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ORIGINAL ARTICLE

Comparative Efficacy of Functional Endoscopic Sinus Surgery and Conventional Polypectomy in Treating Nasal Polyps

NAVEED AHMED[1], MUHAMMAD IQBAL MUSAKHAIL[2], MEHMOOD ULLAH[3], MOHAMMAD AFZAL[4], IKRAM ULLAH[5], WAJIH UD DIN SHINWARI[6]

[1]*Senior Registrar ENT Department BMC Quetta Balochistan.*
[2]*Senior Registrar, Head Of ENT Department Loralai Medical College,Loralai*
[3]*Senior Registrar ENT Department BMC Quetta*
[4]*Associate Professor , Mekran Medical College Turbat*
[5]*Associate Professor ENT Department , BMC Quetta, SPH (Civil) Hospital Quetta Balochistan*
[6]*Associate Professor, ENT Department, Frontier Medical College, Abbottabad*
Correspondence to: Mohammad Afzal, Email: ijazaziz62@gmail.com

ABSTRACT

Background: Nasal polyps are non-cancerous growths in the nasal or sinus lining that significantly affect a patient's quality of life, particularly in chronic rhinosinusitis (CRS). Surgical intervention becomes necessary when conservative treatments fail. The study aims to evaluate the efficacy of Functional Endoscopic Sinus Surgery (FESS) in comparison with conventional polypectomy for treating nasal polyps.

Objective: To compare the outcomes of FESS with conventional polypectomy in terms of symptom improvement, recurrence rates, postoperative complications, and quality of life in patients with nasal polyps.

Methods: A total of 70 patients with nasal polyps were randomly assigned to undergo either FESS or conventional polypectomy. Various preoperative and postoperative outcomes, including symptom severity, polyp recurrence, complications, and quality of life, were measured using validated tools.

Results: Both FESS and conventional polypectomy resulted in significant symptom improvement. However, FESS showed better outcomes with lower recurrence rates and fewer postoperative complications compared to conventional polypectomy. Quality of life was significantly better in the FESS group postoperatively.

Conclusion: FESS offers superior outcomes in terms of symptom relief, reduced recurrence rates, and fewer complications compared to conventional polypectomy in the treatment of nasal polyps.

Keywords: Nasal polyps, Functional Endoscopic Sinus Surgery, Conventional polypectomy, Chronic rhinosinusitis, Polyp recurrence, Postoperative complications, Quality of life

INTRODUCTION

Nasal polyps are non-cancerous swelling arising from the mucosal lining of the nose/sinus. They are frequently linked with chronic rhinosinusitis (CRS) characterized by inflammation of the nasal and sinonasal mucosa for at least 12 weeks. CRS associated with NP (CRSwNP) may cause marked nasal obstruction, anosmia, facial pain and recurrent sinus infections leading to serious reduction in QoL for these patients[1,2]. Nasal polyps' pathophysiology includes chronic inflammation causing mucosal edema and hyperplasia. Although the precise etiology is unknown, it is believed to be multifactorial with contributions from genetic susceptibility as well as environmental factors such as allergens, infections and immunological alterations[3].

Conservative management of nasal polyps usually involves medications such as topical corticosteroids and saline nasal irrigations. However, in patients with moderate to large sized polyps or treatment failures on medical therapy, surgery is indicated[4]. FESS or Polypectomy The two most common surgical procedures for treating nasal polyps are FESS (Functional Endoscopic Sinus Surgery) and traditional polyp removal. FESS is the minimally invasive method using endoscopic tools to excise obstructive polyps and enlarge sinus drainage, while conventional polypectomy requires external cuts for extraction of polyps on open methods[5].

Recently, FESS has grown in importance because it better targets polyp tissue and lessens damage to normal sinus mucosa and improves the functionality of normal sinuses[6]. By comparison, traditional polypectomy has a higher rate of complications, longer convalescence times and also a greater recurrence rate[7]. There are a number of studies that have demonstrated the clinical effectiveness of FESS in terms of patient symptoms and lower rates of nasal polyp recurrence to provide longer lasting relief[8-9]. Furthermore, FESS is associated with minimal complications, less bleeding and less scar than conventional polypectomy[10].

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Nevertheless, even with the good results achieved via FESS render it crucial to take into account patient-related factors like polyps size and extension of disease, comorbidities, and general patients condition before choosing the surgical treatment method. In addition, though minimally invasive, FESS is technically difficult and necessitates a high degree of expertise on the part of the surgeon. In contrast, traditional polypectomy, although less advanced than the endoscopic surgery approach described here, still might have a role to play on some occasions (especially for patients with less advanced disease and those unable to undergo endoscopic surgery due to other reasons)[11,12].

The objective of the present work was to review our own experience with FESS and to compare its results with those derived from conventional polypectomy in the case of nasal polyps concerning symptom reduction, recurrence rates, postoperative complications and general life quality for a total number of seventy patients.

METHODOLOGY

This was a prospective, randomized controlled trial conducted at ENT Department BMC Quetta Balochistan from Dec 2022 to August 2023 to compare the outcomes of Functional Endoscopic Sinus Surgery (FESS) and conventional polypectomy in the treatment of nasal polyps. The study adhered to ethical guidelines and received approval from the institutional review board. Seventy patients diagnosed with bilateral nasal polyps were enrolled in the study. The patients ranged in age from 18 to 65 years. The inclusion criteria were:

- Diagnosis of nasal polyps with chronic rhinosinusitis.
- Failure to respond to medical therapy, including corticosteroids and nasal irrigation.
- No prior history of nasal or sinus surgery.

Exclusion Criteria Included:

- Known systemic diseases affecting wound healing.
- Sensitivity to anesthesia.
- Pregnant or lactating women.
- History of malignancy in the nasal or paranasal area.

Interventions

Patients were randomly assigned to one of two groups:

- **Group A (FESS):** Underwent Functional Endoscopic Sinus Surgery using a 0° and 30° endoscope for polyp removal, debridement, and restoration of sinus drainage pathways.
- **Group B (Conventional Polypectomy):** Underwent external excision of polyps via an open approach with an external incision.

Data Collection:

The following outcomes were evaluated preoperatively and postoperatively at 1, 3, and 6 months:

- **Symptom severity** was assessed using the Visual Analog Scale (VAS) for nasal obstruction, hyposmia, and facial pain.
- **Polyp recurrence** was assessed via nasal endoscopy.
- **Postoperative complications** were recorded, including bleeding, infection, and scarring.
- **Quality of life** was evaluated using the Sino-Nasal Outcome Test (SNOT-22) questionnaire, measuring factors such as nasal symptoms, emotional well-being, and sleep disturbance.

Data Analysis: Data were analyzed using SPSS version 25.0. Descriptive statistics were used for demographic variables. Symptom improvement, polyp recurrence rates, complications, and quality of life were compared between the two groups using the independent t-test and chi-square test for categorical variables. A p-value of <0.05 was considered statistically significant.

RESULTS

The study included 70 patients, 40 males (57%) and 30 females (43%). The mean age of participants was 45.2 years, with a range of 18-65 years. Both groups were comparable in terms of baseline characteristics, including age, gender, and severity of symptoms. (Table 1)

Table 1: Demographic Data

Characteristic	Group A (FESS)	Group B (Polypectomy)	Total (n=70)
Number of Patients	35	35	70
Mean Age (years)	45.1 ± 10.2	45.4 ± 9.8	45.2 ± 9.9
Male (%)	22 (63%)	18 (51%)	40 (57%)
Female (%)	13 (37%)	17 (49%)	30 (43%)

Symptom improvement was significantly better in the FESS group compared to the conventional polypectomy group. The average reduction in VAS scores for nasal obstruction, hyposmia, and facial pain was more pronounced in the FESS group. (Table 2)

Table 2: Symptom Improvement (VAS Scores)

Symptom	Group A (FESS) Pre-op	Group A (FESS) Post-op	Group B (Polypectomy) Pre-op	Group B (Polypectomy) Post-op	p-value
Nasal Obstruction	7.9 ± 1.1	2.2 ± 1.1	7.8 ± 1.2	3.1 ± 1.2	<0.001
Hyposmia	6.8 ± 1.4	2.9 ± 1.0	6.5 ± 1.5	3.4 ± 1.1	<0.001
Facial Pain	5.4 ± 1.2	1.9 ± 0.8	5.2 ± 1.3	2.4 ± 1.0	<0.001

The recurrence rate of nasal polyps was significantly lower in the FESS group compared to the conventional polypectomy group. Only 15% of patients in the FESS group experienced recurrence, whereas 35% of patients in the conventional polypectomy group had recurrent polyps at the 6-month follow-up. (Table 3)

Table 3: Polyp Recurrence Rate

Group	Recurrence Rate (%)	p-value
Group A (FESS)	15%	<0.01
Group B (Polypectomy)	35%	

Postoperative complications were more common in the conventional polypectomy group. While 5% of FESS patients experienced minor bleeding, 10% of conventional polypectomy patients experienced minor bleeding, and 3% had wound infections. (Table 4)

Table 4: Postoperative Complications

Complication	Group A (FESS) (%)	Group B (Polypectomy) (%)	p-value
Minor Bleeding	5%	10%	0.35
Infection	0%	3%	0.05
Scarring	0%	2%	0.04

The SNOT-22 quality of life scores showed significant improvement in the FESS group compared to the conventional polypectomy group. The mean postoperative score for Group A was 20.1, compared to 28.3 in Group B. (Table 5)

Table 5: Quality of Life (SNOT-22 Scores)

Group	Preoperative Mean ± SD	Postoperative Mean ± SD	p-value
Group A (FESS)	45.2 ± 12.3	20.1 ± 8.2	0.02
Group B (Polypectomy)	44.8 ± 11.9	28.3 ± 10.5	0.03

DISCUSSION

The current study suggests that FESS is an optimal approach for nasal polyps and better than conventional polypectomy. The results are in line with the increasing evidence of efficacy, effectiveness and safety of FESS as a treatment modality for CRSwNP. What is more, FESS can offer higher symptom relief and lower recurrence rate after operation as well as less postoperative complications versus conventional polypectomy, which confirms the clinical benefits of FESS.

The present study demonstrated significantly better relief of nasal obstruction, hyposmia and facial pain in PFESS than traditional polypectomy, which is consistent with other studies. For instance, DeConde et al.[8] showed that patients treated with FESS experienced a greater decrease in symptoms and had a higher incidence of complete symptom resolution than those who underwent conventional surgery. Moreover, Sharma et al.[9] demonstrate that the accuracy and less invasive technique of FESS may have enabled a more comprehensive removal of obstructive tissue with minimal collateral damage to healthy mucosa, which would explain an improvement in symptoms.

Another important benefit of FESS that our study recognized is the lower recurrence rate; as only 15% of patients in the FESS group versus 35% who underwent conventional polypectomy had a recurrence. Our finding is in line with those of Hamilos et al.[3] and Zeng et al.[12], who demonstrated that FESS results in lower recurrence rates attributable to its potential for accurate delineation of the site of sinus pathology without altering the integrity of normal sinocavity. Conventional polypectomy, which requires more tissue resection, on the other hand has been associated with an unacceptably high recurrence rate, and probably reflects incomplete removal of these lesions or injury to the sinus drainage tracts.

We showed that the FESS group had fewer postoperative problems (bleeding and infection) than did the traditional polypectomy one. This finding is consistent with other studies. According to Chen et al.[10], FESS is less traumatic and there are fewer complications, with less bleeding. In contrast, traditional polypectomy (particularly in the setting of large polyps) frequently involves greater dissection and scarring with increased incidences of infection and delayed healing[6,13]. These potential complications can lead to delayed recovery and increased postoperative discomfort possibly explaining the significant difference in time until recovery between both groups in our study.

SNOT-22 score based quality of life assessments revealed that patients who received FESS achieved relatively better improvement in their QOL than those after the conventional

polypectomy. This result is consistent with those reported by Ali and co-workers.[13] and Fieux et al.[6] who found that FESS did not only result in a better symptomatic control but also increased patients' wellness including emotional health, social functioning and sleep quality. Preservation of sinus anatomy and restoration of natural sinus drainage in FESS patients is likely to play a role in the improvement in quality of life following surgery.

FESS has various advantages over conventional polypectomy, but it demands significant surgical skills and experience. The technical difficulties of FESS associated with variations in anatomy and the demand for good visualisation during surgery, emphasize the need for adequate training and experience when performing this operation. A number of studies, including those of Bunzen et al.[5] and Netkovski & Sirgovska[14], has pointed out that successful results with FESS rely ultimately on the surgeon being well-versed in endoscopic techniques and comfortable operating within intricate sinus anatomy.

Cost-effectiveness of FESS versus traditional polypectomy has also been studied other than clinical results. Although the initial expense of FESS is somewhat higher considering facilities and surgical expertise, its long-term cost-effectiveness through decreased recurrences and complications following surgery has been demonstrated, making it the more cost-effective management option of CRSwNP[2,11]. Furthermore, smaller numbers of re-operations and complications have an economical effect for patients and healthcare systems as well[15].

Increased patient satisfaction found in patients of the FESS group in our study is comparable to those reported by several other studies. DeConde et al.[7] (8 adopting) that the management of patients submitted to FESS was more satisfactory when compared to traditional polypectomy, based on a faster recovery and better control of symptoms. Furthermore, less invasive approach with FESS without external incisions also leads to more superior cosmetic results which is an essential factor for most of the patients[16].

Limitations and Future Directions: Although FESS provides many benefits, it also has its downsides. Difficile, the technique involves expensive equipment and a steep learning curve for surgeons. In addition, despite the clear superiority of FESS over polypectomy in many instances, there remains a subset of patients with severe or extensive disease for whom intervention in this way might prove not worthwhile. So, Patient selection are still key and further studies need to provide the optimal patient for each surgery technique. In addition, larger prospective long-term studies over a period >5 - 10 years should be conducted to verify the superiority of FESS compared with the traditional method.

CONCLUSION

In summary, the present findings advocate the preference of FESS for treatment of nasal polyps yielding better results with respect to improvement in symptoms, lower recurrence rates, few complications and a better quality of life than conventional polypectomy. As FESS becomes more popular, additional investigation and improvement of optimal surgical procedures probably will improve the benefits achieved by this procedure, thus further establishing it as the treatment for chronic rhinosinusitis with nasal polyps.

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