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A Comparitive Study Of Surgical Outcomes Between Vaaft (Video Assisted Anal Fistula Treatment) And Conventional Fistulotomy For Management Of Low Anal Fistula Ano

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ABSTRACT

Introduction: This study will evaluate the postoperative outcomes of two surgical techniques: an advanced minimally invasive technique (Group A) and a classic surgical approach (Group B). The emphasis is on recovery time, complications, pain levels, and recurrence rates.

Methodology: A total of 60 patients were randomly assigned to two groups of 30 each. Group A experienced the improved surgical approach, whilst Group B used the old way. Postoperative outcomes were evaluated based on procedure time, blood loss, pain levels at various time points, healing time, hospital stay, return to regular activity, and recurrence of the disease.

Results: Group A had much less postoperative discomfort, faster recovery, and a speedier return to normal activities and work than Group B. In addition, Group A had much lower recurrence rates and comorbidities. However, there was no significant difference in hospital stays between the groups. Statistical analysis showed substantial differences ($p < 0.05$) in numerous outcomes, preferring the advanced strategy.

Conclusion: The findings indicate that the advanced minimally invasive procedure (Group A) produces superior recovery outcomes, fewer problems, and lower recurrence rates than the traditional surgical approach. This promotes the employment of modern procedures to improve patient recovery and lower surgical risks.

Keywords: *Minimally invasive surgery, recovery, complications, recurrence, surgical outcomes, postoperative care.*

1. INTRODUCTION

Anal fistula is a chronic inflammatory disorder of the anorectal region characterized by an aberrant tract linking the anal canal to the perianal epidermis that is frequently caused by crypto glandular infections [(1)]. It produces severe morbidity due to discomfort, recurring abscess formation, and chronic discharge, needing surgical intervention for effective treatment [(2).] Males are more likely to contract the disease than females, with a higher incidence found in people with Crohn's disease, TB, and diabetes mellitus [(3)].The major goal of surgical treatment for anal fistula is to remove the fistulous tract while maintaining anal sphincter function to avoid problems including fecal incontinence and recurrence [(4).]Fistulotomy has long been the

conventional surgical procedure for low anal fistula-in-ano. This method entails completely cutting the fistulous tract to encourage healing through secondary intention [5].

Furthermore, VAAFT improves intraoperative assessment of complex fistula pathways, allowing for more accurate surgery while maintaining anorectal function [5]. However, questions have been expressed concerning VAAFT's cost-effectiveness, as the specialist equipment required raises procedure costs, restricting accessibility in resource-constrained situations [6]. While fistulotomy is highly effective, with reported healing rates of up to 90%, the main disadvantage is the danger of sphincter injury, which can lead to fecal incontinence, especially if the tract is proximal to or involves a considerable amount of the sphincter [6].To address this issue, minimally invasive sphincter-preserving procedures have been developed, including Video-Assisted Anal Fistula Treatment (VAAFT). A comparison study comparing the outcomes of VAAFT and standard fistulotomy is required to ascertain their relative efficacy, safety, and effects on postoperative quality of life [7].Antepartum hemorrhage (APH) has been a leading cause of maternal mortality worldwide, especially in developing countries like India. Its early diagnosis and timely management can APH is defined as bleeding from the genital tract after 28 weeks of gestation to delivery of the baby.[1,2]

Recent systematic reviews and meta-analyses have found that VAAFT has a recurrence rate of around 17.7% and a complication rate of 4.8%, but standard fistulotomy, while successful, presents a higher risk of incontinence [8]. VAAFT is a unique endoscopic method that enables direct imaging of the fistulous tract, precise identification of internal and secondary openings, and targeted cauterization without causing significant tissue disturbance. The approach entails performing fistuloscopy with a camera-equipped fistuloscope, followed by electro cauterization and closure of the internal opening to minimize injury to adjacent structures [9]. Several studies have shown that VAAFT has advantages over standard fistulotomy, including less postoperative pain, shorter hospital stays, faster recovery, and lower recurrence rates. Furthermore, patient-reported outcomes indicate that persons receiving VAAFT have better wound healing, fewer wound-related problems, and a higher quality of life after surgery [10].

This study aims to compare the surgical outcomes of both procedures in terms of healing time, recurrence rates, postoperative complications, and patient satisfaction.

2. METHODOLOGY

Study design

This cross-sectional study aims to evaluate and compare the surgical outcomes of Video-Assisted Anal Fistula Treatment (VAAFT) and conventional fistulotomy for the management of low anal fistulas.

Study Area and Duration

The study took place in the Department of General Surgery at SRM Medical College Hospital and Research Centre in Tamil Nadu, a well-known medical facility with substantial surgical competence. The trial ran from September 2024 to September 2025, giving plenty of time for patient enrollment, intervention, and follow-up, as well as rigorous data collecting for a thorough analysis.

Subject Selection

Patients were chosen based on well-defined inclusion and exclusion criteria, ensuring that the study population was uniform and relevant to the research aims. All participants provided informed written consent, guaranteeing ethical compliance and transparency while fully disclosing study methods, risks, and benefits. After getting appropriate information, all subjects volunteered to participate in the study.

Inclusion and Exclusion Criteria

Patients with low-level fistula-in-ano aged 18 and up, as well as those with an Intersphincteric type of fistula, were eligible for the study. Patients with high-level fistula-in-ano, inflammatory bowel disorders (IBD), tuberculosis or numerous anal fistulas, colorectal or anal canal cancer. These exclusions were necessary to ensure that the results were specific to the target patient population.

Sample Size Calculation:

The sample size for the study was determined to be 60 participants, with 30 assigned to each group. This sample size was estimated using a similar study conducted by Andley M et al. The mean healing period for Group 1 (VAAFT) and Group 2 (Open Fistulectomy) was estimated to be 2.2 ± 0.5 days and 3.2 ± 1.6 days correspondingly. The study's statistical power was established at 90%, with a level of significance of 5%, ensuring that it had the power to detect noteworthy differences between the groups.

Sampling Methodology

A simple random sample strategy was used to reduce selection bias and assure equal representation of both surgical techniques. This strategy was adopted to ensure that every eligible participant received an equal chance of being assigned to

either group. A computer-generated random number technique was utilized to randomly assign participants to two groups: Group 1 (VAAFT) and Group 2 (Open Fistulectomy), each with 30 patients. This strategy attempted to decrease any allocation biases while also providing a fair comparison of the two treatment options.

Operational definition:

VAAFT (Video-Assisted Anal Fistula Treatment)

VAAFT is a minimally invasive surgical technique for treating anal fistulas that involves using a video-assisted system to view the anal canal and fistula tract. The procedure is performed using specialized instruments to remove or treat the fistula with minimal damage to surrounding tissues. The surgical outcome is measured by healing time, recurrence rates, and complications following the procedure [(11)].

Conventional Fistulotomy

Conventional fistulotomy refers to the traditional surgical method for treating anal fistulas, where the fistula tract is surgically opened and laid open to allow drainage and healing. The procedure may involve cutting through sphincter muscles, and the outcome is measured based on similar parameters as for VAAFT, such as healing time, complications, recurrence, and hospital stay [(12)].

Low Anal Fistula

A low anal fistula refers to a fistula located below the level of the dentate line in the anal canal, typically involving the Intersphincteric or transsphincteric space. This classification of fistula is crucial as it directly impacts the surgical approach and is the focus of both VAAFT and conventional fistulotomy in this study [(13)].

3. RESULTS

Table 1: Socio-Demographic Characteristics of Study Participants in Group A and Group B

S.no	variables		Groups		P value
			Group A (n=30)	Group B (n=30)	
1.	Age	<20yrs	5(16.7%)	1(3.3%)	0.389
		20-40yrs	10(33.3%)	12(40.0%)	
		20-60yrs	11(36.7%)	13(43.3%)	
		>60yrs	4(13.3%)	4(13.3%)	
2.	Gender	Male	22(73.3%)	19(68.3%)	0.405
		Female	8(26.7%)	11(31.7%)	

Table 1 shows that age distribution was similar between groups, with most participants aged 20–60 years (p = 0.389). A small proportion was under 20 or above 60 years. Males were predominant (73.3% vs. 68.3%), while female distribution was comparable (p = 0.405). No significant differences were observed in age or gender between the groups.

Table 2: Comparison of surgical outcome between Group A and Group B

S.no	variables		Mean ± SD	t value	P value
1.	Procedure time	Group A	52±5.2	7.798	0.001*
		Group B	42±4.6		
2.	Blood loss between the groups	Group A	14.4±3.0	-2.405	0.010*
		Group B	16.8±4.6		
3.	Pain				
	Month 1	Group A	4.9±0.9	-6.17	0.001*
		Group B	6.5±1.1		

	Month 2	Group A	3.9±0.8	-5.422	0.001*
		Group B	5.0±0.8		
	Month 3	Group A	1.1±0.9	-10.92	0.001*
		Group B	3.9±1.1		
4.	Healing time	Group A	24.5±3.0	-6.467	0.001*
		Group B	29.5±3.1		
5.	Hospital stay	Group A	10.6±1.9	0.151	0.44
		Group B	10.5±1.5		
6.	Return to normal activity	Group A	17.3±1.7	-6.446	0.001*
		Group B	20.1±1.6		
7.	Return to work	Group A	20.8±2.5	-4.764	0.001*
		Group B	24.0±2.7		

(P value <0.05 is considered to be a significant)

Table 2 shows that group A had a longer procedure time (p = 0.001) but lost less blood (p = 0.010). Group A had considerably lower pain scores and faster healing time (p = 0.001). They resumed normal activities and work earlier (p = 0.001), whereas the hospital stay had no effect (p = 0.44). Overall, Group A had superior recovery outcomes than Group B.

Table 3: Comparison of Recurrence and Complications between Group A and Group B

S.no	variables		Groups		P value
			Group A	Group B	0.023*
1.	Recurrence	Yes	2(6.6%)	7(23.3%)	
		No	28(96.7%)	23(76.7%)	
2.	Complications				
	Bleeding		1(3.3%)	4(13.3%)	0.018*
	Infection		0(0%)	5(16.7%)	
	None		29(96.7%)	21(70%)	

(P value <0.05 is considered to be a significant)

Table 3 shows that recurrence was substantially higher in Group B (23.3%) compared to Group A (6.6%) (p = 0.023). Complications differed significantly (p = 0.018), with 13.3% of Group B and 3.3% of Group A experiencing hemorrhage. Only Group B (16.7%) experienced infection, while Group A had none. Overall, 96.7% of Group A experienced no difficulties, compared to 70% in Group B.

4. DISCUSSION

Our study found that Group A had a considerably longer procedure duration (52±5.2 minutes) than Group B (42±4.6 minutes) (p=0.001), but experienced less blood loss (14.4±3.0 mL vs. 16.8±4.6 mL, p=0.010). Previous research has shown similar tendencies. Vijay et al. [14] showed that laparoscopic operations have longer operative times but result in reduced intraoperative blood loss compared to open approaches. Our study found that Group A had considerably lower pain scores (p=0.001) and a faster recovery time (24.5±3.0 vs. 29.5±3.1 days, p=0.001). Sharma et al. [15] found that patients who underwent minimally invasive surgeries experienced considerably lower postoperative pain levels than those who underwent typical open procedures. Our study (24.5 ± 3.0 days vs. 29.5 ± 3.1 days, p = 0.001) supports Chen et al.'s [16] findings of faster recovery using minimally invasive procedures. Lower infection rates (0% vs. 16.7%) contribute to improved recovery. Patients in Group A returned to normal activities (17.3±1.7 days) and work (20.8±2.5 days) considerably earlier than those in Group B (20.1±1.6 days, 24.0±2.7 days, respectively) (p=0.001). Jones et al. [17] confirmed similar findings in hernia repair studies, indicating that patients receiving laparoscopic repair returned to work earlier than those undergoing open operations.

Group A had a considerably lower recurrence rate (6.6%) than Group B (23.3%) (p = 0.023). Furthermore, Group A had significantly fewer problems, such as infections (0% vs. 16.7%) and bleeding (3.3% vs. 13.3%, p=0.018). Lee et al. [18] found similar results in a meta-analysis of colectomy operations, indicating that minimally invasive approaches had lower recurrence and complication rates than open surgery. Our study demonstrated considerably lower blood loss in Group A (14.4 ± 3.0 mL) compared to Group B (16.8 ± 4.6 mL, p = 0.010), similar to Gonzalez et al.'s (2018) report of reduced blood loss with tourniquet use in total knee arthroplasty. Both studies emphasize the importance of surgical procedures for reducing intraoperative bleeding and increasing outcomes [19]. Compared to other metrics, the hospital stay was similar in the two groups (10.6±1.9 vs. 10.5±1.5 days, p=0.44). Patel et al. [20] showed no significant difference in hospital stay duration between patients undergoing early vs. delayed mobilization following hip fracture surgery, which supports our findings. Similarly, Nguyen et al. [21] found that hospital stays are frequently impacted by factors other than surgical technique, such as patient comorbidities and postoperative care regimens. Our study demonstrated considerably reduced postoperative infection rates in Group A (0%) compared to Group B (16.7%), which is consistent with Singh et al. [22], who stressed the influence of surgical procedures on infection prevention in orthopedic surgeries. Anderson et al. [23] found that less invasive procedures resulted in a faster return to work (20.8 ± 2.5 days in Group A vs. 24.0 ± 2.7 days in Group B, p = 0.001). Both studies highlight the advantages of modern surgical techniques in decreasing complications and improving recovery.

In this study, Group A had lower recurrence rates and fewer complications, which is consistent with Mori et al. [24], who discovered VAAFT patients had lower recurrence rates and complications than standard fistulotomy, underlining the benefits of advanced surgical procedures. Similar to your findings in Group A, Bae et al. [25] found that patients undergoing minimally invasive colorectal surgery recovered faster and had fewer issues than those undergoing open surgery, underscoring the benefits of less invasive techniques. Our study found that Group A had a faster healing time (24.5 ± 3.0 days) compared to Group B (29.5 ± 3.1 days). This is consistent with Ghosh et al. [26], who reported shorter healing periods with minimally invasive diabetic foot procedures, implying reduced tissue damage. Our study's lower infection rate in Group A (0%) compared to Group B (16.7%) is consistent with Patel et al. [27], who discovered that minimally invasive orthopedic surgeries resulted in significantly fewer infections than traditional open procedures, highlighting the importance of surgical approach in reducing complications. Kumar et al. [28] discovered that laparoscopic surgery resulted in faster recovery and fewer issues, which is consistent with your study's findings, in which Group A experienced faster recovery, less postoperative discomfort, and fewer complications. This lends weight to the assumption that less invasive procedures improve overall surgical outcomes.

Our study found that Group A recovered faster and had less issues, which is consistent with Yang et al. [29], who discovered that laparoscopic cholecystectomy resulted in less postoperative discomfort, faster recovery, and fewer complications than open surgery. Both studies highlight the benefits of minimally invasive treatments for faster recovery times. Mishra et al. [30] discovered that minimally invasive hernia repair resulted in faster recovery and lower complication rates, comparable to your study in which Group A had better recovery, fewer complications, and lower recurrence rates. Both studies show that less invasive techniques reduce recovery time and problems. In this study, Group A had a far lower infection rate (0%) than Group B (16.7%). Singh et al. [31] also found fewer infections in minimally invasive orthopedic procedures, confirming the notion that enhanced surgical techniques can reduce postoperative problems and infections, which is consistent with your findings.

5. CONCLUSION

Our findings show that Group A, which underwent the advanced surgical method, had much superior postoperative results than Group B. Group A reported less discomfort, faster recovery, and an earlier return to normal activities and work. Furthermore, recurrence and problems were significantly reduced in Group A, demonstrating the advantages of minimally invasive surgery. These findings are consistent with prior research showing that enhanced surgical techniques save recovery time, reduce complications, and improve overall patient outcomes. Our findings imply that using such measures may result in better recovery, particularly in terms of pain control and fewer postoperative complications. Further research with bigger sample numbers is required to confirm these findings. Overall, minimally invasive surgery seems to be a promising alternative for improving patient recovery.

6. STRENGTH AND LIMITATIONS

This study's strengths include a comparative design that directly examines the impact of different surgical procedures on patient outcomes, as well as a complete consideration of multiple outcome measures such as operation time, pain, healing time, and recurrence. The statistically significant differences between the groups, as well as Group A's lower recurrence and complication rates, demonstrate the enhanced technique's efficiency. However, the study has limitations, such as a small sample size of 30 participants per group, which restricts statistical power and generalizability, and the fact that it is a single-center study, which may have an impact on the findings' external validity. Furthermore, the short follow-up period limits the assessment of long-term consequences, and group assignment biases may have influenced the results.

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