

Comparing Fistulotomy and Fistulectomy in Patients with Low-Lying Perianal Fistulae

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ABSTRACT

Objective: To compare the outcomes, such as operative time (minutes), healing time (days), and postoperative pain (days), in patients who underwent fistulotomy and fistulectomy with low-lying perianal fistulae.

Study Design: Prospective, observational study.

Place and Duration of the Study: Department of General Surgery, Surgical Unit 2, Sheikh Zayed Medical College and Hospital, Rahim Yar Khan, Pakistan, from September 2023 to 2024.

Methodology: A total of 110 patients of either gender with low-lying anal fistulae, aged 18-60 years were included. Patients with recurrent, complex, and fistulae secondary to other diseases such as tuberculosis, Crohn's disease, immunocompromised status, or taking immunosuppressive therapy were excluded. Group A underwent fistulotomy while Group B underwent fistulectomy as per the standard procedure. Operative time, healing time, and post-operative pain were noted in both groups. Difference in the mean operative time, healing time, and postoperative pain for the two groups was assessed using an independent samples t-test, and a $p < 0.05$ was considered statistically significant.

Results: Mean operative time, healing time, and postoperative pain in Group A were 14.61 ± 1.81 minutes, 26.15 ± 4.45 days, and 1.55 ± 0.79 days, respectively. In Group B, mean operative time, healing time, and postoperative pain were 27.73 ± 3.31 minutes, 38.85 ± 4.68 days, and 5.47 ± 1.12 days, respectively ($p < 0.001$).

Conclusion: The study concluded that fistulotomy is significantly better than fistulectomy for treating low-lying perianal fistulae in terms of operative time, healing time, and postoperative pain.

Key Words: *Fistulotomy, Fistulectomy, Anal fistulae, Complications, Operative time.*

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INTRODUCTION

Perianal fistula can be defined as an abnormal communication between the perianal skin and the anorectal canal. Although the commonest cause for the development of perianal fistulae is idiopathic, the infection of the perianal gland, associated with an abscess formation, spreading in different directions, *i.e.* perianal skin, and leading to fistulae formation, has been considered as the most common aetiology. Other rare causes are Crohn's disease, radiations, tuberculosis, sexually-transmitted infections (STIs), and complications associated with difficult vaginal deliveries. The incidence of perianal fistulae ranges from 0.7 to 37%, and is most commonly reported in males. Though there are different treatment strategies, surgery has stood tall to treat perianal fistulae.¹⁻³

Despite modern treatment strategies, the recurrence of perianal fistulae has also been reported frequently, requiring more than one surgery.^{1,4,5} The main aim of the treatment for perianal fistulae has not only been to treat the fistulae but also to make sure to preserve the continence and prevent recurrence.⁶

The most common symptoms of perianal fistulae are perianal discharge and recurrent episodes of pain, which cause social anxiety and affect the quality of life. There are different classifications for perianal fistulae, which classify perianal fistulae into low (simple), high (complex), or intersphincteric, trans-sphincteric, supra-sphincteric, and extra-sphincteric, based on their anatomical location.^{7,8} The low-lying, simple, inter- or trans-sphincteric fistulae-in-ano were under study.

Fistulotomy and fistulectomy are the two conventional surgical options for simple anal fistulae. In fistulotomy, the fistulous tract is laid open, which leaves a smaller wound, and leads to early wound healing, while in fistulectomy, the tract is excised around the probe.⁴ However, there is no consensus regarding the choice of either of the procedures because of controversy in the available literature.

Katiyar *et al.* reported fistulotomy superior to fistulectomy as the operative time is much lesser in fistulotomy (18.3

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minutes), as compared to fistulectomy (34.2 minutes). Similarly, healing time is also significantly less in fistulotomy, (11 days) as compared to fistulectomy (22 days).⁵ Murtaza *et al.* also reported fistulotomy to be better than fistulectomy.⁴ Ganesan *et al.* reported that the mean operative time in fistulotomy was 12 minutes, while the mean operative time in fistulectomy was 22 minutes. Similarly, healing time was reported to be 24 days in fistulotomy *versus* 31 days in fistulectomy. On assessing the postoperative pain, the mean score on the visual analogue scale (VAS) was higher in fistulotomy than in fistulectomy.⁶ However, Barase *et al.* reported no difference in operative time, healing time, and postoperative time between fistulotomy and fistulectomy.⁷ A meta-analysis was also conducted by Xu *et al.* between fistulotomy and fistulectomy, which revealed no significant difference between the two procedures.⁸

This study aimed to compare the outcomes, such as the operative time (minutes), healing time (days), and postoperative pain (days) in patients undergoing fistulotomy and fistulectomy with low-lying perianal fistulae at a tertiary care hospital.

METHODOLOGY

A prospective, single-centred observational study was conducted at the Department of General Surgery, Surgical Unit 2, Sheikh Zayed Medical College and Hospital, Rahim Yar Khan, Pakistan. Permission was obtained from the Institutional Review Board of Sheikh Zayed Medical College / Hospital, Rahim Yar Khan, Pakistan (Reference No: 565/IRB/SZMC/SZH, Dated: 10 November 2022). A sample size of 110 patients (55 in each group) was calculated with 95% confidence level, 80% power of the study, taking the expected mean operative time as 12.13 ± 2.11 minutes in fistulotomy *versus* 22.23 ± 3.36 minutes in fistulectomy.⁶ A total of 110 patients undergoing fistulotomy and fistulectomy, from September 2023 to 2024, were included in the study.

A fistula was labelled as low-lying if its internal opening was found below the ano-rectal ring on the basis of digital rectal examination and proctoscopy. The outcomes, including operative time, time interval from the first incision and final dressing of the wound; healing time, from the day of surgery till complete healing through secondary intention; and postoperative pain, from the first postoperative period till the patient required analgesics, were assessed.

Data were collected on a pre-designed questionnaire proforma by a simple consecutive sampling technique. Confidentiality of the data was ensured. Patients of both gender and aged 18 to 60 years, with low-lying anal fistulae presenting to the surgical ward, were included in the study. Patients with recurrent and complex fistulae were excluded. The patients having fistulae due to other causes, such as tuberculosis, Crohn's disease (determined on history and medical record), and with immuno-compromised status or taking immunosuppressive therapy, were also excluded.

Detailed information was provided about the procedure, and informed consent was taken from the participants. Group A underwent fistulotomy, while Group B underwent fistulectomy as per standard procedure and protocol. In fistulotomy, the patient was placed in the lithotomy position under anaesthesia. The internal opening was identified by digital rectal examination and proctoscopy. The probe was passed through the external opening. The tract was laid open over the probe. The granulation tissue was curetted and sent for histopathology. After this, wound edges were trimmed, and an aseptic dressing was done. While in fistulectomy, the entire fistulous tract was excised around the probe along with a granulation tissue and sent for histopathology. Aseptic dressing was done to conclude the procedure. All the patients were given similar postoperative analgesia and management. The patients were advised to have a Sitz bath in warm water with pyodine and normal saline. Laxatives (sodium picosulfate) were advised to avoid constipation.

Data were analysed by SPSS version 20. Numerical variables, *i.e.* age, body mass index (BMI), operative time, healing time, and postoperative pain, were summarised as mean and standard deviation (SD). Qualitative variables such as gender, smoking status, and diabetes were presented in the form of frequencies and percentages. Data were stratified for age, gender, smoking status, and BMI to control for the effect modifiers. Differences in the mean operative time, healing time, and postoperative pain for both groups were assessed by independent samples t-test. The normality was assumed while comparing the means for both groups because of the large sample size, *i.e.* 110 patients (55 in each group), based on the Central Limit Theorem. A value of $p < 0.05$ was considered statistically significant.

RESULTS

The mean age of all participants in Group A and in Group B is shown in Table I. Most patients, 70 (63.64%), were 18 to 40 years of age. The majority of the participants were male, with a male-to-female ratio of 1.6:1 (Table I). Mean BMI was 27.68 ± 3.67 kg/m².

The mean operative time, healing time, and postoperative pain in Group A and Group B are represented in Table II.

Stratification of operative time, healing time, and postoperative pain was also done with respect to age, gender, smoking status, diabetes mellitus, and BMI, to control the effect modifiers (Table III).

DISCUSSION

Anal fistula is a perianal condition, mostly associated with perianal discomfort, discharge, and morbidity. Although many recent advances in the treatment of perianal fistulae have occurred, the conventional surgical methods are still used by many surgeons.^{1,9-11} However, either of the procedures can have their own complications, which include bleeding, recurrence, and faecal incontinence.^{12,13}

Table I: Age and gender for both groups (n = 110).

Variables	Group A (n = 55, %)	Group B (n = 55, %)	Total (n = 110, %)
Age (years)			
18-40	36 (65.45)	34 (61.82)	70 (63.64)
41-60	19 (34.55)	21 (38.18)	40 (36.36)
Mean \pm SD	36.29 \pm 7.92	36.91 \pm 7.46	36.43 \pm 7.61
Gender			
Male	34 (61.82)	34 (61.82)	68 (61.82)
Female	21 (38.18)	21 (38.18)	42 (38.18)

Table II: Comparison of outcomes for fistulotomy and fistulectomy for low-lying anal fistulae.

Outcomes	Group A (n = 55) Mean \pm SD	Group B (n = 55) Mean \pm SD	p-values
Operative time (minutes)	14.61 \pm 1.81	27.73 \pm 3.31	< 0.001
Healing time (days)	26.15 \pm 4.45	38.85 \pm 4.68	< 0.001
Postoperative pain (days)	1.55 \pm 0.79	5.47 \pm 1.12	< 0.001

Note: A p-value was calculated using the independent samples t-test to compare mean operating time, healing time, and postoperative pain between the two groups. Normality was assumed based on the Central Limit Theorem (n = 110).

Table III: Stratification of operative time, healing time, and postoperative pain with respect to various effect modifiers.

Parameters	Group A (n = 55) Operative time (min) Mean \pm SD	Group B (n = 55) Operative time (min) Mean \pm SD	Group A (n = 55) Healing time (days) Mean \pm SD	Group B (n = 55) Healing time (days) Mean \pm SD	Group A (n = 55) Postoperative pain Mean \pm SD	Group B (n = 55) Postoperative pain Mean \pm SD	p-value
Age years							
18-40	14.61 \pm 1.95	27.03 \pm 2.83	25.36 \pm 4.45	39.24 \pm 5.02	1.47 \pm 0.74	5.59 \pm 1.04	<0.001
41-60	14.63 \pm 1.57	28.86 \pm 3.76	27.63 \pm 4.15	38.24 \pm 4.13	1.68 \pm 0.89	5.29 \pm 1.23	<0.001
Gender							
Male	14.91 \pm 1.50	27.15 \pm 2.93	26.09 \pm 4.71	38.24 \pm 5.33	1.47 \pm 0.75	5.53 \pm 1.11	<0.001
Female	14.14 \pm 2.17	28.67 \pm 3.72	26.24 \pm 4.11	39.86 \pm 3.26	1.67 \pm 0.86	5.38 \pm 1.16	<0.001
BMI (kg/m ²)							
≤ 30	15.27 \pm 1.52	28.25 \pm 3.73	26.11 \pm 4.59	38.89 \pm 4.15	1.57 \pm 0.84	5.53 \pm 1.13	<0.001
>30	13.28 \pm 1.64	26.74 \pm 2.05	26.22 \pm 4.26	38.79 \pm 5.68	1.50 \pm 0.71	5.37 \pm 1.12	<0.001
Diabetes mellitus							
Yes	14.42 \pm 1.86	28.30 \pm 3.68	26.16 \pm 5.61	30.00 \pm 4.65	1.47 \pm 0.61	5.35 \pm 1.04	<0.001
No	14.72 \pm 1.79	27.40 \pm 3.07	26.14 \pm 3.78	38.20 \pm 4.63	1.58 \pm 0.87	5.54 \pm 1.17	<0.001
Smoking							
Yes	14.31 \pm 1.88	27.10 \pm 3.10	25.08 \pm 2.62	41.80 \pm 4.94	1.69 \pm 0.85	5.30 \pm 1.05	<0.001
No	14.71 \pm 1.79	27.87 \pm 3.36	26.48 \pm 4.85	38.20 \pm 4.41	1.50 \pm 0.77	5.51 \pm 1.14	<0.001

Note: Separate independent samples t-tests were performed, based on age group, gender, body mass index (BMI), smoking status, and diabetes mellitus (DM) status to compare fistulotomy (Group A) with fistulectomy (Group B) for dependent variables, i.e. operating time, healing time, and postoperative pain. Bonferroni correction was applied, and an adjusted α value of ≤ 0.005 was considered significant.

The mean age of the participants in the fistulotomy group was 36.29 ± 7.92 years, while in the fistulectomy group, it was 36.91 ± 7.46 years, which was consistent with the previous studies in the literature.^{4,7,11} Similarly, regarding the descriptive statistics of the gender, there was slight male predominance in both groups, consistent with the findings that fistulae prevalence is more common in males.^{3,7,11}

Both the procedures, i.e. fistulotomy and fistulectomy, were performed as outpatient surgeries. Therefore, the outcome of hospital stay was not assessed between the two groups.¹⁴ The operative time for the fistulotomy group was 14.61 ± 1.81 minutes, while for the fistulectomy group, it was 27.73 ± 3.31 minutes in this study. Similar to the previous literature, the operative time in the fistulotomy group was less than that of fistulectomy. The less operative time in Group A supported the evidence of fistulotomy as the procedure of choice.^{11,15} The increase in the operative time for fistulectomy was partly due to the complexity of the procedure, which involves complete excision of the fistula tract around the probe.^{4,11}

Parwez *et al.* reported the mean operative time for the fistulectomy to be 17 ± 10.19 minutes, contrary to the results of this study and previous randomised-controlled trials in the database. The reason for this could be the use of a circular

blade around the probe, making the excision of the fistula tract easy for the operating surgeon and minimising the duration of surgery.¹⁶

When comparing the healing time of fistulotomy *versus* fistulectomy groups, the mean healing time for the fistulotomy group was 26.15 ± 4.45 days as compared to 38.85 ± 4.68 days for fistulectomy, which was statistically significant ($p < 0.001$). The increased healing time for fistulectomy was attributed to the increased wound size, requiring the need for excision of the whole tract, rather than opening of the tract over the probe.^{4-7,11}

While assessing postoperative pain for fistulotomy *versus* fistulectomy group, the mean duration of pain that lasted postoperatively was 1.55 days, which was significantly less than the fistulectomy group (5.47 days, $p < 0.001$). The results of postoperative pain were also consistent with the previous studies.^{5,6} The increased duration of postoperative pain for the fistulectomy group was also reported to be due to more dissection, resulting in a larger surgical site wound.¹¹

A systematic review conducted in 2023 also recommended fistulotomy as a safe and reliable surgical procedure in

terms of decreased recurrence and preservation of the continence mechanism.¹⁷ The same procedure has also been recommended by German S3 guidelines on anal abscess and fistula.¹⁸ A systematic review conducted in 2020 also reported fistulotomy as reliable surgical procedure for simple anal fistulae.¹² Meanwhile, fistulectomy, although not associated with increased recurrence and incontinence as compared to fistulotomy, increased healing time, operative time, and postoperative pain render it a less favourable choice for most surgeons.^{4-7,11,15,19}

One of the limitations of the study was that the operative time, healing time, and postoperative pain were assessed as outcomes following the procedures. However, the recurrence rate and incontinence, regarded as the commonest complications of both fistulotomy and fistulectomy, were not assessed because of the short follow-up. Also, the majority of the patients were lost to follow-up after their complete recovery.^{7,12,20} The collected data were from one institution that limited its generalisability. Surgical technique, including the experience of the operating surgeon, might have acted as a confounder in the study.

CONCLUSION

The study concluded that fistulotomy is better than fistulectomy for treating low-lying perianal fistulae in terms of operative time, healing time, and postoperative pain. A multi-centre randomised controlled trial should be done to compare the outcomes of fistulotomy with current, recent, and more advanced approaches, such as filling therapy, photodynamic therapy, and fistula laser closure for more standardised treatment of simple perianal fistulae.

ETHICAL APPROVAL:

The study was conducted after obtaining approval from the Institutional Review Board of Sheikh Zayed Medical College / Hospital, Rahim Yar Khan, Pakistan (Reference No: 565/IRB/SZMC/SZH, Dated: 10 November 2022).

PATIENTS' CONSENT:

Consent was taken from the participants on the research participation consent form, ensuring the confidentiality of the data.

COMPETING INTEREST:

The authors declared no conflict of interest.

AUTHORS' CONTRIBUTION:

SMH, MHA: Concept, acquisition, analysis, interpretation of the data, drafting the work, revision of the manuscript critically, and editing.

MHA: Supervision.

Both authors approved the final version of the manuscript to be published.

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