



Original Article

Risk Factors for Recurrence and Morbidity After Surgery for High Trans-sphincteric Anal Fistula

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Abstract

Introduction: High trans-sphincteric fistula-in-ano presents significant management challenges owing to its complex anatomy and high risk of recurrence. Despite advancements in surgical techniques, postoperative complications and recurrences remain major concerns. Identifying the factors that influence these outcomes is crucial for optimizing the treatment strategies. This study aimed to evaluate factors affecting postoperative complications and recurrence in patients undergoing surgery for high transsphincteric fistula-in-ano

Methods: This prospective observational study was conducted at the Department of Colorectal Surgery, Bangladesh Medical University (BMU), Dhaka, Bangladesh, from June 2021 to May 2022. Total 36 patients who underwent surgical management for high transsphincteric fistula-in-ano were included in this study. Patient demographics, fistula characteristics, surgical outcomes, and postoperative complications were also analyzed.

Results: The recurrence rate was 19.4%, and wound infection was significantly associated with recurrence ($P=0.033$). No significant association was found between fistula location and recurrence ($p>0.05$). Postoperative continence outcomes were favorable, with 91.2% of the patients maintaining Grade A continence. Suture line dehiscence was observed in 11.1% of cases. These findings emphasize the critical role of infection control in preventing recurrence.

Conclusion: Wound infection was a significant predictor of recurrence in patients with high transsphincteric fistula-in-ano, underscoring the need for stringent perioperative infection control. This study supports the effectiveness of sphincter-preserving techniques for maintaining continence. Further research with larger cohort and longer follow-up periods is needed to optimize treatment strategies and improve patient outcomes.

Keywords: High trans-sphincteric fistula, recurrence, postoperative complications, wound infection.

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Introduction

The anorectal condition fistula-in-ano exists as a common difficult disorder which develops when cryptoglandular infections produce long-lasting tracts that connect the anal canal with perianal skin.¹ High trans-sphincteric fistulas create substantial therapeutic barriers because their deep intrusion into the sphincter complex leads to management difficulties.² Multiple treatments exist for optimal outcome management of fistula-in-ano including fistulotomy alongside advancement flap repair and seton placement as well as current minimally invasive procedures.^{3,4} However, postoperative complications such as fecal incontinence, recurrence, and delayed healing remain major concerns.⁵

Traditional surgical treatments such as fistulectomy and fistulotomy treat anal fistulas but scientists have found that they lead to sphincter damage and cause

urinary incontinence⁶. The mucosal advancement flap procedure combined with fibrin glue application provides sphincter-preserving treatment methods for inflammatory bowel disease but achieves different success levels^{7,8}. The current surgical approaches struggle to achieve effective fistula treatment while preserving the sphincter function because recurrence rates remain high even though more studies are needed to find predictive indicators for treatment outcomes⁹. The use of laser closure techniques and the ligation of the intersphincteric fistula tract (LIFT) procedure show promising results although studies have not provided conclusive evidence for long-term effectiveness¹⁰.

Multiple studies explore factors that determine postoperative outcomes through assessment of the complexities associated with fistulas alongside previously performed interventions and abscess occurrence and also account for patient-related elements such as diabetes mellitus and tobacco use^{11,12}. Several studies document unpredictable recurrence rates and complication frequencies which indicate healthcare providers still lack critical understanding about the combined defects of various factors on patient prognosis¹³. A lack of investigation exists regarding the effectiveness comparison between new surgical procedures¹⁴.

This study evaluates the factors which trigger postoperative complications and recurrence in patients who receive high trans-sphincteric fistula-in-ano surgery. The evaluation of surgical results together with the identification of vital predictive elements help us to provide evidence-based guidance for enhancing treatment approaches. This research will lead to more specific techniques for dealing with complex anal fistulas which will produce enhanced patient results along with lower recurrence frequencies.

The objective of this study was to evaluate the factors affecting postoperative complications and recurrence in patients undergoing surgery for high transsphincteric fistula-in-ano.

Materials and Methods

This prospective observational study was conducted in the Department of Colorectal Surgery, Bangladesh Medical University (BMU), Dhaka, Bangladesh, from June 2021 to May 2022. A total of 36 patients with high trans-sphincteric fistula-in-ano who underwent surgical treatment during the study period were

consecutively enrolled. Adult patients diagnosed clinically and confirmed by magnetic resonance imaging (MRI) were included in the study after obtaining informed written consent. Patients with simple fistula-in-ano, extra sphincteric or supra sphincteric fistulas, fistulas associated with malignancy, Crohn's disease, tuberculosis, or trauma, and those with preoperative fecal incontinence were excluded. Data were collected using a predesigned structured proforma that included demographic information, clinical presentation, comorbidities, fistula characteristics, MRI findings, preoperative investigations, operative details, and postoperative outcomes. All patients underwent detailed clinical evaluation and MRI assessment for accurate classification of the fistulous tract. Surgical findings were recorded intraoperatively. Patients were followed up postoperatively to assess complications, healing, and recurrence. The collected data were entered into a database and analyzed to determine factors associated with postoperative complications and recurrence in patients with high trans-sphincteric fistula-in-ano. Statistical analysis: Statistical analyses were performed using the Statistical Package for Social Sciences (version 23.0). Descriptive analysis was conducted for all data. Mean values were calculated for continuous variables. Quantitative observations were indicated by frequencies and percentages. Fisher exact test analyzed categorical variables, shown with cross tabulation. P values <0.05 were considered statistically significant.

Results

The study included 36 patients with high trans-sphincteric fistula-in-ano, with a mean age of 39.4 ± 7.9 years; half of the patients were aged 31–40 years, and the majority were male (86.1%), giving a male-to-female ratio of 6.2:1 (Table 1). Postoperative perianal discharge was observed in 14 patients, predominantly scanty in nature (Figure 1). Most fistulas had a posterior external opening (66.7%), while 33.3% were located anteriorly (Table 2). Suture line dehiscence occurred in 11.1% of patients (Table 3). Postoperative continence status was not significantly associated with wound infection, as all patients with wound infection maintained Grade A continence ($p=0.838$) (Table 4). Wound infection was significantly associated with recurrence; 28.6% of patients with recurrence developed wound infection, whereas no wound infection was observed among patients without recurrence

($p=0.033$) (Table 5). Recurrence occurred in 16.7% of patients with anterior external openings and 20.8% of those with posterior external openings; however, this difference was not statistically significant ($p=0.571$) (Table VI).

Table I: Patients base line characteristics (n=36)

Characteristics	Frequency (n)	Percentage (%)
Age (years)		
≤30	3	8.3
31-40	18	50.0
41-50	12	33.3
>50	3	8.3
Mean ± SD	39.4±7.9	
Gender		
Male	31	86.1
Female	5	13.9

Table I shows that half (50.0%) of the patients belonged to age 31-40 years. The mean age was found 39.4±7.9 years with range from 20 to 57 years. Majority (86.1%) patients were male and 5(13.9%) patients were female. Male female ratio was 6.2:1.

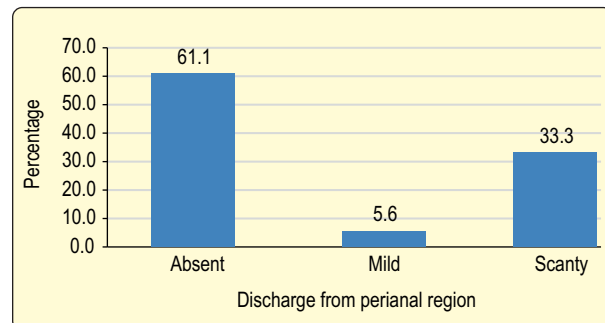


Figure 1: Distribution of the study patients according discharge from perianal region (n=36)

Fourteen patients were found discharges from perianal region among them 2 cases were mild & 12 were scanty.

Table II: Location of fistula External opening of the study patients (n=36)

Location of fistula (External opening)	Frequency (n)	Percentage (%)
Anterior	12	33.3
Posterior	24	66.7

Table II shows that two third (66.7%) patients were found in posterior and 12(33.3%) in anterior.

Table III: Suture line dehiscence of the study patients (n=36)

Suture line dehiscence	Frequency (n)	Percentage (%)
Not occurred	32	88.9
Occurred	4	11.1

Table III shows that 4 (11.1%) patients were found to have suture line dehiscence.

Table IV: Postoperative continence status with wound infection (n=36)

Postoperative continence status	Wound infection				P value
	Not occurred		Occurred		
	(n=34)		(n=2)		
	N	%	n	%	
Grade-A	31	91.2	2	100	0.838
Grade-B	3	8.8	0	0	

Table IV shows that 2(100.0%) patients had postoperative continence of grade A in wound infection and 31(91.2%) without wound infection.

Table V: Association of wound infection with recurrence (n=36)

Wound infection	Recurrence				P value
	Yes (n=7)		No(n=29)		
	n	%	n	%	
Not occurred	5	71.4	29	100	0.033
Occurred	2	28.6	0	0	

Table V shows that 2(28.6%) patients were found to have wound infection in the recurrence group and not found in without recurrence group. The difference was statistically significant ($p<0.05$) between the two groups.

Table VI: Location of fistula external opening and recurrence (n=36)

Recurrence	Location of fistula: External opening				P value
	Anterior (n=12)		Posterior (n=24)		
	N	%	N	%	
Yes	2	16.7	5	20.8	0.571
No	10	83.3	19	79.2	

Table VI shows that 2(16.7%) patients were found recurrence in anterior group and 5(20.8%) in posterior group. The difference was not statistically significant ($p>0.05$) between two groups.

Discussion

The research examined factors affecting complication rates and fistula recurrence in patients who underwent surgery for high trans sphincteric fistula in ano. Wound infection emerged as an important factor influencing recurrence, showing a significant association with recurrence ($p = 0.033$). Overall recurrence occurred in 19.4% of cases. Recurrence rates between anterior and posterior fistula locations did not differ significantly. Postoperative continence outcomes were favorable: 91.2% of patients achieved Grade A continence. These results are consistent with prior studies of complex fistula surgery^{4,8,10}.

Previous studies report wide variation in recurrence after surgery for trans sphincteric fistula, with 30–40% recurrence reported after traditional fistulotomy and seton placement⁷. The present data suggest the surgical approach used in this cohort may reduce recurrence, but larger studies are needed to confirm this. Wound infection has been strongly linked to fistula recurrence; Hall et al. found that surgical infections impair tissue healing and increase the likelihood of recurrence¹⁰. These findings underscore the importance of strict perioperative and postoperative infection control^{10,13}.

Studies evaluating the effect of fistula location on recurrence have produced mixed results. This study found no significant difference between anterior and posterior external openings. Malakorn et al. reported that anatomical location alone is not a reliable predictor of recurrence when advanced procedures such as LIFT are performed¹². Conversely, Bleier and Moloo noted higher recurrence in posterior fistulas, possibly due to greater external sphincter involvement⁴. Differences in patient selection, surgical technique, and postoperative care likely explain these discrepancies^{7,12}.

Preservation of postoperative continence is a key consideration because sphincter injury can cause varying degrees of fecal incontinence. In this study, 91.2% of patients retained Grade A continence, supporting findings by Toyonaga et al. that non sphincter splitting techniques better preserve continence than conventional fistulotomy¹⁵. Maqbool

et al. similarly reported minimal impact on continence after sphincter sparing procedures, though long term follow up is necessary to confirm sustained function¹⁶.

Clinically, these results support the selection of sphincter preserving techniques and rigorous infection prevention to minimize recurrence while maintaining function. Standardized postoperative antibiotic regimens and wound care protocols should be emphasized. Optimal surgical choice may vary by patient subgroup; comprehensive preoperative planning is essential, particularly for diabetic patients and those with prior failed surgeries, as noted by Sileri et al.¹⁷.

Limitations and recommendations. This study is limited by its small sample size, which reduces generalizability, and by a short follow up period that limits assessment of long term recurrence and continence. Future research should include larger, multicenter cohorts with extended follow up, standardized surgical protocols, and evaluation of advanced wound healing and minimally invasive techniques to improve management of complex anal fistulas.

Conclusion

This study found wound infection to be a significant predictor of recurrence in high trans sphincteric fistula in ano, while fistula location had no statistically significant effect. These results underscore the need for rigorous perioperative infection control measures to optimize surgical outcomes^{10,13}. High rates of preserved continence support the use of sphincter preserving techniques^{15,16}. Overall, the findings advocate individualized surgical planning and improved wound healing strategies. Future research should evaluate long term outcomes and the efficacy of minimally invasive approaches^{9,14}.

Ethical Issue

IRB clearance was obtained from the corresponding Hospital

Conflict of Interest

The authors declare no conflict of interest.

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