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ORIGINAL ARTICLE

Frequency of polyp recurrence after endoscopic sinus surgery with nasal polyposis.

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ABSTRACT… Objective: To determine the frequency of polyp recurrence after ESS in patients with chronic rhinosinusitis with nasal polyps. **Study Design:** Descriptive study. **Setting:** Department of ENT, Hayatabad Medical Complex, Peshawar. **Period:** May 14, 2023, to May 14, 2024. **Methods:** A total of 179 patients aged 18–60 years with bilateral nasal polyps were enrolled using purposive non-probability sampling. Exclusion criteria included antrochoanal polyps, cystic fibrosis, and prior surgery within three months. Data were analyzed using SPSS, with frequencies, percentages, and chi-square tests for stratified comparisons. **Results:** Of the participants, 63.7% were aged 20–40 years, and 36.3% were aged 41–60 years. Males constituted 62.6%, and females 37.4%. Postoperative pain was reported in 27.9%, while 31.8% experienced polyp recurrence. Recurrence rates were not significantly associated with age (P = 0.217) or gender (P = 0.658). **Conclusion:** ESS remains an essential treatment for chronic rhinosinusitis with nasal polyps. However, recurrence continues to be a clinical challenge, with a recurrence rate of 31.8% observed. Improved adherence to postoperative care and anti-inflammatory therapies may help mitigate recurrence.

Key words: Eosinophilia, Endoscopic Sinus Surgery, Nasal Polyps, Sinonasal Outcomes.

INTRODUCTION

Polyp recurrence following endoscopic sinus surgery (ESS) in patients with chronic rhinosinusitis with nasal polyps (CRSwNP) remains a significant and multifaceted clinical challenge.[1] Despite advancements in surgical techniques and postoperative care, recurrence is not uncommon, with several factors contributing to its likelihood. Research has highlighted a broad range of recurrence rates, with estimates varying significantly from 20.7% to 29.5% within the first six months following surgery.[1,2]

A particularly notable observation is the strong association between asthma and polyp recurrence. Asthma is frequently identified as a prevalent comorbidity among patients with recurring polyps, and studies suggest that individuals with asthma are more likely to require revision surgery compared to those without this condition.[3]

The extent and quality of the initial surgery are critical factors influencing outcomes. Inadequate surgical intervention, such as incomplete removal of polyp tissue or poor access to affected sinuses, has been strongly linked to higher rates of recurrence.[4] Effective surgical techniques that ensure thorough clearance of the diseased tissue are essential for minimizing the risk of early recurrence. However, surgery alone is insufficient for long-term disease control, and postoperative medical management plays a vital role.[3,4]

Adherence to prescribed postoperative medications, particularly topical corticosteroids, is crucial in preventing polyp regrowth. Non-compliance with these medications significantly increases the likelihood of recurrence, as topical steroids help control inflammation and reduce the potential for tissue regrowth.[1]

Innovative therapeutic options, such as perioperative treatment with biologics like

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dupilumab, have emerged as promising strategies for reducing recurrence rates. Dupilumab, in particular, targets Type 2 inflammation, which is known to contribute to poor surgical outcomes and increased disease activity.[5] By modulating the inflammatory pathways associated with CRSwNP, these treatments have shown potential in improving both surgical and long-term outcomes. However, access to such therapies and their cost-effectiveness remain considerations in broader clinical implementation.[4,5]

Despite these advances in surgical and medical interventions, some patients experience recurrence due to factors that extend beyond these measures. Genetic predispositions and environmental triggers, such as allergens or irritants, have been implicated in polyp recurrence and can complicate disease management.[6] These complexities highlight the need for a multifactorial approach that addresses not only surgical and pharmacological aspects but also individual patient characteristics and external influences.[5,6]

Aspirinexacerbated disease and comorbid asthma were associated with an increased likelihood of polyp recurrence while Draf-III frontal sinusotomy was protective against polyp recurrence. The recurrence of nasal polyposis 6 months after ESS was 35% (68/197), compared to 38% (48/125) after 12 months, and 40% (52/129) after 18 months.[7]

OBJECTIVE

To determine the frequency of polyp recurrence after endoscopic sinus surgery with CRWNP

METHODS

The study was conducted in the Department of ENT, MTI-Hayatabad Medical Complex, Peshawar after approval from ethical committee (CPSP/REU/ENT-2020-021-1217-14-5-23), following a descriptive study design. The study spanned from May 14, 2023, to May 14, 2024, with a sample size of 179 patients. The sample size was determined using a 35% expected proportion of polyp recurrence within six months after endoscopic sinus surgery (ESS), a 7% margin of error, and a 95% confidence interval, calculated using WHO software.[7] A non-probability purposive sampling technique was employed for participant selection.

Patients aged 18–60 years with benign bilateral nasal polyps confirmed through clinical and radiological evaluations were included in the study. Patients with antrochoanal polyps, cystic fibrosis, or those who had undergone surgery for nasal polyps within the previous three months were excluded to minimize confounders and potential bias in the results. Ethical approval was obtained from the institution's research committee, and informed consent was secured from all participants after explaining the study's purpose, benefits, procedure, and potential complications.

Comprehensive demographic and clinical data, including the degree of postoperative pain assessed using a visual analog scale (0–10), were collected and recorded on a pre-designed proforma. The exclusion criteria were strictly adhered to ensure the validity of the study results.

Data analysis was performed using SPSS software. Means and standard deviations were calculated for continuous variables like age, while frequencies and percentages were computed for categorical variables such as gender, postoperative pain, and polyp recurrence. Stratification by age and gender was conducted to evaluate effect modification, with statistical significance assessed using the chi-square test at a p-value threshold of <0.05.

RESULTS

Mean and SD for age was 38.43+14.35 years. Mean and SD for duration of nasal polyp was 2.74+1.34 months. n= 114(63.7%) patients were recorded in 20-40 years age group while 65 (36.3%) patients were recorded in 41-60 years age group. n=112 (62.6%) male patients and n=67 (37.4%) patients were recorded.

n=50 (27.9%) patients were recorded with post operative pain. 57 (31.8%) patients were recorded with polyp recurrence. (Table-I)

The study analyzed the stratification of polyp recurrence based on age and gender. Among the 114 patients in the 20–40-year age group, 40 patients (35.1%) experienced polyp recurrence, while 74 patients (64.9%) did not. In the 41–60-year age group, recurrence was observed in 17 patients (26.2%), and 48 patients (73.8%) did not experience recurrence. The difference in recurrence between the age groups was not statistically significant (P = 0.217). In terms of gender, 37 male patients (33.0%) out of 112 experienced polyp recurrence, while the remaining 75 patients (67.0%) did not. Among the 67 female patients, 20 patients (29.9%) had recurrence, and 47 patients (70.1%) did not. The difference in recurrence rates between males and females was also not statistically significant (P = 0.658).

DISCUSSION

The findings of this study provide valuable insights into the demographic and clinical characteristics of patients with chronic rhinosinusitis with nasal polyps (CRSwNP), as well as factors associated with polyp recurrence after endoscopic sinus surgery (ESS). When compared with existing literature, several similarities and differences can be observed.

In this study, the majority of the participants belonged to the 20–40-year age group (63.7%), while 36.3% were in the 41–60-year age group. On the contrary, other studies by Fokken WJ et al., Steven WW et al., and Battacharyya N et al., et al. suggest that older age groups tend to have increase chances of having polyp compared to younger group[9,10,11] The variation in results may be due to differences in sample size, follow-up duration, or population demographics.

This study found that males constituted 62.6% of the sample population, while females accounted for 37.4%. Polyp recurrence was slightly higher among males (33.0%) compared to females (29.9%), though the difference was not statistically significant (P = 0.658). These findings are consistent with results from Rayan MT et al., who reported a marginally higher recurrence rate in males, potentially due to hormonal and anatomical differences, but no conclusive evidence of gender as a significant predictor of recurrence.[12]

Category	Subcategory	Frequency	Percent
Age Groups	20-40 Years	114	63.7%
	41-60 Years	65	36.3%
	Total	**179**	**100.0%**
Gender	Male	112	62.6%
	Female	67	37.4%
	Total	**179**	**100.0%**
Post Operative Pain	Yes	50	27.9%
	No	129	72.1%
	Total	**179**	**100.0%**
Polyp Recurrence	Yes	57	31.8%
	No	122	68.2%
	Total	**179**	**100.0%**

Table-I. Descriptive statistics of clinicodemographic variables

Category	Subcategory	Polyp Recurrence Yes	Polyp Recurrence No	Total	P-Value
Age Groups	20-40 Years	40 (35.1%)	74 (64.9%)	114 (100.0%)	0.217
	41-60 Years	17 (26.2%)	48 (73.8%)	65 (100.0%)	
	Total	57 (31.8%)	122 (68.2%)	179 (100.0%)	
Gender Groups	Male	37 (33.0%)	75 (67.0%)	112 (100.0%)	0.658
	Female	20 (29.9%)	47 (70.1%)	67 (100.0%)	
	Total	57 (31.8%)	122 (68.2%)	179 (100.0%)	

Table-II. Comparison of polyp recurrence with demographic variables

However, contrasting evidence from Stain NR et al. indicates that females may experience slightly higher recurrence rates, particularly in cases where asthma or allergic rhinitis is a comorbidity.[13]

Postoperative pain was reported in 27.9% of the participants, which is within the range observed in similar studies. Gill KS et al. found that postoperative pain was observed in 23% of patient and was often associated steroid use and increasing age.[14]

The overall recurrence rate in this study was 31.8%, which is consistent with the range reported in prior study Calus S et al.[11] found that the overall recurrence rate of nasal polyps after endoscopic sinus surgery (ESS) was 35% at 6 months, 38% at 12 months, and 40% at 18 months. While Muhammad S et al., found that 15% of the patients experienced recurrence of nasal polyps after endoscopic sinus surgery (ESS) and required revision surgery.[15]

Recurrence rates in this study did not show significant associations with demographic variables such as age or gender, indicating that recurrence may be more influenced by other factors, such as disease severity, comorbid conditions (e.g., asthma, allergic rhinitis), and adherence to postoperative therapy. While Brescia G et al reported recurrence rate of nasal polyps after endoscopic sinus surgery (ESS) was significantly higher in young adult men (29.0%) compared to young adult women (11.6%) and elderly men (4.5%).[16]

Our study is subject to several limitations that should be acknowledged. First, the sampling technique employed was non-probability consecutive sampling, which may limit the generalizability of our findings to a broader population. Second, we did not include key factors such as comorbid asthma, allergic rhinitis, or other related allergic conditions. These factors are known to significantly influence the outcomes of endoscopic sinus surgery (ESS) and the recurrence of nasal polyps. Their exclusion may have restricted our ability to fully understand the impact of these comorbidities on surgical outcomes. Lastly, the study was limited by its relatively short follow-up duration, which may not adequately capture long-term recurrence rates or other delayed outcomes.

CONCLUSION

This study highlights that endoscopic sinus surgery (ESS) remains a vital treatment modality for managing chronic rhinosinusitis with nasal polyps (CRSwNP). However, the recurrence of nasal polyps continues to be a substantial clinical challenge, with a recurrence rate of 31.8% observed in this cohort. Recurrence was not significantly associated with demographic variables like age or gender.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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2	**Bilal Khan:** Data collection, Proof reading, Critical analysis.
3	**Khurshid Anwar:** Data collection, Data analysis, Final drafting.
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