

Two Stages Re-routing Versus Fistulectomy with Primary Sphincteric Reconstruction in Treatment of High Transsphincteric Anal Fistula

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ABSTRACT

Background: Fistula in ano remains a challenging condition in colorectal surgery due to its high recurrence rate and potential for fecal incontinence. Various surgical techniques, such as seton placement, fibrin glue application, rectal advancement flaps, collagen plug insertion, fistulotomy with sphincter repair and fistula tract rerouting, have been described for its treatment. Nonetheless, no single technique consistently superior to the others. Obliterating the fistula tract while maintaining complete continence is the main objective of any therapeutic strategy.

Objective: The outcomes of rerouting and fistulectomy with primary sphincteric reconstruction will be analyzed and compared in order to ascertain which procedure is better for treating high trans-sphincteric fistulas in ano.

Patients and Methods: A randomized clinical trial was conducted between January 2023 and May 2024, involving 30 patients with high trans-sphincteric fistulas. Patients were randomized to either the fistulectomy and primary sphincteric repair group or the rerouting group.

Results: Both groups exhibited similar results, with no statistically significant difference observed between them regarding the recurrence rate, postoperative complications and continence.

Conclusion: In patients with high trans-sphincteric fistula-in ano, rerouting and fistulectomy with primary sphincteric reconstruction operations yield similar results in terms of healing rate, recurrence, continence, and quality of life; no treatment is better than the other.

Key Words: Re-routing, transsphincteric anal fistula, sphincteric reconstruction.

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INTRODUCTION

Fistula in ano is a specific type of fistula that connects the perianal skin to the rectum or anal canal^[1]. Anal fistula affects approximately 1 in 10,000 individuals annually^[2].

Cryptoglandular infection is often considered the primary cause of fistula development. This infection leads to the formation of a perirectal abscess, which is an acute inflammatory process. In contrast, fistula formation represents a chronic condition. Symptoms associated with fistula disease can significantly impact quality of life, ranging from mild discomfort and drainage to life-threatening sepsis^[3].

Various classifications have been proposed to categorize fistulas. These classifications often distinguish between low and high fistulas, simple and complex fistulas, or categorize them based on their anatomical location, such

as intersphincteric, trans-sphincteric, supra-sphincteric, or extra-sphincteric fistulas^[4].

Treating anal fistulas remains a significant therapeutic challenge. Without sacrificing anal continence, the main objective is to reduce recurrence and eradicate infection^[5]. Sphincter-saving and sphincter-sacrificing operations are used to treat anal fistulas. More recurrence and less incontinence are known to be linked to the former, while significant postoperative incontinence and less recurrence are linked to the latter^[6].

Fistulotomy is considered the standard treatment for low anal fistulas, either with or without marsupialization, demonstrating high healing rates. However, the extent of external sphincter muscle division during fistulotomy is directly related to the risk of postoperative

incontinence^[5]. Mann and Clifton introduced the concept of rerouting operation^[7], the procedure aimed at converting trans-sphincteric fistula into inter-sphincteric or submucous fistula, which can then be laid open safely with minimal, or without, sphincter division^[8].

For more than ten years, direct repair methods have been used to treat distal fistulas with good results. Surgeons expanded the use of these surgical procedures to high anal fistulas in order to build on their success^[9]. Promising outcomes for fistulectomy with primary sphincter repair as a cutting technique have not been found in many trials, especially for individuals who had incontinence from previous procedures^[10].

Aim of the work

The outcomes of rerouting and fistulectomy with primary sphincteric reconstruction will be analyzed and compared in order to ascertain which procedure is better for treating high trans-sphincteric fistulas in ano.

PATIENTS AND METHODS:

This was prospective comparative study. The study included 30 adult patients diagnosed with high trans-sphincteric anal fistulas affecting more than one third of the external sphincter muscle (age range from 18 to 60 years). The study comprised patients who were admitted to the general surgery department's colorectal unit at Sohag University Hospital between January 2023 and May 2024, with a minimal 6-month follow-up.

Patients with acute anal sepsis, fistula complicating IBD, major incontinence, who were found to have a low fistula and severe medical illness (ASA >2) were excluded from the study.

Diagnosis was based on thorough history (including any comorbidity, inflammatory bowel diseases, previous anorectal surgeries), clinical evaluation including general and digital rectal evaluation and examination under anaesthesia. M.R.I. Fistulogram was performed for all patients to outline the fistulous tract and its relation to the anal sphincter complex, also routine Laboratory and Physical fitness tests and investigations were conducted. The Wexner grading system was used to assess patient's continence.

Patients were randomized to either the fistulectomy and primary sphincteric repair group or the rerouting group. 15 patients were placed in Group A, (rerouting), and another 15 patients were placed in Group B (fistulectomy with primary sphincteric reconstruction).

Ethical consent

The study received permission from the Sohag University Academic and Ethical Committee (IRB:Soh-Med-22-12-43). All patients provided written informed consent prior to being enrolled in the trial.

Preoperative

All patients received a rectal enema the night before surgery.

Operative technique

Patients were put in the lithotomy position following spinal or general anesthesia. Anal examination was carried out after skin preparation in order to confirm the diagnosis, describe the anatomy of the fistula with its side branches, and locate the internal entrance, which is made easier by gentle probing and air injection into the external opening (Figure 1).



Figure 1: Probing and identification of internal opening.

Operative technique for group A (Rerouting group):

The procedure began with an ellipse around the external aperture, then the track was mobilized and cored out till its opening in the external sphincter (Figure 2), the intersphincteric plane was cut and dissected (Figure 3). Through a cut in the external sphincter muscle, the external part of the tract was brought down into the intersphincteric plane and mobilised. After that, a loose seton is passed through the tract (Figure 4).



Figure 2: Mobilization and dissection of the fistulous track.

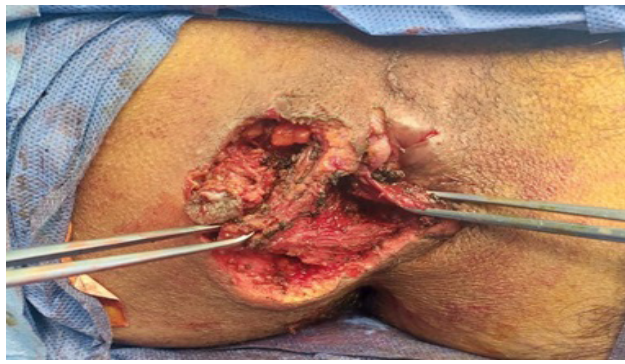


Figure 3: Opening and dissection of the intersphincteric plane.



Figure 4: Insertion of loose seton through the track.

Second stage : After 8 to 12 weeks, when the external lesion had healed, the The rerouted tract was divided and curettaged (Figure 5).



Figure 5: lay open of the rerouted track.

Operative technique for group B (Fistulectomy with primary sphincteric reconstruction)

After dissection and mobilization of the fistula, fistulectomy and curettage was done Then Primary

sphincter repair with PDS 2/0 after adequate hemostasis was performed (Figure 6).



Figure 6: Repair of the external sphincter.

Postoperative follow up

All patients discharged from hospital on the 2nd postoperative day on pain killers and laxatives; antibiotics were not prescribed routinely. Warm sitz baths were advised one to three times daily and after every bowel motion.

Patients were monitored weekly for the initial month and monthly for the subsequent six months. At each follow-up visit, the wound was examined for signs of premature closure or abscess formation. Following complete healing, patients were evaluated for fistula recurrence and continence status. Wexner scoring system was used to assess incontinence.

Persistent discharge, ongoing internal or external openings, and the existence of anal pain were indicators of recurrence. If the recurrence was clinically suspected, an MRI fistulogram was performed to confirm it.

The minimum follow-up period in this study was 6 months (range, 7–10 months). The duration between the two stages for group (A) ranged from 5 weeks to 12 weeks.

RESULTS:

The results are shown in the following Tables.

Table 1: Distribution of patients' age and sex in the two studied groups.

		Rerouting group	Sphincter reconstruction group	Test value	P-value	Sig.
		No= 15	No= 15			
Age	Mean±SD	35.60±9.21	32±10.02	0.310*	0.758	NS
	Range	18-55	20-50			
Sex	Female	4(26.7 %)	3 (20%)	0.153*	0.706	NS
	Male	11(73.3 %)	12 (80 %)			

*: Chi-square test; •: Independent *t*-test.

Table 2: Wexner score.

Type Of Incontinence	Frequency				
	Never	Rarely	Sometimes	Usually	Always
Solid	0	1	2	3	4
Liquid	0	1	2	3	4
Gas	0	1	2	3	4
Wear Pads	0	1	2	3	4
Lifestyle Alteration	0	1	2	3	4

Never; 0; rarely, <1/month; sometimes, <1/week, > 1/month; usually, <1/day, > 1/week; always, > 1/day. 0, perfect; 20, complete incontinence.

Table 3: Comparative analysis of complications, incontinence, and recurrence rates between rerouting and sphincter reconstruction groups.

		Rerouting group		Sphincter reconstruction group		Test value	P-value*	Sig.
		No.	%	No.	%			
Complications	No	12	80	11	73.3	0.226	0.635	NS
	Yes	3	20	4	26.7			
	Infection	2	13.3	2	13.3	0.354	0.540	NS
	Bleeding	1	6.7	1	6.7	0.154	0.360	NS
	Dehiscence	0	0	1	6.7	0.167	0.354	NS
Incontinence	No	14	93.3	13	86.7	0.213	0.540	NS
	Yes	1	6.7	2	13.3			
Recurrence rate	No	14	93.3	13	86.7	1.126	0.234	NS
	Yes	1	6.7	2	13.3			

P-value >0.05 Non-significant (NS); *: Chisquare test.

Table 4: Comparison of healing time between rerouting and sphincter reconstruction groups.

		Rerouting group	Sphincter reconstruction group	Test value	P-value	Sig.
		No.= 15	No.= 15			
1 st stage in weeks	Mean±SD	5.83±0.67	4.92±0.63	1.76	0.123	NS
	Range	4-8	3-6			
2 nd stage in days	Mean±SD	10.47±1.65	--	--	--	--
	Range	7-13	--			

P-value >0.05 Non-significant (NS).

DISCUSSION

Fistula in ano is a common benign condition characterized by an aberrant communication between the anorectum and the perianal skin. While anal fistulas are benign conditions, they can significantly influence a patient's quality of life. Its common symptoms include mild pain, social discomfort, and, in severe cases, life-threatening sepsis. In spite of its long history and prevalence, the optimal management of anal fistulas remains a subject of debate among colorectal surgeons^[11].

Eliminating infection, promoting healing, reducing recurrence, and maintaining anal function and continence are the main goals of anal fistula surgery^[12]. However, there is not enough data from current randomised controlled studies to suggest one

treatment over another for complicated anal fistula in order to get the best short- and long-term results^[13].

For many patients, fistulotomy is the gold standard of care since it is a safe and very successful surgery^[14]. It enables healing to start at the bottom. The inevitable sacrifice of the anal sphincters following a fistulotomy is a major drawback that may cause postoperative fecal incontinence in 10–52% of individuals^[15]. One of the main reasons why quality of life declines following anal fistula surgery is postoperative fecal incontinence^[16].

Soltani and Kaiser highlighted that numerous therapeutic options have been proposed for the treating trans-sphincteric anal fistulas. But many of these

choices don't meet the best therapeutic objectives, include low recurrence rates, high healing rates, and minimal effect on continence^[17].

The process of rerouting of the fistulous tract involves minimal sphincter sacrifice. After mobilizing the extra-sphincteric segment of the track into an inter-sphincteric position, the transposed intersphincteric track is laid open, so, the external sphincter is maintained while the lower portion of the internal sphincter is detached^[18].

High transsphincteric anal fistula can be safely treated with fistulectomy combined with primary sphincteric repair. This operation has a minimal risk of incontinence or recurrence and an excellent healing rate^[19].

All of the patients in this study exhibited high transsphincteric fistulas, and these individuals are likely to experience considerable recurrence if they undergo a sphincter-saving operation or major incontinence if they undergo a fistulotomy.

This study compared the outcomes of two sphincter-preserving surgical technique for treating anal fistula. The effectiveness of rerouting the tract vs fistulectomy with primary sphincteric repair in the treatment of high trans-sphincteric anal fistulas was assessed in a comparative research. There were thirty patients, fifteen in each group, and they were followed at least for six months after surgery.

Among the studied group ,There were 7 females (23.3%) and 23 males (76.7%), the mean for group A was 35.60 ± 9.21 while 32 ± 10.02 was the mean age for group B, the results did not show statistical significance.

Of the 15 patients who underwent rerouting, three patients (20%) experienced postoperative complication, bleeding occurred in one patient (6.7%) while two patients(13.3%)suffered from infection. Postoperative complications observed in four patients (26.7%) in group B: infection was observed in one patient ,wound dehiscence in another patient and the remaining two patients developed infection (13.3%), the results did not show statistical significance.

On average healing time was 5.83 ± 0.67 weeks for the rerouting group and 4.92 ± 0.63 weeks for the sphincter reconstruction group, a difference that was not statistically significant. After a six-month follow-up, the recurrence rate was 13.3% in the sphincter reconstruction group and 6.7% in the rerouting group, again, not a statistically significant difference.

Regarding postoperative incontinence, mild incontinence was observed in one patient among group A and in two patients in group B (Table 5).

A review of the literature revealed that Mann and Clifton (1985) described a rerouting technique with a 100% healing rate and no recurrences in 5 patients followed up for up to 3 years^[7]. Another study published by Abou-Zeid *et al.*, conducted on 54 patients with high arching transsphincteric and suprasphincteric fistula, They reported 5.5% and 7.4% incidence of recurrence and incontinence, respectively^[8] our results are comparable with these studies.

14 patients treated at Basrah General Hospital between 1992 and 2000 for complicated anal fistulas in a study conducted by by Khayat and Al-Hawaz, The external aperture and fistula tract were redirected to the anal canal as part of staged therapy, after a follow-up period of 10 to 91 months, all patients had good results. There was no sign of a fistula recurrence or abscess development. Both flatus and faecal continence were maintained, healing was quick, and hospitalisation was short^[20]. These findings align with our research, with postoperative incontinence and a recurrence rate did not exceed 6.7%.

In a 2009 research by Jivapaisarnpong, 33 patients had fistulectomy with anal sphincteric primary repair and closure of the internal aperture,. There was no discernible effect on continence, and the surgery had positive functional results^[21].

These outcomes are consistent with the findings of our trial, which similarly showed a minimal incidence of incontinence and recurrence. Our results also concur with a research by Arroyo *et al.*, (2012) that found an 8.6% recurrence rate^[22]. The recurrence rate in our research was 13.3%, which is a little higher.

Farag *et al.*, reported that a single-stage treatment that combined primary sphincter repair with fistulectomy had favorable outcomes ^[23], with good wound healing, low recurrence rate, low risk of incontinence, and successful fistula repair and this is comparable with our results.

CONCLUSION

In patients with high trans-sphincteric fistula-in ano, rerouting and fistulectomy with primary sphincteric reconstruction operations yield similar results in terms of healing rate, recurrence, continence and quality of life; no treatment is better than the other.

CONFLICT OF INTEREST

There are no conflicts of interest.

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