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## **Efficacy functional endoscopic sinus surgery (FESS) for the treatment of chronic rhinosinusitis**

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**Abstract**--Objective: To assess the efficacy and quality of life after functional endoscopic sinus surgery (FESS) in individuals who have chronic rhinosinusitis. Methods: This prospective study was held in the department of ENT of Aziz Bhatti Shaheed Teaching Hospital and ENT, Head and Neck Surgery department, Pak International Medical College and Peshawar Institute of Medical Sciences (PIMS), Hayatabad Peshawar for the duration from September 2021 to September 2022. The study had 80 patients in total who underwent FESS surgery. Inclusion criteria: radiographically and clinically suggested disease of the paranasal sinuses and nose, such as rhinosporidiosis, nasal polyposis, chronic recurrent acute sinusitis and patients who are not

improving after receiving the proper surgical care (antral lavage) and medical care. Exclusion criteria: Nasal and paranasal sinus Malignant conditions. Patients with acute sinusitis who have been diagnosed with intracranial complications and patients with intracranial complications. The data was analyzed with SPSS 21.0. Results: There were 80 patients in total. In this study, ethmoid polyps were operated in 30 (37.5%) patients, chronic rhinosinusitis in 23 (28.8%), Antrochoanal polyps in 12 (15%) patients, rhinosporidiosis in 10 (12.5%) patients, and in 5 (6.2%) patients with inverted papilloma's were operated. Per-operative difficulties included gross DNS in 9 patients (11.3%), unusual bleeding in 8 individuals (10%), and concha bullosa in 6 patients (7.5%). The most communal post-operative complications include synechiae were in 2(2.5%) of patients, Periorbital ecchymoses in 10(12.5%), infection in 3(3.8%) and epiphora in 2(2.5%). On the second postoperative day, maximum patients 65 (81.3%) were discharged from the hospital. Conclusions: Despite certain drawbacks, functional endoscopic sinus surgery outcomes are improving quickly, are very effective, involve less time, are less expensive, and require less hospitalization.

**Keywords**--chronic rhinosinusitis, functional endoscopic sinus surgery (FESS), treatment.

## Introduction

One common clinical symptom that affects people of all ages and genders is sinusitis. The mucous membranes inflammation which lines the paranasal sinuses and nasal cavities, the fluids within the underlying bone and these cavities is referred to as sinusitis<sup>1-2</sup>. Chronic rhinosinusitis is sinus inflammation that lasts longer than 12 weeks and worsens with lingering signs and symptoms that don't resolve completely<sup>3-4</sup>. The presence of two or more of the main symptoms of chronic rhinosinusitis, such as facial fullness or congestion, nasal congestion, runny (purulent) or discolored nasal discharge, decreased sense of smell or anosmia (smell disorder), as well as one to two minor symptoms, such as headache, bad breath, exhaustion, toothache, cough, or pressure or fullness in the ears, can also indicate the condition. FESS is the most popular procedure for treating chronic rhinosinusitis<sup>5-6</sup>. FESS is far less intrusive than earlier surgical techniques and is minimally invasive, meaning it is carried out without making an open incision<sup>7</sup>. The drainage and ventilation capabilities of the paranasal sinuses play a major role in the healthiness and appropriate function of the sinuses as well as the mucous membranes that cover them<sup>8-9</sup>. The sinuses' proper ventilation and drainage are frequently hampered by abnormalities in the osteomeatal complex.

The main sinus drainage pathway is in this location, which is also the narrowest, making it more likely that any pathology may cause nose and sinus congestion<sup>10-11</sup>. The goal of functional endoscopic sinus surgery (FESS) is to treat the primary pathology while preserving as much as possible of the physiological processes and anatomical features of the sinuses and nose. According to a research by

Bassiouny et al, after FESS, the maxillary sinus's ventilation and drainage improve, and the mucosa there recovers to normal in patients with chronic sinusitis<sup>12</sup>. Preoperative CT is currently regarded as the first line investigation for determining both the degree of the disease and the precise, thorough normal structure of the sinuses after a comprehensive physical examination, conventional radiography and history taking. The careful cleansing of the operative cavity is crucial to the success of endoscopic procedures<sup>13</sup>. Following surgery, patients are frequently checked on to clear away blood clots and debris, prevent synechia, and assess recovery. To determine recovery, a 3- to 6-month long postoperative follow-up is needed. In skilled hands, reported FESS complications are surprisingly few.

The most frequent side effects include synechiae, hemorrhage, and orbital ecchymosis<sup>14</sup>. Blindness caused by optic nerve injury is the most severe and uncommon side effect of FESS. Leakage of cerebrospinal fluid is another serious problem. Today, functional endoscopic sinus surgery (FESS) is the preferred method for treating chronic rhinosinusitis that does not improve with medication. Endoscopic sinus surgery is becoming more and more popular every day<sup>15</sup>. Our capacity to identify and treat sinus disease has substantially benefited from significant advancements in imaging, technology, and philosophy. In our nation, endoscopic sinus surgery is becoming more and more common. However, research on functional endoscopic sinus surgery is currently scarce. This study's goal is to assess FESS's efficiency, its drawbacks and complications as well as its outcomes.

## **Methods**

This prospective study was held in the department of ENT of Aziz Bhatti Shaheed Teaching Hospital and ENT, Head and Neck Surgery department, Pak International Medical College and Peshawar Institute of Medical Sciences (PIMS), Hayatabad Peshawar for the duration from September 2021 to September 2022. The study had 80 patients in total. Inclusion criteria: radiographically and clinically suggested disease of the paranasal sinuses and nose, such as rhinosporidiosis, nasal polyposis, chronic recurrent acute sinusitis and patients who are not improving after receiving the proper surgical care (antral lavage) and medical care.

## **Exclusion criteria**

Nasal and paranasal sinus Malignant conditions. Patients with acute sinusitis who have been diagnosed with intracranial complications and patients with intracranial complications. The data was analyzed with SPSS 21.0.

## **Results**

There were 80 patients in total. In this study, ethmoid polyps were operated in 30 (37.5%) patients, chronic rhinosinusitis in 23 (28.8%), Antrochoanal polyps in 12 (15%) patients, rhinosporidiosis in 10 (12.5%) patients, and in 5 (6.2%) patients with inverted papilloma's were operated (Table-1).

Table I  
Shows the various causes for FESS surgery

Diseases	No(%)
Ethmoidal polyp	30(37.5%)
Chronic rhinosinusitis	23(28.8%)
Rhinosporidiosis	10(12.5%)
Antrochoanal polyp	12(15%)
Inverted papilloma	5(6.2%)

Per-operative difficulties included gross DNS in 9 patients (11.3%), unusual bleeding in 8 individuals (10%), and concha bullosa in 6 patients (7.5%). (Table-II)

Table II  
Shows the per-operative difficulties of FESS

Difficulties	No(%)
Gross DNS	9(11.3%)
Unusual hemorrhage	8(10%)
Concha bullosa	6(7.5%)
No difficulties	57(71.2%)

The most communal post-operative complications include synechiae were in 2(2.5%) of patients, Periorbital echymoses in 10(12.5%), infection in 3(3.8%) and epiphora in 2(2.5%). (Table III).

Table III  
Shows the post-operative complications

Complications	No (%)
Synechiae	2(2.5%)
Epiphora	2(2.5%)
Infection	3(3.8%)
Periorbital echymoses	10(12.5%)
Blindness	0
Haemorrhage	4(5%)
CSF leakage	0
No complication	59(73.7%)

In 77.5% of cases, all symptoms completely disappeared. (Table IV).

Table IV  
Shows the results of FESS surgery

Outcome	No (%)
Persistence of diseases	8(10%)
Completely symptom free	62(77.5%)
Partial relief	10(12.5%)

On the second postoperative day, maximum patients 65 (81.3%) were discharged from the hospital. (Table V).

Table V  
Shows the mean stay in hospital

Duration	No (%)
24-48 hours	65(81.3%)
48 hrs-7 days	15(18.7%)

## Discussion

The study included 80 patients who were prospectively assessed in the Otorhinolaryngology department. As with other conventional tests, numerous diseased entities were treated endoscopically in this investigation. In this study, ethmoid polyps were operated in 30 (37.5%) patients, chronic rhinosinusitis in 23 (28.8%), Antrochoanal polyps in 12 (15%) patients, rhinosporidiosis in 10 (12.5%) patients, and in 5 (6.2%) patients with inverted papilloma's were operated. The majority of the 57 patients (71.2%) in this FESS series underwent surgery without any complication. However, significant issues were noted, Per-operative difficulties included gross DNS in 9 patients (11.3%), unusual bleeding in 8 individuals (10%), and concha bullosa in 6 patients (7.5%). In 59 (73.7%) of the patients, there were no problems according to the FESS scale, although during postoperative observation, most communal complications include synechiae were in 2(2.5%) of patients, Periorbital echymoses in 10(12.5%), infection in 3(3.8%) and epiphora in 2(2.5%). Their results agreed with those of Rahman MJ et al<sup>16-17</sup>. but disagreed with those of Gross et al., who found 1% synechia<sup>18-19</sup>. JinG et al reported that after FESS surgery, 81.67% of patients reported complete symptom alleviation, 11.67% reported partial symptom reduction, and 6.67% reported persisting condition<sup>20-21</sup>. Smith LF et al carried out a study which exhibited that 13 patients (23.33%) were discharged after 7-days and the majority (76.67%) of patients were discharged from the hospital having FESS surgery after day two<sup>22-23</sup>. Rahman MZ et al results are comparable to this study<sup>24-25</sup>.

## Conclusion

Careful patient selection based on history, physical examination, and appropriate paranasal sinus imaging can result in a favorable surgical outcome. For one to be proficient in functional endoscopic sinus surgery, one must receive the proper training in sinuses anatomy's.

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