



A COMPARATIVE STUDY OF POWERED VERSUS CONVENTIONAL FUNCTIONAL ENDOSCOPIC SINUS SURGERY FOR NASAL POLYPS WITH REFERENCE TO RECURRENCE

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ABSTRACT

Background: Chronic rhinosinusitis with nasal polyps is a common inflammatory condition that significantly affects quality of life and often requires surgical intervention when refractory to medical management. Functional endoscopic sinus surgery (FESS) is the standard surgical treatment, with advances in instrumentation such as powered microdebriders proposed to improve surgical precision and outcomes. However, comparative data evaluating powered versus conventional FESS remain limited in the Indian clinical setting.

Objectives: To compare the clinical, endoscopic, and radiological outcomes of powered functional endoscopic sinus surgery using a microdebrider versus conventional functional endoscopic sinus surgery in patients with nasal polyposis.

Methods: This prospective interventional comparative study was conducted at a tertiary care teaching hospital over one year. Fifty patients aged 18–60 years with chronic rhinosinusitis and nasal polyps refractory to medical therapy were included and divided into two equal groups. Group A underwent conventional FESS, while Group B underwent powered FESS using a microdebrider. Assessment included symptom evaluation using the Visual Analog Scale (VAS), diagnostic nasal endoscopy with polyp grading, and CT of the paranasal sinuses graded using the Lund–Mackay scoring system. Outcomes included symptom scores, endoscopic findings, radiological improvement, recurrence, and postoperative complications. A p-value <0.05 was considered statistically significant.

Results: Both techniques were reported to improve symptoms, endoscopic polyp grades, and radiological scores. The source manuscript reports greater improvement and lower recurrence with powered FESS, but does not provide complete numerical outcome data in its summary tables.

Conclusion: Powered FESS using a microdebrider may offer advantages in symptom relief, disease clearance, recurrence, and synechia. These conclusions should be interpreted cautiously because the manuscript tables do not report complete group-wise numerical data.

1. INTRODUCTION

Chronic rhinosinusitis with nasal polyps (CRSwNP) is a persistent inflammatory disorder characterized by nasal obstruction, discharge, facial pressure and reduced or absent smell, together with objective endoscopic or radiological evidence of sinonasal inflammation.^{1,2}

Nasal polyposis affects a proportion of the adult population and may coexist with asthma or aspirin-exacerbated respiratory disease, supporting the importance of recognizing associated airway disease.^{3–5} Its pathogenesis is multifactorial, involving chronic inflammation and host susceptibility.⁶

Initial management generally includes topical corticosteroids and other appropriate medical therapy. Patients with persistent symptoms despite medical treatment may be considered for endoscopic sinus surgery, which aims to restore sinus



www.ajmrhs.com
eISSN: 2583-7761

Date of Received: 11-12-2025
Date of Acceptance: 19-12-2025
Date of Publication: 18-01-2026

RECURRENCE

ventilation and facilitate postoperative topical treatment. Conventional instruments and powered microdebriders are both used for polyp removal and sinus clearance.^{1,2}

A microdebrider permits controlled tissue removal with simultaneous suction and may improve operative visibility; however, clinical benefit must be assessed against patient-centred outcomes, recurrence and complications rather than assumed from instrumentation alone. This study compared conventional and powered FESS in patients with nasal polyposis, with particular emphasis on recurrence.

Aims and Objectives

1. To investigate the recurrence rate of nasal polyps after standard functional endoscopic sinus surgery.
2. To investigate the recurrence rate of nasal polyps after FESS with powered (microdebrider-assisted) instrumentation.
3. To compare recurrence after powered endoscopic sinus surgery versus conventional FESS.

2. MATERIALS AND METHODS

Study design and setting: This hospital-based prospective interventional comparative study was conducted in the Department of Otorhinolaryngology at a tertiary care hospital from November 2024 to November 2025. The Institutional Ethics Committee approval was obtained.

Study population and sample size: Fifty patients diagnosed with nasal polyposis who met the eligibility criteria were recruited from the outpatient department and admitted for surgery after failure of medical therapy.

Inclusion criteria: Patients aged 18–60 years, of either gender, diagnosed with nasal polyposis refractory to medical management and willing to provide written informed consent were included.

Exclusion criteria: Patients with benign or malignant neoplasms of the nose and paranasal sinuses; those below 18 or above 60 years;

medically unfit patients; pregnant or lactating women; patients with previous sinonasal surgery; and those unwilling to consent were excluded.

Preoperative evaluation: Evaluation included history of nasal obstruction, nasal discharge, headache and associated symptoms; general and systemic examination; external nasal examination; anterior and posterior rhinoscopy; paranasal sinus examination; and diagnostic nasal endoscopy. Imaging included X-ray of the paranasal sinuses and CT of the paranasal sinuses.

Grouping and surgical intervention: Patients were divided into two groups of 25: Group A underwent conventional FESS and Group B underwent powered FESS using a microdebrider. Procedures were performed under local or general anaesthesia as appropriate.

Operative procedure: The source describes topical nasal packing with 4% xylocaine and adrenaline (1:100,000), infiltration with 1% lignocaine with adrenaline, and head elevation of 20–30 degrees. Conventional FESS was performed in Group A; powered instruments were used for polyp removal and sinus clearance in Group B.

Postoperative care and follow-up: Postoperative care included antibiotics, analgesics and nasal douching. Patients were followed at regular intervals for symptom relief, endoscopic findings, recurrence and complications such as synechiae. The source discusses outcomes at three and six months, but the follow-up schedule is not fully specified.

Outcome measures and analysis: Outcomes included symptom evaluation, endoscopic polyp grading, Lund–Mackay CT score, recurrence and postoperative complications. The source states that $p < 0.05$ was considered statistically significant but does not provide the full statistical tests or complete numerical data.

3. RESULTS

Fifty patients with CRSwNP refractory to medical management were included, with 25 patients in each group. The source manuscript states that baseline age, gender, symptom duration and disease severity were comparable.

Table 1. Study groups and baseline profile

Characteristic	Conventional FESS (n=25)	Powered FESS (n=25)	Total (N=50)
Participants	25 (50%)	25 (50%)	50 (100%)
Age range, years	18–60	18–60	18–60
CRSwNP refractory to medical therapy	25 (100%)	25 (100%)	50 (100%)
Gender, male/female	33	17	50 (100%)

RECURRENCE

Table 2. Presenting symptoms and polyp grade

Parameter	Number (n)	Percentage (%)
Nasal obstruction	47	94
Nasal discharge	39	78
Headache	35	70
Smell disturbance	32	64
Grade 3 nasal polyps	27	54
Grade 2 nasal polyps	23	46

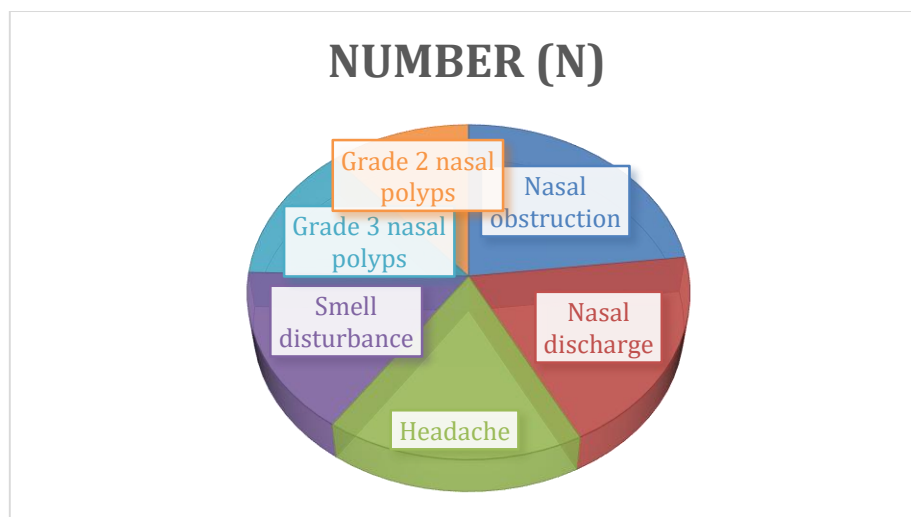


Table 3. Recurrence following surgery

Outcome	Conventional FESS (n=25)	Powered FESS (n=25)	Total (N=50)
Recurrence	8 (32%)	1 (4%)	9 (18%)
No recurrence	17 (68%)	24 (96%)	41 (82%)

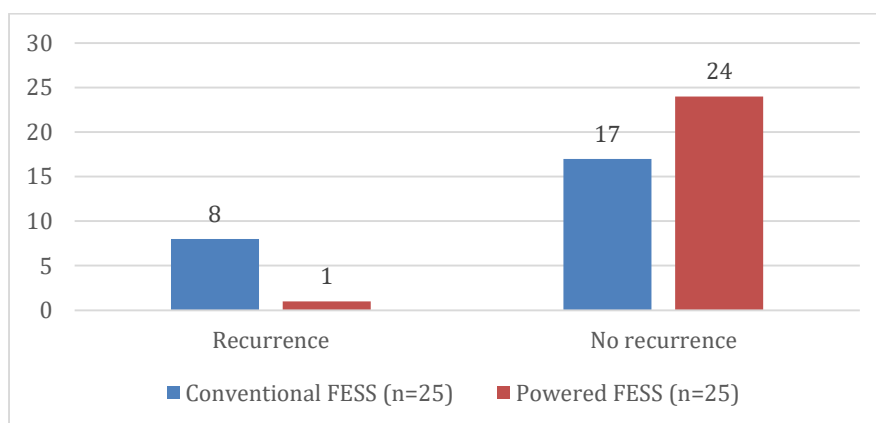


Table 4. Postoperative complications

Outcome	Number (n)	Percentage (%)	Group-wise data
Synechiae	7	14	More frequent in conventional FESS
Major complications	0	0	None reported in either group

Table 5. Comparative outcome

Outcome	Conventional FESS	Powered FESS
VAS symptom improvement	Improved	Greater improvement reported
Lund-Mackay CT score	Reduced	Greater reduction reported

RECURRENCE

Endoscopic polyp grade	Reduced	Greater reduction reported
Synechia	Higher reported	Lower reported

4. DISCUSSION

In this cohort of 50 patients, nasal obstruction was the most frequently reported symptom (94%), followed by nasal discharge (78%), headache (70%) and smell disturbance (64%). Grade 3 polyps were reported in 27 patients (54%) and grade 2 polyps in 23 (46%). These findings describe a symptomatic population with substantial polyp burden; however, the reported gender distribution and baseline group comparability should be checked against the original dataset before publication.

The manuscript reports symptomatic improvement after both procedures and a greater improvement with powered FESS. Recurrence was reported in 9/50 patients (18%); 8/25 (32%) after conventional FESS and 1/25 (4%) after powered FESS. This is a descriptive difference favouring powered instrumentation, but the counts must be verified against source records and an appropriate statistical test should be performed before claiming statistical significance. The available manuscript does not provide complete group-wise VAS means, standard deviations, effect estimates or confidence intervals, limiting quantitative comparison.

The findings can be considered alongside prior comparative literature. Singh et al. specifically compared microdebrider-assisted with conventional endoscopic sinus surgery for nasal polyps, making it the closest clinical comparator to the present study; their work supports evaluating powered instrumentation as a distinct technique rather than assuming equivalence from general FESS outcomes.⁷ Bernstein et al. described postoperative healing after microdebrider-assisted surgery, while Krouse and Christmas reported a comparative study of powered instrumentation; these reports provide a technical and healing context for the present findings.^{8,9} Becker and Setliff and Parsons described the role and development of powered instruments in sinonasal surgery, emphasizing their operative rationale rather than establishing that recurrence is invariably lower.^{10,11} Wolf et al. examined mucosal healing after FESS, underscoring the importance of postoperative endoscopic assessment when comparing techniques.¹²

Broader outcome studies also caution against attributing all postoperative benefit to the instrument used. The national comparative audit by Hopkins et al. documented outcomes across sinonasal surgery, while Ragab et al. compared medical and surgical treatment for chronic rhinosinusitis; both provide context for interpreting symptom improvement and the role of ongoing medical management.^{13,14} Khalil and Nunez reviewed evidence for FESS in chronic

rhinosinusitis, and Blomqvist et al. compared medical with medical-surgical treatment of nasal polyposis.^{15,16} Revision surgery literature from Jiang and Hsu highlights that persistent or recurrent disease remains clinically relevant after FESS.¹⁷ Chen et al. described extensive applications of microdebriders in endoscopic sinus surgery, supporting their technical versatility but not, by itself, proving a superior long-term recurrence rate.¹⁸ In the present study, synechia were reported in 7/50 patients (14%) overall and were described as more frequent after conventional FESS, but group-specific counts were unavailable. Consequently, no reliable risk ratio or significance test can be reproduced. Taken together, the current findings are directionally consistent with the proposed advantages of powered instrumentation, but the small sample, incomplete numerical reporting and limited follow-up information mean that recurrence and complication differences should be interpreted as preliminary rather than definitive.

Limitations

The study has a relatively small sample size and was conducted at a single tertiary care centre, which may limit generalizability. Advanced objective measures of mucosal healing and long-term functional outcomes were not included. The follow-up duration may underestimate late recurrence.

5. CONCLUSION

Both conventional and powered FESS were reported to improve symptoms, endoscopic findings and radiological scores in patients with CRSwNP. The study reports greater symptomatic relief, improved endoscopic clearance, lower recurrence and fewer synechia with powered FESS.

Recommendations

Powered FESS may be considered in the surgical management of nasal polyposis when appropriate equipment and trained surgeons are available. Surgeons should receive adequate training in powered instrumentation. Routine postoperative endoscopic follow-up is recommended to detect recurrence and assess healing.

Further multicentre studies with larger samples and longer follow-up are recommended. Future studies should report complete group-wise numerical outcomes, prespecified statistical tests, effect sizes and confidence intervals.

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How to cite this article: Suman Reddy Dakkata, Satujoda Susmitha, Kalyani Hanumanthu, Surendra Kumar chowdary, Boni Tata Rao, Ravada V S S K Kinneresh, A COMPARATIVE STUDY OF POWERED VERSUS CONVENTIONAL FUNCTIONAL ENDOSCOPIC SINUS SURGERY FOR NASAL POLYPS WITH REFERENCE TO RECURRENCE, *Asian J. Med. Res. Health Sci.*, 2026; 4 (1):- 1445-1449.

Source of Support: Nil, **Conflicts of Interest:** None declared.