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INCIDENCE OF RECURRENT FISTULA-IN-ANO POST-SURGICAL TREATMENT IN A TERTIARY CARE CENTER

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Abstract

Objective: *To determine the incidence of recurrent fistula-in-ano following surgical treatment in patients presenting to a tertiary care center in Karachi.*

Study Design: *Descriptive cross-sectional study.*

Settings: *Department of Surgery Unit II, Jinnah Postgraduate Medical Centre (JPMC), Karachi.*

Period: *Six months.*

Material & Methods: *A total of 100 patients aged 18–65 years diagnosed with fistula-in-ano and undergoing surgical treatment were included using non-probability purposive sampling. Data were collected using a structured proforma including demographic variables, type of fistula, and surgical procedures. Patients were followed up for six months to assess recurrence. Data were analyzed using SPSS version 27. Chi-square test was applied, with $p \leq 0.05$ considered significant.*

Results: *The mean age of patients was 41.48 ± 10.04 years. Males constituted 68% of participants. The overall recurrence rate was 21%. Recurrence was significantly associated with complex fistula type ($p < 0.001$) and surgical procedure ($p < 0.001$), particularly seton placement. No significant association was found with gender ($p = 0.090$).*

Conclusion: *A considerable proportion of patients developed recurrence following surgical treatment, with higher risk observed in complex fistulas and specific surgical procedures. Improved surgical strategies and careful patient selection are recommended.*

INTRODUCTION

Fistula-in-ano is a common anorectal disorder characterized by an abnormal tract between the anal canal and perianal skin, often arising as a sequela of anorectal abscess due to cryptoglandular infection (1). It is associated with significant morbidity, including persistent pain, discharge, and impaired quality of life, making it a clinically challenging condition to manage (2). Surgical intervention remains the cornerstone of treatment, aiming to eradicate the fistulous tract while preserving anal sphincter function (3). However, achieving this balance is difficult, as aggressive surgical approaches may lead to incontinence, while conservative methods may increase the risk of recurrence (4). The complexity

of fistula anatomy and patient-specific factors further complicate management decisions, necessitating individualized treatment strategies.

Despite advancements in surgical techniques, recurrence remains a major concern in the management of fistula-in-ano. Various procedures, including fistulotomy, fistulectomy, seton placement, ligation of intersphincteric fistula tract (LIFT), and newer sphincter-sparing approaches, have been developed to improve outcomes (5,6). However, recurrence rates continue to vary widely, ranging from approximately 5% to over 30%, depending on fistula complexity and surgical modality (7,8). Evidence suggests that complex fistulas, particularly transsphincteric types, are associated with significantly higher recurrence compared to simple fistulas (8). Furthermore, certain procedures such as LIFT and plug-based techniques have been linked with higher recurrence rates in some studies, despite their sphincter-preserving advantages (9,10). Additional factors, including diabetes, prior abscess, and delayed wound healing, have also been identified as predictors of poor surgical outcomes (11,12). These findings highlight the multifactorial nature of recurrence and the need for careful surgical planning.

In developing countries such as Pakistan, there is limited local data regarding the incidence and determinants of recurrence following surgical treatment of fistula-in-ano. Most available evidence is derived from international studies, which may not fully reflect local patient characteristics and healthcare settings. Given the burden of disease and variability in surgical practices, it is essential to generate context-specific data to guide clinical decision-making. Therefore, this study aims to determine the incidence of recurrent fistula-in-ano and to evaluate its associated factors among patients undergoing surgical treatment at a tertiary care center in Karachi.

MATERIAL & METHODS

This descriptive cross-sectional study was conducted in the Department of Surgery Unit II, Jinnah Postgraduate Medical Centre (JPMC), Karachi. The duration of the study was six months. A total of 100 patients were included in the study, and the sample size was calculated using the WHO sample size calculator by taking an expected recurrence proportion of 14.8%, with a 95% confidence level and 7% margin of error. A non-probability purposive sampling technique was employed to recruit participants.

Patients aged between 18 and 65 years, diagnosed with fistula-in-ano and undergoing surgical treatment, were included in the study. Patients with Crohn's disease, tuberculosis-related fistula, malignant fistula, immunocompromised conditions, or those lost to follow-up were excluded from the study.

Data were collected using a structured proforma designed to capture relevant patient information, including demographic characteristics such as age and gender, clinical features, type of fistula (simple or complex), and details of the surgical procedure performed (fistulotomy, fistulectomy, seton placement, or other techniques). All patients underwent surgical treatment according to standard protocols practiced in the department. Postoperatively, patients were followed up at regular intervals of 2 weeks, 1 month, 3 months, and 6 months to assess healing and identify recurrence. Recurrence was defined as the reappearance of symptoms such as discharge, pain, or formation of a new fistulous tract after initial healing.

Data were entered and analyzed using Statistical Package for Social Sciences (SPSS) version 27. Quantitative variables such as age were expressed as mean and standard deviation, while categorical variables such as gender, type of fistula, and recurrence status were presented as frequencies and percentages. The Chi-square test was applied to determine associations between recurrence and categorical variables, with a p-value of ≤ 0.05 considered statistically significant. Ethical approval was obtained from the IRB of JPMC, and informed written consent was taken from all participants prior to inclusion in the study.

RESULTS

A total of 100 patients were included in the study. The mean age of the participants was 41.48 ± 10.04 years, ranging from 18 to 65 years (see Table 1). The majority of patients were male, comprising 68% (n = 68), while females accounted for 32% (n = 32) of the study population (see Figure 1).

Table 1: Descriptive Statistics for Age (n = 100)

Variable	Mean	Std. Deviation	Minimum	Maximum
Age (years)	41.48	10.04	18	65

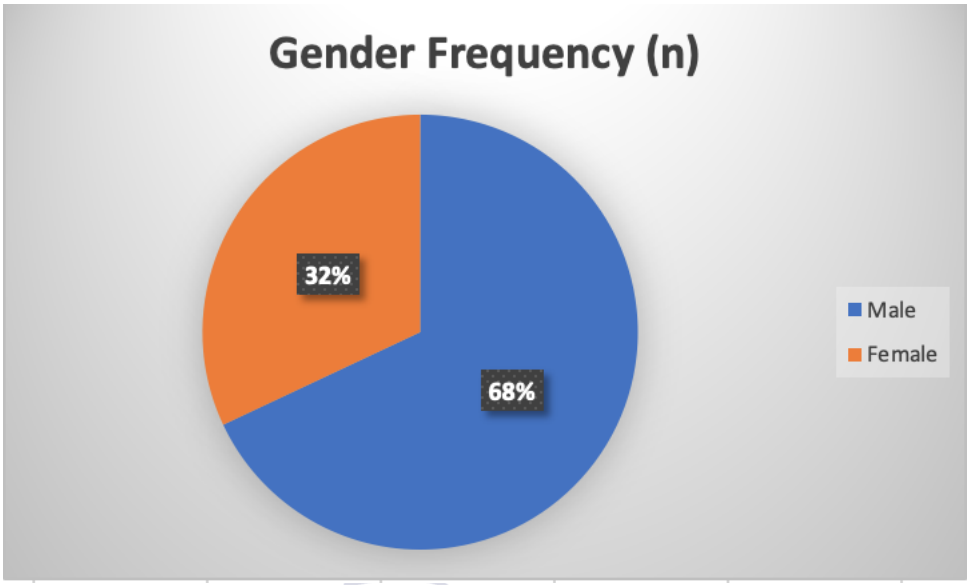

Figure 1: Gender Frequency (n = 100)

The overall incidence of recurrence of fistula-in-ano was observed to be 21% (n = 21), whereas 79% (n = 79) of patients showed no recurrence during the six-month follow-up period (see Figure 2).

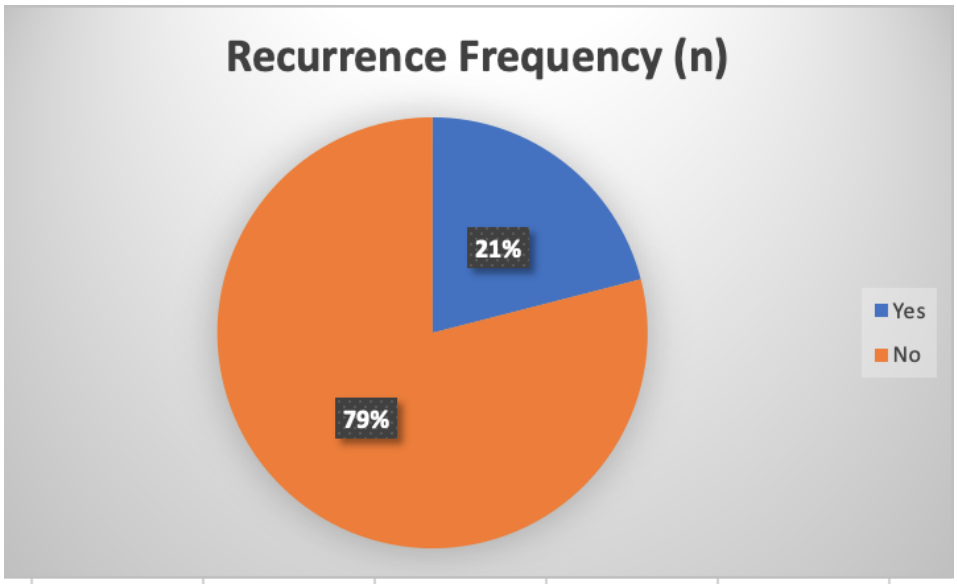

Figure 2: Recurrence of Fistula-in-Ano (n = 100)

Analysis of gender distribution revealed that recurrence was more frequent among males (n = 18) compared to females (n = 3). However, this difference was not statistically significant (χ^2 = 2.87, p = 0.090) (see Table 2). A statistically significant association was found between the type of fistula and recurrence (p < 0.001). All cases of recurrence occurred in patients with complex fistula (n = 21), whereas no recurrence was observed in patients with simple fistula (see Table 2). Similarly, surgical procedure demonstrated a highly significant association with recurrence (p < 0.001). Recurrence was predominantly observed in patients who underwent seton placement (n = 21), while no recurrence was reported in patients treated with fistulotomy or fistulectomy (see Table 2). These findings indicate that fistula complexity and type of surgical procedure are major determinants of recurrence following surgical treatment.

Table 1: Association of Variables with Recurrence of Fistula-in-Ano (n = 100).

Variable	Recurrence Yes (n)	Recurrence No (n)	Total (n)	p-value
Gender				0.090
Male	18	50	68	
Female	3	29	32	
Type of Fistula				**<0.001**
Complex	21	42	63	
Simple	0	37	37	
Procedure Type				**<0.001**
Fistulotomy	0	35	35	
Fistulectomy	0	20	20	
Seton Placement	21	12	33	
Other	0	12	12	

DISCUSSION

The present study demonstrated an overall recurrence rate of 21% following surgical treatment of fistula-in-ano. This finding falls within the range reported in the literature, where recurrence rates vary between approximately 5% and 30% depending on patient characteristics and surgical approach (7,8). In comparison, a large retrospective analysis reported an overall recurrence rate of 12.5%, with higher rates observed in complex fistulas (8). The relatively higher recurrence observed in our study may be attributed to a greater proportion of complex fistula cases and variations in surgical techniques.

A key finding of this study was the strong association between fistula complexity and recurrence. All recurrence cases (21%) occurred in patients with complex fistula, while no recurrence was observed in simple fistula cases (p < 0.001). This is consistent with previous studies demonstrating significantly higher recurrence rates in complex fistulas, particularly mid- and high-transsphincteric types (8). As shown in the another study, recurrence in complex fistulas can reach up to 25.4%, compared to 5.9% in simple fistulas (13). This difference is likely due to the anatomical complexity and difficulty in complete eradication of the fistulous tract, which increases the risk of persistent infection and recurrence (3).

The type of surgical procedure also showed a highly significant association with recurrence in this study (p < 0.001). Recurrence was predominantly observed in patients undergoing seton placement (21 cases), whereas no recurrence was reported in patients treated with fistulotomy or fistulectomy. These findings are supported by previous research indicating that sphincter-sparing techniques, including seton and LIFT procedures, may have higher recurrence rates despite their advantage of preserving continence (9,10). Another study also highlighted that procedures such as LIFT and biologic plug techniques can have recurrence rates exceeding 50% in complex fistulas (14). This may be explained by the staged

healing process and incomplete tract closure associated with these techniques.

Although recurrence was more frequent among male patients (18 cases) compared to females (3 cases), no statistically significant association was found between gender and recurrence (p = 0.090). This is consistent with existing literature, which generally reports no strong relationship between gender and recurrence outcomes (8). Similarly, other studies have demonstrated comparable recurrence rates between male and female patients, suggesting that biological sex is not a major determinant of surgical outcome (13).

From a clinical perspective, these findings emphasize the importance of individualized surgical planning. The choice of surgical technique should consider fistula complexity, patient comorbidities, and the risk of recurrence versus functional outcomes. While sphincter-sparing techniques are valuable in preserving continence, they may require careful patient selection due to their higher recurrence rates (5). Conversely, more definitive procedures such as fistulotomy and fistulectomy may provide lower recurrence rates but carry a potential risk of incontinence, necessitating a balanced approach (4).

In the local context, this study provides important data on recurrence patterns in patients treated at a tertiary care center in Karachi. Limited regional studies are available on this topic, and most evidence is derived from international populations. Therefore, the findings of this study contribute valuable insight into disease patterns, treatment outcomes, and risk factors specific to the Pakistani population, which may differ due to variations in healthcare access, patient presentation, and surgical expertise.

However, this study has certain limitations. The sample size was relatively small (n = 100), and the study was conducted at a single center, which may limit the generalizability of the findings. Additionally, the follow-up period was limited to six months, which may underestimate the true long-term recurrence rate, as some recurrences may occur later. Future studies with larger sample sizes, multicenter designs, and longer follow-up durations are recommended to validate these findings and provide a more comprehensive understanding of recurrence in fistula-in-ano.

CONCLUSION

Recurrence of fistula-in-ano remains a significant clinical concern despite advances in surgical management. This study demonstrated an overall recurrence rate of 21%, with a strong association observed between recurrence and complex fistula types as well as specific surgical procedures, particularly seton placement. In contrast, no significant relationship was found between gender and recurrence. These findings highlight the importance of careful preoperative assessment and selection of appropriate surgical techniques based on fistula complexity. Furthermore, structured postoperative follow-up is essential for early detection and management of recurrence. Future studies with larger sample sizes and longer follow-up are recommended to improve treatment outcomes.

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