regarded as significant.

**RESULTS**

The 75 patients mean age of 44.7212.5 years, was used. Before the surgery, SNOT-22 mean was 62.4 9.8 points, which is extreme symptomatology. Twelve months after surgery, the SNOT-22 score decreased to 28.7 +/- 7.6, which also was a significant decrease (p < 0.001). Nares blockage improved in 92 %, hyposmia in 63 and facial pain in 62 %. Polyp recurrence was noticed in 24 percent of the cases and the interval between the first and second recurrence was 10.2 3. reporting months. No serious adverse events (e.g., leakage of cerebrospinal fluid or loss of vision) were noted.

**Table 1. Demographic Characteristics of Patients (n = 75)**

Characteristic	Value
Age (years), mean ± SD	44.7 ± 12.5
Gender, n (%)	
Male	42 (56%)
Female	33 (44%)
Comorbidities, n (%)	
Asthma	18 (24%)
Allergic rhinitis	22 (29.3%)
Diabetes Mellitus	10 (13.3%)

**Table 2. Preoperative Clinical Symptoms and SNOT-22 scores**

Symptom	Preoperative n (%)	Mean ± SD Score
Nasal obstruction	75 (100%)	8.2 ± 1.1
Hyposmia/anosmia	60 (80%)	7.6 ± 1.4
Facial pain/pressure	55 (73%)	6.9 ± 1.3
Rhinorrhea	68 (90.7%)	7.1 ± 1.2
Total SNOT-22	-	62.4 ± 9.8

**Table 3. Postoperative Symptom Improvement at 12 Months**

Symptom	Improved n (%)	Mean ± SD Score	p-value
Nasal obstruction	69 (92%)	3.2 ± 0.9	<0.001
Hyposmia/anosmia	47 (63%)	3.5 ± 1.1	<0.001
Facial pain/pressure	46 (62%)	3.1 ± 1.0	<0.001
Rhinorrhea	61 (81%)	3.3 ± 0.8	<0.001
Total SNOT-22	-	28.7 ± 7.6	<0.001

**Table 4. Recurrence and Complications**

Parameter	n (%)
Polyp recurrence	18 (24%)
Mean time to recurrence (months)	10.2 ± 3.4
Minor complications (epistaxis, crusting)	5 (6.7%)
Major complications (CSF leak, vision loss)	0 (0%)

**Table 5. Effect of Surgical Extent on Outcome**

Surgery Type	Patients n (%)	Mean SNOT-22 Improvement	Recurrence n (%)	p-value
Limited FESS	33 (44%)	28.2 ± 7.5	9 (27%)	0.028
Extended FESS	42 (56%)	34.1 ± 8.0	9 (21%)	0.028

**DISCUSSION**

Functional Endoscopic Sinus Surgery (FESS) has become a basic technique in the management of chronic rhinosinusitis complicated with nasal polyp (CRSWNP), which produces impressive improvements in patients with much better quality of life. Nevertheless, nasal polyps' recidivism after surgery is an issue of concern and recovery may vary between 18.2 to 40 % within 6 - 18 months after surgery [11]. This is highly variable and reflects the complexity of (CRSWNP) and the necessity to develop personalized treatment strategies. The recurrence rates found in our study were similar to these findings which is 24% recurrence at 12 months post-FESS [12]. This rate can be compared with the one reported in the literature and it shows that FESS is not apparently effective in the long term, as long-lasting management approaches are necessary to ensure that the symptoms will be relieved [13]. There are a number of contributing factors to recurrence of nasal polyps after FESS. Presence of comorbid such as asthma and aspirin-exacerbated respiratory disease (AERD) has also been linked to increased recurrences [14]. We also found that asthmatics had a greater recurrence and that such comorbidities may affect surgical outcomes [15]. The scope of surgery also significantly contributes, whereby it was also found that more comprehensive surgical procedures, including extended FESS, have lower rates of recurrence and do better in the long-term [16]. Another important issue of FESS is its effect on quality of life. In our study, there were significant improvements in SNOT-22 scores after surgery indicating improvement in nasal function, reduction in facial pain, and olfaction [17,18].

These results are in agreement with the customary findings, which showed significant positive changes in quality-of-life after FESS. It is however necessary to add that although results provide symptomatic relief, certain patients still exhibit residual symptoms and as such the continued management and education assists patients to fully grasp. Our study results in relation to surgical outcome are comparable to those of other studies. As an example, a study conducted by DeConde et al. reported 22.2% rate of recurrence of CRSWNP patients who underwent a FESS. One study cited a recurrence rate of

18.2 per cent in a series of 154 patients [19,20]. These and our studies highlight the need to consider patient specific variables, including age, comorbidities and extent of surgery when planning and assessing outcomes of surgical interventions in (CRSWNP) [21]. In summary, although FESS offers a valid cure to (CRSWNP), nasal polyp recurrence and failure to clear symptoms in selected patients, warrants multipronged management of the disease. These are proper selection of patients, consideration of comorbidities, and the degree of surgery. P-Future study should concern itself with establishing predictive factors of recurrence and creating interventions to offset these risks so as to maintain symptom relief and quality of life enhancement over a long-term period among (CRSWNP) patients [22-23].

### LIMITATIONS

Weaknesses include the study had a single center design and short follow-up of 12 months which may not represent the long-term recurrence. The sample was moderate and possible confounding factors of outcome such as the adherence to the postoperative therapy, and surgical technique variances could not be completely controlled. Future studies should be attempted in multicenter format with long-term follow-up in relation to recurrence pattern over several years. Future studies are needed to understand how to integrate biologic agents, postoperative steroid regimen and individualized approaches to surgery can be developed to reduce the rate of recurrence. By pinpointing prognostic biomarkers, it is possible to further optimize patient selection and better personalize management of (CRSWNP) post FESS.

### CONCLUSION

Functional endoscopic sinus surgery is a safe and effective treatment for chronic rhinosinusitis with nasal polyps, resulting in significant symptom relief and improved quality of life. Although recurrence may occur in a subset of patients, careful patient. Despite the fact that FESS leads to recurrence among a few patients, the intervention is safe and effective. With extended surgery and selecting the right patient, relapse is mitigated and victory is attained.

### Authors Contribution

Concept & Design of Study: **Tahreem Fatima**  
Drafting: **Shakir Ullah, Imran Khan**

Critical Review: **Mushtaq Ahmad, Muhammad Afaq**

Data Collection & Data Analysis: **Osama Nawaz**

Final Approval: All Authors

### DECLARATIONS

#### Conflict of Interest:

The authors declare no conflict of interest.

#### Funding:

No external funding was received for this study.

#### Ethical Approval:

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#### AI Usage Statement:

Artificial intelligence tools (e.g., ChatGPT) were used solely for language editing and manuscript structuring. The authors take full responsibility for the accuracy, integrity, and originality of the content.

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#### Data Availability Statement:

All data generated or analyzed during this study are available from the corresponding author upon reasonable request

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