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Post-Fistulotomy Outcomes: A Study of Complications, Healing Time, and Recurrence

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Abstract **Original Research Article**

Background: Fistulotomy is a widely performed surgical procedure for the management of anal fistulas. While it is considered effective; complications, healing time, and recurrence rates vary. This study aimed to evaluate the outcomes of fistulotomy, focusing on post-operative complications, healing duration, and recurrence rates. ***Methods:*** This prospective observational study included 350 patients who underwent fistulotomy across six hospitals in Bangladesh from July 2021 to June 2024. Demographic, clinical, and surgical data were collected using a structured data sheet and outcomes were analyzed. Outcomes assessed included complications (e.g. incontinence, infection, bleeding), wound healing time, recurrence within six months, and patient satisfaction. ***Results:*** The majority of patients (84.9%) were male, with a mean age of 39.3 ± 12.1 years. The most common fistula type was intersphincteric (60.9%), and 81.7% were classified as simple fistula. Post-operative complications included temporary flatus incontinence in 7.4%, reactionary hemorrhage in 7% of cases, with no significant infective complications. Cumulative 77.7 % patients experienced complete healing within sixty days, and the recurrence rate was 7.7%. Patient satisfaction was high, with 85.1% of patients expressing satisfaction with the outcomes. The median time for returning to daily activities was 2.3 days, and hospital stays were short (median: 1.2 days). ***Conclusion:*** Fistulotomy remains an effective treatment for anal fistulas, with low complication and recurrence rates. Most patients experienced favorable healing times and high satisfaction levels, reaffirming fistulotomy as a reliable surgical approach.

Keywords: Fistulotomy, anal fistula, complications, healing time, recurrence, patient satisfaction, fistula in ano.

INTRODUCTION

Anal fistula is a common yet challenging anorectal condition characterized by an abnormal tract connecting the anal canal to the perianal skin [1,2]. It typically arises as a result of cryptoglandular infections and is associated with symptoms such as perianal pain, recurrent abscesses, discharge, and itching [3]. If left untreated, it can lead to significant morbidity, affecting the patient's quality of life [4]. Surgery remains the mainstay of treatment for anal fistulas, with fistulotomy being one of the most commonly performed procedures [5]. This surgical approach aims to eliminate the fistulous tract while promoting healing and minimizing complications [6].

Fistulotomy is associated with a high success rate for simple anal fistulas; however, outcomes can vary based on the complexity of the fistula, patient characteristics, and post-operative care [7]. Complications such as delayed wound healing, infection, recurrence, and fecal incontinence are key concerns that influence long-term success and patient satisfaction [8]. Various classification systems, such as Park's classification and the American Gastroenterological Association (AGA) guidelines, are used to evaluate

fistula complexity and guide treatment decisions [9]. Despite advancements in surgical techniques, the management of anal fistulas remains challenging, particularly for complex cases, where the risk of recurrence and functional impairment is higher [10].

Optimal post-operative outcomes depend not only on surgical precision but also on comprehensive follow-up care [11]. Factors such as early detection of complications, appropriate wound management, and timely intervention are critical for minimizing adverse outcomes [12]. Moreover, the patient's return to daily activities and satisfaction with the procedure play a crucial role in assessing the overall success of fistulotomy [13].

Despite the prevalence of anal fistulas and the widespread use of fistulotomy, there is a relative paucity of comprehensive data from low-resource settings [14]. Most studies have focused on outcomes in specialized centers, making it essential to explore the efficacy and safety of fistulotomy in diverse healthcare environments. This study aimed to fill this gap by evaluating the complications, healing time, recurrence rates, and patient satisfaction following fistulotomy, providing valuable insights to improve clinical practice and patient care in similar settings.

METHODOLOGY & MATERIALS

This prospective observational study was conducted over three years, from July 2021 to June 2024 and included 350 patients who underwent fistulotomy for anal fistula. Inclusion criteria encompassed patients who underwent fistulotomy during the study period and had complete follow-up data. Patients with extra-sphincteric, supra-sphincteric and high trans-sphincteric fistula; alternative procedures for anal fistula or pre-existing anorectal malignancies or inflammatory bowel diseases were excluded.

Initially 444 patients were diagnosed as anal fistula. Among them all the extra-sphincteric (1), supra-sphincteric (14), high trans-sphincteric (73) were excluded as fistulotomy will cause incontinence. Six of inter-sphincteric fistula patient were excluded from the study due to consent issue for fistulotomy; who were managed by other procedure.

All of the operative data were written and drawn in the St Mark's Hospital fistula operation note format. Demographic and detailed post-operative data were collected using a structured data sheet. Patients were followed up at first week then two to four weekly until healing. The study was conducted at six hospitals of Bangladesh. Among them five hospitals are situated at Dhaka: Shaheed Suhrawardy Medical College Hospital, Mudga Medical College Hospital, Super Specialized Hospital, Impulse Hospital, Labaid Cancer and Super Specialty Hospital. One hospital is in Jhenaidah district: Rabeya Hospital.

Data were collected to evaluate Demographics, fistula characteristics, complications, wound healing time, recurrence rates and patient satisfaction. Complications, categorized as reactionary hemorrhage, post-operative pain, infective complications, and fecal incontinence. Wound healing time was classified into <30 days, 30–60 days, and >60 days, while recurrence was assessed within six months of surgery. Patient satisfaction was recorded using a 5-point scale ranging from "Very Satisfied" to "Very Dissatisfied."

All data were analyzed using SPSS Version 25.0, and descriptive statistics such as mean, standard deviation, median, and percentages were used to summarize the results. This comprehensive approach allowed for a robust evaluation of the complications, healing time, recurrence, and patient satisfaction associated with fistulotomy.

RESULTS

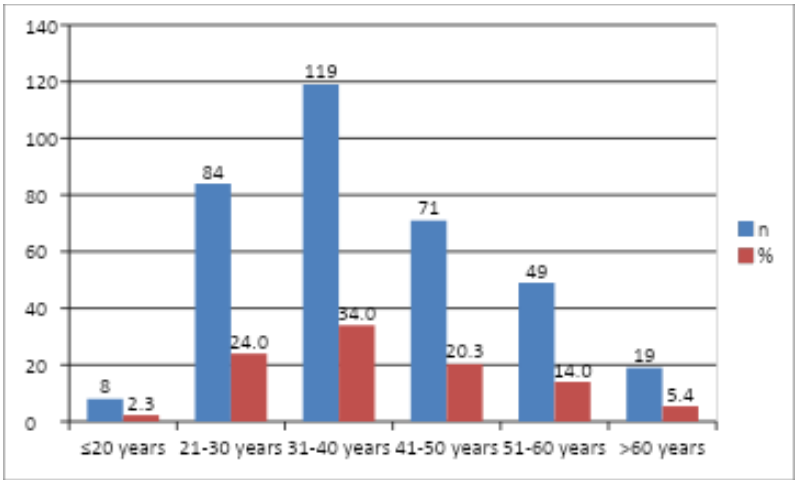

Figure 1: Age Distribution of our Study Participants (N = 350)

Figure 1 presents the age distribution of the 350 patients who underwent fistulotomy. The mean age was 39.3 ± 12.1 years. The majority of patients (34.0%) were aged 31-40 years, followed by 24.0% in the 21-30 age group. Patients aged ≤20 and >60 years constituted the smallest proportions, at 2.3% and 5.4%, respectively.

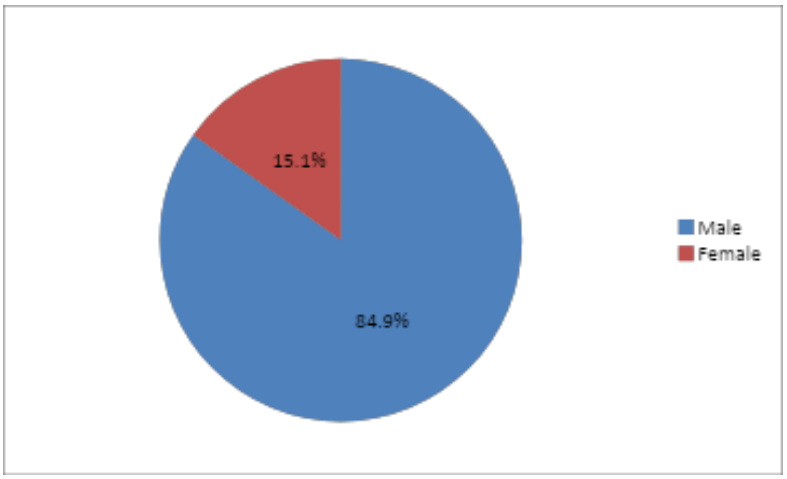

Figure 2: Sex Distribution of our Study Participants (N = 350)

Figure 2 shows the sex distribution of the 350 patients who underwent fistulotomy. The majority were male (84.9%), while females accounted for 15.1%. The male-to-female ratio was approximately 5.6:1.

Table I: Parks Classification in all the anal fistula diagnosed patients (N = 444)

Tract Type	N	%
Superficial	35	7.9
Intersphicteric	219	49.3
Transsphincteric (Low)	102	23.0
Transsphincteric (High)	73	16.4
Suprasphincteric	14	3.2
Extrasphincteric	1	0.2
Total	444	100

Table I presents the Parks classification of all 444 diagnosed anal fistula cases. The intersphincteric type was the most common (49.3%), followed by low transsphincteric fistulas (23.0%). High transsphincteric cases accounted for 16.4%, while superficial fistulas made up 7.9%. Less frequent types included suprasphincteric (3.2%) and extrasphincteric (0.2%).

Table II: Parks Classification of the fistulotomy patients (N = 350)

Tract Type	N	%
Superficial	35	10.0
Inter-sphicteric	213	60.9
Trans-sphincteric (low)	102	29.1
Total	350	100

Table II outlines the distribution of fistula types based on Parks classification among the 350 patients in fistulotomy. The most common type was inter-sphincteric (60.9%), followed by trans-sphincteric (29.1%). Superficial fistulas accounted for 10.0%.

Table III: Total Fistula AGA Classification (N = 444)

Type	N	%
Simple	286	64.4
Complex	158	35.6
Total	444	100

Table III categorizes the 444 fistula cases based on the American Gastroenterological Association (AGA) classification. The majority of fistulas (64.4%) were classified as simple, while 35.6% were complex.

Table IV: Fistulotomy AGA Classification (N = 350)

Type	N	%
Simple	286	81.7
Complex	64	18.3
Total	350	100

Table IV presents the classification of fistulas according to the AGA system. The majority of fistulas were simple (81.7%), while complex fistulas constituted 18.3% of the cases in fistulotomy. Among the complex fistula patients the internal opening was located near the anorectal junction in two patients; Six patients had secondary blind tract, while the remaining (56) patients presented with multiple openings or tracks.

Table V: Wound Healing Time from Surgery (N = 350)

Time (days)		N	%
Cumulative within 60 days=77.7%	<30	81	23.1
	30-60	191	54.6
More than 60 days	>60	78	22.3
Total		350	100

Table V illustrates the wound healing time following fistulotomy. Most patients (54.6%) healed within 30-60 days, while 23.1% healed in less than 30 days. Cumulative 77.7 % patients experienced complete healing within sixty days. A smaller proportion (22.3%) required more than 60 days for wound healing.

Table VI: Recurrence of Anal Fistula within 6 Months (N = 350)

Recurrence	N	%
Yes	27	7.7
No	323	92.3
Total	350	100.0

Table VI demonstrates the recurrence rate of anal fistula within 6 months after fistulotomy. Recurrence occurred in 7.7% of patients, while 92.3% showed no recurrence.

Table VII: Summary of Post-Operative Outcomes and Patient Satisfaction (N = 350)

Variable		N	%
Incontinence	Solid stool	0	0
	Liquid stool	0	0
	Gas	26	7.4
Reactionary hemorrhage	Yes	123	35.1
	No	227	64.9
Need for Pethidine injection	Yes	0	0.0
	No	350	100.0
Infective complications (within 1 month)	Yes	0	0.0
	No	350	100.0
Relief of perianal itching (days)	<30	333	95.1
	30-60	17	4.9
	>60	0	0.0
Number of post-operative follow-ups	2-3	315	90.0
	>4	35	10.0
Operative time (minutes)	Mean ± SD	33.7 ± 7.1	
Hospital stay (days)	Median	1.2	
Return to daily activity (days)	Median	2.3	
Patient satisfaction	Very satisfied	245	70.0
	Satisfied	53	15.1
	Not sure	35	10.0
	Dissatisfied	17	4.9
	Very dissatisfied	0	0.0

Table VII summarizes post-operative outcomes and patient satisfaction in 350 fistulotomy patients. Only 7.4% of patients experienced gas incontinence, while no cases of solid or liquid stool incontinence were observed. Reactionary hemorrhage occurred in 35.1% of cases, but no patients required Pethidine injections or experienced infective complications. Most (95.1%) had perianal itching relief within 30 days. The majority (90.0%) needed 2–3 follow-ups. The mean operative time was 33.7 ± 7.1 minutes, with a median hospital stay of 1.2 days and return to daily activities in 2.3 days. Patient satisfaction was high, with 85.1% satisfied or very satisfied, reflecting positive surgical outcomes.

DISCUSSION

Anal fistula is a challenging condition due to its recurrent nature and associated post-operative complications, despite surgical intervention [15,16]. Fistulotomy remains the gold standard for simple anal fistulas, with its effectiveness reflected in numerous studies [17,18]. Our findings provide insight into post-operative outcomes, healing times, and recurrence rates, aligning with or differing from previously reported studies.

In our study, the mean age of participants was 39.3 years, with most patients in the 31–40 years age group. This observation is consistent with the findings of Hämäläinen and Sainio, who reported a peak incidence of anal fistulas in middle-aged adults [19]. The male predominance observed in our study (84.9%) aligns with previous studies, including Nambirajan *et al.*, which noted a male-to-female ratio of 3:1. The higher prevalence in males may be attributed to anatomical and hormonal differences influencing susceptibility to glandular infections [20]. Smoking, along with factors such as diabetes, poor nutrition, immunosuppression, and chronic inflammation, may negatively impact the healing process by impairing blood circulation, reducing tissue oxygenation, and delaying wound healing [5,9].

The classification of fistulas significantly influences treatment outcomes. In our study, intersphincteric fistulas (60.9%) were the most common type, followed by trans-sphincteric fistulas (29.1%). This finding correlates with Parks' classification system, which also identifies intersphincteric fistulas as the most frequent type. Similarly, simple fistulas accounted for 81.7% of cases in our cohort based on AGA classification, comparable to other studies that reported simple fistulas in 75%–85% of cases. The predominance of simple fistulas in our study reinforces the suitability of fistulotomy for managing these cases.

Our findings regarding wound healing times post-fistulotomy align with earlier studies. More than half of our patients (54.6%) healed within 30–60 days, while 23.1% healed in less than 30 days. Cumulative 77.7 % patients experienced complete healing within sixty days. These results are comparable to Anaraki *et al.*, who reported median healing times of 6–8 weeks for uncomplicated fistulas [21]. However, 22.3% of patients in our study experienced delayed healing beyond 60 days, consistent with reports by Malik *et al.*, who identified factors such as larger wound sizes and secondary infections as contributors to prolonged healing [22]. Amont these 22.3% patients of delayed healing; 7.7% of recurrent cases are also included. If we deduct this recurrent case then actual delayed healing goes to 15% only.

Recurrence remains a critical concern in fistula surgery. Our study's recurrence rate of 7.7% within six months is consistent with previous studies, such as Ortiz *et al.*, which reported recurrence rates ranging from 5% to 10% for fistulotomy [23]. Potential reasons for recurrence include inadequate drainage of secondary tracts or unrecognized complexity in the fistula. The low recurrence rate in our study underscores the importance of pre-operative imaging as recommended by Nelson *et al.*, [16].

Post-operative complications such as hemorrhage and infections significantly impact patient recovery and satisfaction. Reactionary hemorrhage occurred in 35% of our cases, which is higher than the rates reported by Malik *et al.*, [22]. However, despite this incidence, none of our patients experienced severe hemorrhage requiring blood transfusion or resuscitation, indicating that the bleeding was minimum, self-limiting and conservatively manageable. Infective complications were notably absent in our study, likely due to strict adherence to aseptic techniques and the routine use of perioperative antibiotics, consistent with practices reported by Nambirajan *et al.*, [20]. In our study only 7.4% of patients experienced gas incontinence, all of which were temporary. No cases of solid or liquid stool incontinence were observed.

Post-fistulotomy pain management is essential for patient comfort and recovery. None of the patients in our study required pethidine injections, suggesting effective pain control through multimodal analgesia we used such as per operative pudendal nerve block routinely plus combination of post operative paracetamol, NSAIDs and pregabalin. This finding supports the results of Jiang *et al.*, who emphasized the role of multimodal analgesia in minimizing post-operative discomfort [24].

Relief from perianal itching, a common symptom of anal fistulas, was achieved in 95% of patients within 30 days. This rapid resolution mirrors the findings of Ommer *et al.*, who reported symptom relief in most patients within the first month post-surgery [25]. Similarly, our patients required a median of 2–3 follow-up visits, highlighting the efficacy of fistulotomy in reducing the need for prolonged follow-up care, as also noted by Gupta *et al.*, [26].

Hospital stay and return to daily activities are key indicators of post-operative recovery. The median hospital stay in our study was 1.2 days, with patients resuming daily activities within 2.3 days. These results are consistent with studies by Ortiz *et al.*, which reported short hospital stays and early return to work following fistulotomy [23]. The low morbidity associated with fistulotomy contributes to its cost-effectiveness and reduced socio-economic burden on patients and healthcare systems.

Patient satisfaction is a critical measure of surgical success. In our study, 70% of patients were "very satisfied" with their outcomes, and only 5% were dissatisfied. This high satisfaction rate aligns with Ommer *et al.*, who reported satisfaction rates above 80% following fistulotomy [25]. Factors contributing to high satisfaction include effective symptom relief, low recurrence rates, and minimal post-operative complications.

Limitations of the study

Despite these favorable outcomes, our study has limitations. Outcomes may vary across different centers due to variations in surgical expertise or post operative care.

RECOMMENDATIONS

Future research should aim to address these limitations by conducting multicenter randomized controlled trials comparing fistulotomy with newer surgical techniques. Long-term follow-up studies are also necessary to evaluate the durability of fistulotomy outcomes and their impact on patients' quality of life.

CONCLUSION

In conclusion, our study demonstrates that fistulotomy is a safe and effective procedure for treating anal fistulas, with favorable outcomes in terms of healing time, recurrence rates, and patient satisfaction. These findings reinforce its role as the gold standard for simple fistulas while emphasizing the importance of meticulous surgical technique and comprehensive post-operative care in achieving optimal results.

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