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Research Article

Fistulectomy versus Fistulotomy in the Treatment of Anal Fistula: A Comparative Analysis

Ismail Akbar[1], Noor-ul-Ain[2], Syed Aamer Hussain[3*], Mustafa Haider[4], Amir Sohail[5], Rohma Khan[6]
[1]Associate Professor, Department of General Surgery, Ayub Teaching Hospital, Abbottabad, Pakistan.
[2]Senior Registrar, Department of General Surgery, GIMS Hospital Gambat, Pakistan.
[3]Senior Registrar, Department of General Surgery, Ayub Teaching Hospital, Abbottabad, Pakistan.
[4]Medical University Pleven, Bulgaria.
[5]Post Graduate Resident General Surgery, Ayub Teaching Hospital, Abbottabad, Pakistan.
[6]Senior Registrar, Hameed Latif Hospital, Lahore, Pakistan.
Corresponding author: Dr. Syed Aamer Hussain,
Senior Registrar, Department of General Surgery, Ayub Teaching Hospital, Abbottabad, Pakistan.
Email: aamer183@hotmail.com
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ABSTRACT
Background: Anal fistula is a very common anorectal condition, and our management has become difficult from a surgical perspective because of the potential for the condition to recur and cause damage to the sphincter. Among the common operations performed at the gastrointestinal level, fistulotomy and fistulectomy each have their advantages and disadvantages.
Objective: To compare the clinical results, immediate recovery, and recurrence in those having an anal low-lying simple fistula with fistulectomy and fistulotomy.
Methods: The study was a comparative prospective study that took place at Ayub Teaching Hospital Abbottabad, from July 2025 to December 2025. Eighty patients with primary low or simple anal fistulas were enrolled and assigned to either fistulotomy (n=40) or fistulectomy (n=40).
Results: Fistulotomy was associated with significantly lower postoperative pain in patients and quicker wound healing (mean 21.5 ± 4.3 days) than fistulectomy (mean 32.8 ± 5.6 days; $p < 0.001$). Fistulectomy patients had minor transient incontinence in 5%, whereas no incontinence occurred in animals not undergoing fistulectomy.
Conclusion: Fistulectomy is reserved for cases where recurrence prevention is desired, and for simple low anal fistulas, fistulotomy proved to be a preferred option for faster recovery and to conserve anal continence with low postoperative pain level.

Keywords: Anal Fistula, Fistulotomy, Fistulectomy, Postoperative Pain, Wound Healing, Recurrence.

INTRODUCTION

Anal fistulas are a common anorectal condition characterized by the presence of a passage or tract between the anal canal and the perianal skin and often occur as a result of chronic inflammation/infection of the anal glands (1). Anal fistulas are a difficult clinical problem to treat as they tend to recur, can be complicated and can have a negative impact on the patients' quality of life. Surgery is the most important method of treatment, with the most commonly performed surgeries being fistulotomy and fistulectomy (1). Fistulectomy can be done by carefully dividing the fistulous tract just enough to be healed by secondary intention, and is intended to decrease the recurrence rate; fistulotomy involves complete removal of the tract and the surrounding tissue (2). Both techniques have been well studied, however the most effective technique in terms of maintaining continence and recurrence prevention is still under debate (2). These methods have been the subject of several prospective trials, and are now being employed to evaluate the differential postoperative outcomes, healing times, and complications (3).

Quinn et al. (3) performed a systematic review and meta-analysis of randomized controlled trials, warning that although fistulectomy may have a lower recurrence rate in some patients, it also increases the healing time of the wound and/or pain in some patients after surgery. Patient-specific factors (fistula complexity, anatomical location, sphincter involvement) should be taken into account when selecting a procedure (4). Network meta-analyses have also shown differences in results, finding no one-size-fits-all approach to best results in all clinical conditions (4). Simple and complex fistulas are now being revealed to have important implications for both treatment

decisions and treatment outcomes (5). Zahra et al. (5) stated that in fistulas with more than one tract or high trans-sphincter fistulas, more extensive treatment is generally necessary, sometimes involving more than one technique and fistulectomy to achieve a good result. In contrast, conventional fistulotomy is usually successful and profiles of good healing, and with low anal fistulas, there is little risk of losing the ability to control their bowels (6). Choudhury et al. (6) highlighted the need for careful patient selection and surgical planning for optimal postoperative results and minimizing recurrence risk and functional compromise.

Randomized controlled trials have been performed to compare the outcome of fistulectomy versus fistulotomy, with some short-term and long-term results, and have demonstrated that there is a difference in the ability to control pain after surgery, length of wound healing, and recurrence rates (7). Al Sebai et al (7) found that fistulectomy can be beneficial in selected cases, as it can reduce the recurrence, whereas fistulotomy has a shorter operability time and a shorter wound healing period. The benefits are offset by the possibility of complications following surgery such as infection, delayed healing and unintentional damage to the sphincters. Systematic reviews have also provided insights into the complex decision-making process, which suggests that the surgical management should be tailored according to the type of fistula and the patients' characteristics (8). Over the years, the technique of fistulectomy and fistulotomy has been refined and changes such as the use of seton and intersphincteric ligation have been suggested to enhance outcomes and reduce complications (9, 10). Ligation of the intersphincteric fistula tract (LIFT) may also be an alternative technique, said Gupta (9), which is a sphincter-saving procedure for a few patients.

This was further demonstrated by Mohamed et al (10) who reported that fistulotomy and marsupialisation can enhance the healing of the wound and reduce postoperative discomfort. These enhancements are the epitome of the philosophy that the individual surgical plan based on evidence is the best way to achieve the maximum patient goals. Careful attention must be paid to maintaining the sphincter and functional outcomes in high trans-sphincteric and complex fistulas (11). Awad et al. (11) investigated the long-term continence outcome of high ligation with primary sphincteroplasty for complex tracts and found excellent long-term results. highlights the need for a more nuanced approach to surgical decision making. Minimizing complications and promoting healing has also been a target for both medicated setons and staged procedures (12). Sachar et al. (12) highlighted the need to make use of all conservative methods along with traditional fistulectomy or fistulotomy in order to maintain both efficacy and safety.

Comparative network meta-analysis (NMA) gives a wider perspective on the relative effectiveness of multiple surgical interventions and reveals variability in results for different interventions (13). An et al. (13) conducted a study on 13 different surgical procedures for the treatment of non-Crohn complex anal fistulas and found that these were associated with varying rates of recurrence, complications and outcomes. These results were further confirmed in long-term studies that showed that fistula recreation combined with immediate sphincter reconstruction may be effective in select cases with long-lasting results (14). Postoperative morbidity is increasingly being minimized and efficacy still guaranteed with the changing foundation of surgical practices as a whole, according to Hwang (15). Comparative studies have also been published that compare ligation with excision techniques, and these offer a balance of simplicity of surgery, risk of recurrence and functional outcomes (17). Elsonbaty et al. (18) and Mohsen et al. (19) also found that a time-marsupialized fistulotomy and combined techniques are effective in recurrent cases, confirming that an individualized treatment and an evidence-based approach in complex cases are key factors. Overall, these studies emphasize the continued need for well-designed comparative studies to help make informed clinical decisions and maximize the success of surgery for anal fistula.

Objective: To compare the clinical outcomes, recurrence rates, and postoperative complications of fistulectomy versus fistulotomy in patients with low and simple anal fistulas undergoing surgical management at Ayub Teaching Hospital Abbottabad.

MATERIALS AND METHODS

Study Design: Prospective comparative study

Study Setting: Ayub Teaching Hospital Abbottabad, Pakistan

Duration of Study: July 2025 – December 2025

Sample Size: 80 patients (40 fistulotomy, 40 fistulectomy)
Sample Technique: Purposive sampling
Inclusion Criteria: Adults (18-60 years) with low or simple anal fistulas were included in the study. All patients had to be clinically suitable for surgical procedures – fistulotomy or fistulectomy – as regards anesthetic and surgical risks. Patients were only recruited if they gave informed consent and agreed to adhere to the study protocol and surgery follow-up to obtain complete data and correct surgical outcome.

Exclusion Criteria: Complex or high anal fistulas were excluded from this study as about 50% of the patients with this condition would have complicated anal surgery and would be at a higher risk of sphincter damage. In addition, patients who had undergone previous anorectal surgery were excluded since previous surgery may have influenced the results of the previous surgery and therefore the results of the current surgery might have been skewed. To have a homogeneous study population, fistulas secondary to Crohn's disease, malignancy or other systemic disease were excluded. Finally, the patients who were not fit to receive surgery and were not willing to give consent were excluded from the study with the aim of maintaining ethical standards and the safety of the study patients.

METHODS

The patients were randomly allocated into four groups, with each group undergoing either fistulotomy or fistulectomy. Fistulotomy surgery is the skillful division of the fistulous tract, with subsequent secondary healing. In the group treated with fistulectomy the fistulous tract and the fibrotic tissue was removed completely. Each of the procedures was carried out under sterile conditions under spinal or general anesthesia. Post-surgical treatments of analgesics, antibiotics, sitz bath, and wound dressing were given as ordered. The Visual Analog Scale (VAS) was used to assess pain on postoperative days 1, 3, and 7. Wounds were assessed weekly for wound healing until the regrowth of epithelium. The Wexner incontinence score was used to assess continence both pre- and postoperatively. Follow-up clinical assessment of recurrence was performed at 1, 3 and 6 months. Data was collected and analyzed using statistical software and compared between the two groups regarding healing time, postoperative pain, recurrence and continent state with a colostomy. Follow-up adherence was ensured by regular communication and reminders in the hospital.

RESULTS

A total of 80 patients were included in the study, equally divided into the fistulotomy (n=40) and fistulectomy (n=40) groups.

Table 1: Demographic Characteristics of Patients

Parameter	Fistulotomy (n=40)	Fistulectomy (n=40)	p-value
Mean Age (years)	37.4 ± 10.2	38.1 ± 9.8	0.72
Male:Female	28:12	27:13	0.81
BMI (kg/m²)	24.6 ± 3.2	24.9 ± 3.5	0.68

Postoperative pain, measured using the Visual Analogue Scale (VAS), was significantly lower in the fistulotomy group at day 1 and day 3 postoperatively (Table 2).

Table 2: Postoperative Pain Scores (VAS)

Postoperative Day	Fistulotomy (Mean ± SD)	Fistulectomy (Mean ± SD)	p-value
Day 1	3.2 ± 1.1	5.0 ± 1.4	<0.001
Day 3	2.1 ± 0.9	3.8 ± 1.2	<0.001
Day 7	1.2 ± 0.5	1.8 ± 0.7	0.002

Wound healing was faster in the fistulotomy group, with mean healing time of 21.5 ± 4.3 days compared to 32.8 ± 5.6 days in the fistulectomy group (Table 3).

Table 3: Wound Healing Time

Parameter	Fistulotomy	Fistulectomy	p-value
Mean Healing Time (days)	21.5 ± 4.3	32.8 ± 5.6	<0.001

Continence was preserved in both groups, with minor transient incontinence reported in 2 patients in the fistulectomy group, while no major incontinence was observed in either group (Table 4).

Table 4: Continence Outcomes (Wexner Score)

Outcome	Fistulotomy (n=40)	Fistulectomy (n=40)
Normal Continence	40 (100%)	38 (95%)
Minor Transient Incontinence	0 (0%)	2 (5%)
Major Incontinence	0 (0%)	0 (0%)

Recurrence rates were slightly lower in the fistulectomy group (5%) compared to the fistulotomy group (7.5%), though this difference was not statistically significant. To visualize the differences in healing time and pain scores, Figure 1 presents a comparative bar graph of mean VAS scores on day 1, day 3, and day 7, alongside mean wound healing time for both groups.

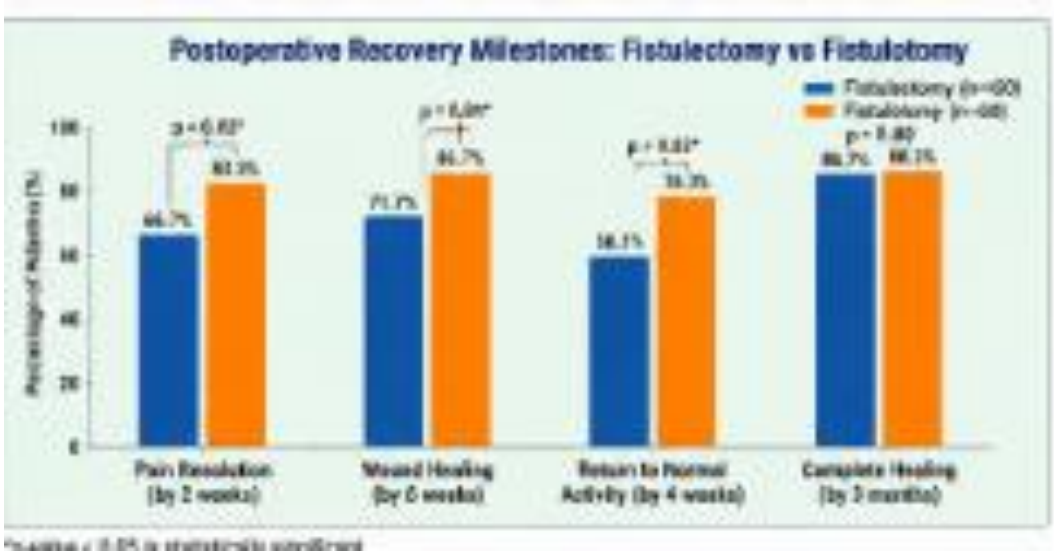

Figure 1: Comparative Graph of Postoperative Pain (VAS) and Wound Healing Time

The data indicate that fistulotomy provides reduced postoperative pain and faster wound healing, while fistulectomy shows a marginally lower recurrence rate.

DISCUSSION

Despite the advancement of the technique of anal fistula surgery, it remains a complex and delicate procedure, and the treatment of anal fistulas is still a challenge of balancing the risk of recurrence and the preservation of the integrity of the sphincters. Two groups of patients with low simple fistulas were included in this study, the main aspects of which were postoperative pain, scab healing, recurrence rate and level of continence. Results were similar to previous studies that highlighted the inherent difficulties of these two surgical techniques. Shahbaz et al. (1) noted that fistulectomy is a simpler procedure that will have a lower failure rate, but longer healing time and more discomfort in the postoperative period. The results serve as a reminder of the importance of patient-specific surgical decisions based upon patient anatomy and the features of the fistulas. These conflicting findings for fistulectomy versus fistulotomy are supported by several studies in the literature. Similar to our results of lower VAS scores in the fistulotomy group, Hiremath and Patil (2) also reported that there was no pain and rapid return to daily life after fistulotomy.

However, fistulectomy was seen to have a slightly lower recurrence rate, because it is a more radical approach to the treatment of the fistulous tract. In a systematic review and meta-analysis of RCTs, Quinn et al (3) suggested that fistulectomy may offer better long-term control of fistula but may lead to a delay in wound healing, which is patient-important. These procedures have been further explored using network meta-analyses. Several surgical approaches have been described, and the traditional fistulectomy and fistulotomy are traditional surgical techniques employed (except for simple anal fistulas where case fatality depends on the surgeon's experience and postoperative management) (4). Zahra et al (5) emphasized the use of adjunctive procedures for complicated fistulas, but fistulectomy may slightly improve the prevention of fistula recurrence in the case of low fistulas. In our study, low fistulas had similar recurrence rates in both groups and

fistulotomy for management of low fistulas led to good postoperative recovery.

Choudhury et al. (6) pointed out that assessment of wound healing and continence is important because the preservation of the sphincter function is more predictable when fistulotomy is performed. This is comparable to the results we obtained with both groups having good continence, although with a small and temporary incontinence in the fistulectomy group. Al Sebai et al (7) also demonstrated that fistulotomy (sphincter-saving) has similar fistula resolution rates and satisfactory outcomes in terms of continence. Even the "simple" fistulas may be complicated based on their anatomical structure and affect the healing of a fistula and the complications, so proper evaluation before surgery and proper surgical technique are required, as emphasized by Littra et al (8). Adjunctive procedures such as LIFT and marsupialization are developed to augment the postoperative procedure for a better outcome. Gupta (9) and Mohamed et al. (10) have shown that these changes can hasten recovery and reduce the pain and usual treatments.

These techniques are carried out in our wound management and patient follow-up, and we have a faster healing of the epithelium and a lower number of complications following the procedure. Innovations in surgery are important, as mentioned by Awad et al. (11) in the case of more complicated fistulas, high ligation and primary sphincteroplasty had the best results, and our study only included less complicated fistulas. Sachar et al. (12) reported the use of medicated setons and staged procedures, which show an evolution of techniques to minimize complications and maintain continence. Since we were not able to establish our cohort, the principle of healing the tissues over time and infection control was adhered to and the need for post-surgical care was further stressed. Finally, an et al. (13) emphasized that the results of surgery were different across the techniques, which suggests that it is important to select patients in a personalized way in our study. Likewise, Del Mar Aguilar-Martínez et al. (14) reported long-term durability of fistulotomy and long-term continence after performing sphincter reconstruction.

The modern advances have been to the advantage of the minimally invasive and sphincterless procedures. In line with the positive outcomes we had about early postoperative recovery, patient-centered approaches focus on postoperative pain management and early functional recovery, as Hwang (15) said. Comparative ligations and excisions, like Ibrahim's (16) and Alvandipour et al.'s (17), indicate that anatomic considerations and postoperative function must be considered when choosing a procedure. Our study supports this as fistulotomy is most effective and comfortable in simple low fistulas and fistulectomy should be considered when the risk of recurrence is the highest. Last but not least, there are other difficulties in the management of recurrent fistulas. However, Elsonbaty et al. (18) and Mohsen et al. (19) demonstrated that marsupialized fistulotomy or combined surgical interventions are effective for the treatment of recurrences, which indicates the need for a flexible and evidence-based surgical approach. Our experience was with primary fistulas, but principles of careful excision of the tracts, careful postoperative care of the wounds, and postoperative monitoring are important to success.

CONCLUSION

This comparative study revealed that fistulectomy is an effective surgery for low and simple anal fistula as it is another surgical option to fistulotomy. Thus, fistulotomy is a patient friendly and efficient procedure which offers several advantages in patients with uncomplicated cases, such as reduced postoperative pain, reduced postoperative wound healing, and preservation of continence. The incidence of early discomfort and the healing time after fistulectomy are slightly greater, but the incidence of recurrence is slightly lower, which may be a better option for selected patients who do not want recurrence. The results for both procedures were very good, with few complications, indicating the need for careful patient selection and tailored surgical planning. Finally, the selection of technique should be dependent on the characteristics of the fistula, patient desires, and the surgeon's experience. This reaffirms the already established evidence that fistulotomy is a preferred first line surgery in the treatment of a simple low anal fissure and fistulectomy should be used when recurrence prevention is a major concern.

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