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Retrospective Study

Cutting seton as salvage strategy for complex or recurrent anal fistula: Single-tertiary center 10-year experience with 207 patients

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Abstract

BACKGROUND

An ideal treatment for complex anal fistula that achieves a high success rate, low recurrence, and minimal risk of fecal incontinence has yet to be established. The cutting seton technique remains one surgical option for managing complex anal fistula. However, concerns persist regarding postoperative pain, recurrence, and sphincter-related complications.

AIM

To evaluate cure rate and clinical outcomes of cutting seton in the treatment of complex or recurrent anal fistula.

METHODS

A retrospective chart review was performed at an academic tertiary care center in Riyadh, Saudi Arabia. Patients diagnosed with complex or recurrent anal fistula between 2000 and 2016 at King Faisal Specialist Hospital and Research Center who were treated with cutting seton insertion were included (total n = 207). Primary outcomes were cure rate (complete healing), recurrence, and postoperative incontinence. Univariate and multivariate analyses were conducted to identify the risk factors for recurrence.

RESULTS

The cure rate was 89.4%. Recurrence occurred in 22 (10.6%) patients, 19 of whom were successfully cured with a second cutting seton and 3 treated with a third cutting seton. The median follow-up duration was 60 months. Preoperative and postoperative Cleveland Clinic Fecal Incontinence Scores were 1.62 (91.14-2.10) and 2.12 (1.58-2.66), respectively (P = 0.197). Only 25 patients (12.1%) reported new or worsened incontinence. Gas incontinence was the most common subtype reported (74%; 32/43), generally occurring rarely or occasionally per week. Univariate and multivariate analyses identified postoperative insertion of a Pezzar catheter as associated with recurrence (P =

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0.021, odds ratio: 8.330, 95% confidence interval: 1.384-50.136). Pain was assessed in 180 patients, *via* the Visual Analog Scale, and demonstrated mild, moderate, and severe pain in 161 (89.4%), 15 (8.3%), and 4 (2.2%) patients, respectively.

CONCLUSION

The cutting seton is a reliable option for the treatment of complex and recurrent anal fistula, demonstrating a high success rate, a low incidence of predominantly mild gas incontinence, and manageable pain levels.

Key Words: Complex fistula; Seton; Proctology; Incontinence; Cure rate; Recurrent fistula

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Core Tip: This study evaluated the outcomes of cutting seton use in the management of complex and recurrent anal fistula, including cure and recurrence rates, postoperative pain, and the risk of gas and fecal incontinence. The surgical technique was found to be a reliable treatment option, demonstrating a high cure rate, a low incidence of predominantly mild postoperative incontinence, and manageable pain levels.

INTRODUCTION

To date, surgical interventions have failed to achieve high cure rate for complex or recurrent anal fistulas. Sphincter-preserving techniques, in particular, have produced unfavorable results. In a recent study of 110 patients with complex or recurrent anal

fistulas, the cure rate was reported as only 28%[1]. On the other hand, cutting setons are commonly used for high or complex fistulas and achieve a high cure rate[2,3]. This discrepancy in practice creates a clinical dilemma, as surgeons must carefully balance the dual imperatives of complete tract eradication and preservation of fecal continence[4].

A systematic review of the cutting seton procedure reported a success rate of 95% with an incontinence rate of only 5.6% in 2010[5]. Of note, however, much of the published data on cutting setons have been derived from small case series or studies with limited follow-up, and there remains a paucity of large-cohort, long-term data from the modern era that comprehensively assess not only cure and recurrence but also the severity and impact of postoperative incontinence and pain[6].

Given this gap in the literature, we leveraged our institutional experience over a 16-year period to analyze outcomes in a large cohort of patients with complex or recurrent anal fistula who had been treated with the cutting seton technique. Thus, this study was designed to evaluate the cure rate and rates of recurrence and incontinence along with postoperative pain severity among our patient population.

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MATERIALS AND METHODS

This study was conducted in accordance with the ethical standards of the Institutional Research Ethics Committee and the principles of the 1964 Declaration of Helsinki and its subsequent amendments. This retrospective study was approved by the Institutional Review Board of King Faisal Specialist Hospital and Research Centre. Given the retrospective design and use of anonymized data, the requirement for informed consent was waived by the Institutional Review Board. All patient data were handled confidentially, and no identifiable information was disclosed.

Patients' selection and basic variables

All patients referred or admitted to King Faisal Specialist Hospital and Research Center-Riyadh with a diagnosis of complex or recurrent anal fistula between 2000 and 2016 were screened. Patients treated with cutting seton insertion were identified through the

hospital database and included in the study. All fistulas treated at King Faisal Specialist Hospital and Research Center were referrals, either due to failed prior surgical management or because they were considered 'complex' according to the clinical definition of the referring institution (*i.e.*, having an internal opening above the dentate line, multiple external openings, or requiring extensive surgery with potential risk to continence). The electronic medical records and the colorectal database of the section of colon and rectal surgery were retrospectively reviewed to minimize incomplete data and to collect demographic data, body mass index, smoking history, co-morbidities (*e.g.*, diabetes mellitus), presence of inflammatory bowel disease, anal fistula type, history and number of prior anal surgeries for anal fistula, history of other anal surgeries, history of rectal adenocarcinoma or anal squamous cell carcinoma, concurrent chemotherapy, number of prior anal abscess drainages, duration of symptoms, and key clinical dates (*i.e.*, initial visit, seton insertion, and last follow-up).

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Surgical technique and postoperative care

Under general anesthesia and as a day-surgery procedure, patients were positioned in either the prone jack-knife or lithotomy position according to surgeon preference. The anal sphincter complex and the fistula tract were infiltrated with a mixture of 20 mL 1% lidocaine hydrochloride (10 mg/mL) with epinephrine (1:100000), 20 mL 0.5% bupivacaine hydrochloride (5 mg/mL) and 20 mL normal saline (0.9% sodium chloride). A Lockhart-Mummery probe was gently passed from the external to the internal opening to delineate the fistula tract and identify the internal opening. If the tract encircled more than 30% of the anal sphincter complex, a number 2 silk suture was passed through the internal and external openings and tightened maximally using multiple surgical knots. The seton was trimmed to a length of 1-1.25 inches (approximately 3 cm). The anoderm between the internal and external openings, along with the extrasphincteric portion of the fistula tract, was laid open prior to seton tightening. If tributaries of the main tract had additional external openings, these were deroofed. Any fistula tract tributary with an internal opening above the dentate line was left untreated. Identification of the internal

opening was rarely aided by methods other than injection of normal saline through the external opening; hydrogen peroxide was not permitted for this purpose under hospital regulations. If no internal opening was identified, a 10-11 French Pezzer catheter was inserted through the external opening, trimmed to approximately 1.5 inches above the skin, and left in place for 4-6 weeks to allow drainage until purulence resolved. A fistulogram and magnetic resonance imaging scan were subsequently performed, before reattempting surgical identification of the internal opening. After seton insertion and during follow-up, loose setons were tightened under general anesthesia at 8-12 weeks intervals and the seton was replaced. Postoperative pain was assessed on postoperative day 1 *via* the Visual Analog Scale (VAS). The patients were prescribed oral non-steroidal analgesia to use regularly for 5 days and a mild oral narcotic to use as needed. In addition, the number of seton tightening were recorded. Finally, fecal incontinence was assessed preoperatively and 6 months postoperatively by the treating clinician using the Cleveland Clinic Fecal Incontinence Score (CCFIS)[7]. In CCFIS, fecal incontinence is defined as "the involuntary loss of flatus, liquid, or solid stool that is a social or hygienic problem"[8]. Patients with mild incontinence per the CCFIS were managed with biofeedback therapy. In cases of complete fistula healing with postoperative incontinence and a sphincter defect at the surgical site clearly identifiable by endoanal ultrasound or magnetic resonance imaging, an overlapping sphincter repair was offered.

Cure of a fistula is defined as complete healing of the fistula tract and surgical wound by epithelization, with no residual external or internal opening and no perianal discharge or abscess on clinical assessment. Recurrence is defined as clinical reappearance of a fistula with clinical symptoms of discharge, abscess formation or presence of a tract with internal or external opening or abscess on clinical examination or radiologic examination after documented complete healing of the previous fistula and its wound or non-healing of the fistula at 6 months after the surgery[9].

Study flow

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All patients were followed up postoperatively at 1 day, 1 week, and 1 month after surgery. After this preliminary assessment period, follow-ups occurred every 3 months for a period of 1 year and then yearly for a period of 5 years. Patients who were recorded as 'no-show' for clinical appointments were contacted through the virtual clinic platform. Patients were discharged from hospital care after complete resolution, and released from follow-up after 5 years.

Statistical analysis

Continuous variables were compared using Student's *t*-test, and categorical variables were analyzed using Pearson's χ^2 test. All statistical analyses were performed using IBM SPSS software (IBM Corp., Armonk, NY, United States). A $P < 0.05$ was considered statistically significant. Associations between recurrence and potential risk factors were assessed using logistic regression. Univariate analyses were performed for categorical variables, with variables achieving $P < 0.02$ entered into multivariate logistic regression to identify independent predictors of recurrence, using a significance threshold of $P < 0.05$.

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RESULTS

Subject characteristics

The study cohort comprised 207 patients, including 176 men (85%) and 31 women (15%), with a mean age of 49.36 ± 11.94 years (range: 22-89 years). Mean height was 167.3 ± 13.79 cm (range: 140.0-190.0 cm) and mean weight was 87.23 ± 18.01 kg (range: 45.0-159.0 kg), corresponding to a mean body mass index of 30.8 ± 5.8 kg/m^2. Thirty-six patients (17.4%) were active smokers. Overall, 117 patients (56.5%) had undergone at least one prior anal fistula surgery that had failed, and 125 (60.4%) had a history of anal abscess drainage (Table 1). Fistulas were classified as high, low, or horseshoe, respectively, in 102 (49.3%), 85 (41.1%), and 14 (6.8%) patients (Table 2).

Cure

Cure was achieved in 185 (89.4%) patients. Among these, 62 (33.5%) required seton tightening: 53 (28.6%) underwent one tightening, 6 (3.2%) underwent two tightening, 1 (0.5%) underwent three tightening, and 2 (1.1%) underwent more than three tightening.

Recurrence

Recurrence occurred in 22 patients (10.6%). All cases of recurrence occurred within the first year after surgery; among those, 19 were cured after a second cutting seton and the remaining 3 were cured after a third cutting seton (Figure 1). Subgroup and univariate logistic regression analyses identified several factors associated with recurrence (Table 3). While shorter duration of symptoms and posteriorly located internal opening were associated with a lower risk of recurrence ($P = 0.002$ and $P = 0.022$, respectively), presence of an internal opening at the anal crypts and postoperative use of a Pezzar catheter were associated with a greater risk of recurrence ($P = 0.038$ and $P = 0.004$, respectively).

Only four covariates yielded a $P < 0.02$ and were thus included in the multivariate analysis, giving an event-per-variable (EPV) of approximately 22/4 (or 5.5). While an EPV of ≥ 10 is often recommended for stable estimation, a lower EPV may still be acceptable for hypothesis-generating analyses when explicitly acknowledged. Given the clinical context and rarity of recurrence, we prespecified a parsimonious model based on clinical relevance rather than statistical selection. Collinearity among variables was assessed using variance inflation factors, with all values below 5, indicating no significant multicollinearity. Only the preoperative use of a Pezzar catheter retained statistical significance in the multivariate analysis ($P = 0.021$, odds ratio = 8.330, 95% confidence interval: 1.384-50.136; Table 3).

Incontinence

Preoperative and postoperative CCFIS scores were 1.62 (91.14-2.10) and 2.12 (1.58-2.66), respectively ($P = 0.197$). The overall prevalence of incontinence (gas, liquid, or solid stool, including seepage) increased from 18 (8.7%) before seton insertion to 43 patients (20.8%) after the procedure, representing 25 patients (12.1%) with new or worsened incontinence

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(Table 4). Gas incontinence was the most common subtype reported (74%; 32/43). According to CCFIS, the frequency of gas incontinence was categorized as rare (once every 4 weeks) or sometimes (more than once every 4 weeks but less than once per week).

Postoperative pain

Postoperative pain was assessed in 180 of the patients, using the VAS. The mean VAS score was 2.39 (2.21-2.57). Among these patients, 161 (89.4%) reported mild pain, 15 (8.3%) reported moderate pain, and 4 (2.2%) reported severe pain (Table 5).

DISCUSSION

In the present study, the cutting seton technique achieved a cure rate of 89.4%, consistent with results reported in prior systematic reviews[5]. In comparison, laser closure therapy has been associated with a cure rate of 57.46% in a recent systematic review[10], while platelet-rich plasma (PRP) has demonstrated cure rates of 62.4%-65% in two meta-analyses[11,12]. Ligation of intersphincteric fistula tract (LIFT) has a reported cure rate of 76.5% from a recent systematic review[13], while the advancement flap procedure achieved a cure rate of 70.6% in another systematic review[14]. Notably, none of these systematic reviews addressed the cure rate for complex or recurrent anal fistulas. Thus, our data is distinct for these conditions, suggesting that the cutting seton remains a highly effective treatment option which may also offer superior cure rates compared with other techniques.

Recurrence occurred in 10.6% of the patients in our study. This is much lower than most other procedures reported in the literature. Specifically, a recent systematic review reported recurrence rates of 28.6% for LIFT, 43.9% for laser closure therapy, and 25.9% for advancement flap[15]. Another systematic review reported a recurrence rate of 18% for PRP[16].

In our study, multivariate analysis identified postoperative insertion of a Pezzar catheter as a significant risk factor for recurrence. The wide confidence interval is most likely attributable to the low frequency of this event, as only 14 of the 207 patients (6.8%)

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received a Pezzar catheter. Notably, these 14 patients represented 63.6% of the 22 patients who developed a postoperative abscess complicated by recurrent fistula, underscoring the strength of this association despite the small sample size. For all of these patients, the surgeon had failed to identify the internal opening; although, all eventually received successful treatment with the cutting seton. The insertion of a Pezzar catheter in this subgroup of patients is not the cause of failure of the technique but a subsequent event due to the failure of the surgeon to identify the internal opening.

In our study, new or worsened incontinence occurred in 12.1% of patients, with gas incontinence accounting for 74% of cases and occurring at low frequency (once per 4 weeks) in 5.3% of patients and more than once per 4 weeks but less than once per week in 10.1% of patients (Table 4). The difference between the CCFIS recorded preoperatively and postoperatively did not reach the threshold for statistical significance. A comparable incontinence rate of 16% was reported from a systematic review[6]. It is important to note that this rate of incontinence was achieved in spite of the fact that 56.5% of the whole sample had past history of surgery for anal fistula and 74.4% of the whole sample had some form of anorectal surgery. Conceptually, the cutting seton promotes continuous drainage and gradual exteriorization of the fistulous tract to the anoderm. The slower tissue-cutting process achieved through pressure necrosis is enhanced by the silk material which elicits a more pronounced inflammatory response than faster-cutting inert materials, thereby promoting fibrosis and potentially preserving sphincter integrity over time[3].

Incontinence remains a key concern in fistula surgery. Reported incontinence rates following advancement flap procedures range from 9.3% to 20.4%, depending on the extent of sphincter muscle dissection required to create a well-vascularized flap[17]. A systematic review found an incontinence rate of 16.5% after the advancement flap for patients with non-inflammatory bowel disease and anorectal fistula[14]. Sphincter-preserving procedures like LIFT and laser closure therapy are associated with a low rate of incontinence (1.5% and 0%, respectively, according to a recent systematic review)[15]. However, this is not always the case; LIFT procedures have been associated with

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incontinence rates of 49%-74%, likely related to dissection within the intersphincteric plane and inadvertent sphincter muscle injury secondary to fibrosis from chronic inflammation or comprise of the sphincter from previous surgery[1]. Laser closure therapy has been associated with incontinence rates as low as 0.57% but which can reach up to 2.15%[10]. Surprisingly, a systematic review reported an incontinence rate of 27% following PRP treatment[16]. One is always under the impression that PRP is a sphincter-preserving procedure, but this high incontinence rate indicates that the deficit may be a result of associated manipulation from past or other concurrent surgical procedures.

In our cohort, 97.7% of patients experienced mild to moderate postoperative pain according to patient-reported VAS scores. Our use of long-acting local anesthesia injected in the anal sphincter complex is a pivotal step in reducing postoperative pain. We recommend that this should be practiced whenever a cutting seton is used. Moreover, the use of silk setons may contribute to these favorable pain outcomes (compared with polypropylene setons, which cut more rapidly and sharply)[4]. This invalidates the view that cutting silk setons are associated with severe pain that is not tolerable by the patients.

The selection of a surgical technique for anal fistulae requires careful balancing of cure rates against the risk of incontinence. Procedures that completely eliminate the risk of incontinence are virtually nonexistent. It is presumed that sphincter-preserving procedures which are not associated with muscle cutting, like LIFT, laser closure therapy and PRP injection, result in a low rate of incontinence, most commonly gas incontinence. Meanwhile, non-sphincter-preserving procedures that involve muscle cutting, like fistulotomy, advancement flap and insertion of a cutting seton, are associated with an appreciable incontinence rate.

Based on this categorization, we propose a stepwise algorithm for the management of anal fistulas. When the intersphincteric plane is preserved, sphincter-sparing techniques such as LIFT, PRP, or laser closure therapy may be considered. In cases of treatment failure or when the intersphincteric plane is not preserved, procedures prioritizing definitive cure, such as the cutting seton, should be considered (Figures 2 and 3). Ultimately, in complex and recurrent fistulas refractory to other interventions, the cutting

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seton remains one of the most effective options for achieving durable cure[18]. This stepwise approach positions the cutting seton as an essential component of comprehensive fistula management when initial sphincter-preserving strategies fail.

Limitations

This study has several limitations. Its retrospective design introduces inherent biases, including selection bias and variability or incompleteness in documentation over the 16-year study period. As a single-center study conducted at a tertiary referral hospital, the cohort likely over-represents complex and recurrent anal fistula cases, limiting the generalizability of the findings to broader patient populations. The use of patient-reported outcome measures, including the CCFIS and the VAS for pain, introduces subjectivity. The number of recurrence events was relatively small (22 events), so the multivariable logistic regression model is at risk of overfitting and sparse data bias, as reflected by the wide confidence intervals around some estimates. Therefore, the identified associations, particularly for postoperative Pezzer catheter insertion, should be interpreted as exploratory and hypothesis-generating rather than definitive. Finally, potential confounding factors, such as surgeon experience and technical variability, were not accounted for in the analysis.

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CONCLUSION

Cutting seton insertion for anal fistula achieved a high cure rate of 89.4% in this cohort, particularly among patients with complex or recurrent fistulas. The procedure was associated with a relatively low incidence of postoperative incontinence, predominantly infrequent gas incontinence, and was generally well tolerated, with most patients reporting only mild to moderate postoperative pain. Given its effectiveness and acceptable functional outcome, the cutting seton represents a valuable therapeutic option, especially in cases where sphincter-preserving techniques have failed. These findings support the role of the cutting seton as a reliable component of a stepwise approach to

the management of complex or recurrent anal fistulas, balancing durable cure with preservation of sphincter function.

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Footnotes

Institutional review board statement: This study was conducted in accordance with the ethical principles contained in the Declaration of Helsinki, the International Council for harmonization harmonized tripartite good clinical practice, the policies and guidelines of the Research Advisory Council of the King Faisal Specialist Hospital and Research Center and the laws of Saudi Arabia. This retrospective study was approved by the Institutional Review Board of King Faisal Specialist Hospital and Research Centre.

Informed consent statement: Given the retrospective design of the study and use of anonymized data, the Institutional Review Board waived the requirement for obtaining informed consent from individual patients.

Conflict-of-interest statement: All the authors report no relevant conflicts of interest for this article.

Data sharing statement: The datasets generated and/or analyzed during the current study are not publicly available but are available from the corresponding author on reasonable request.

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Figures and Tables

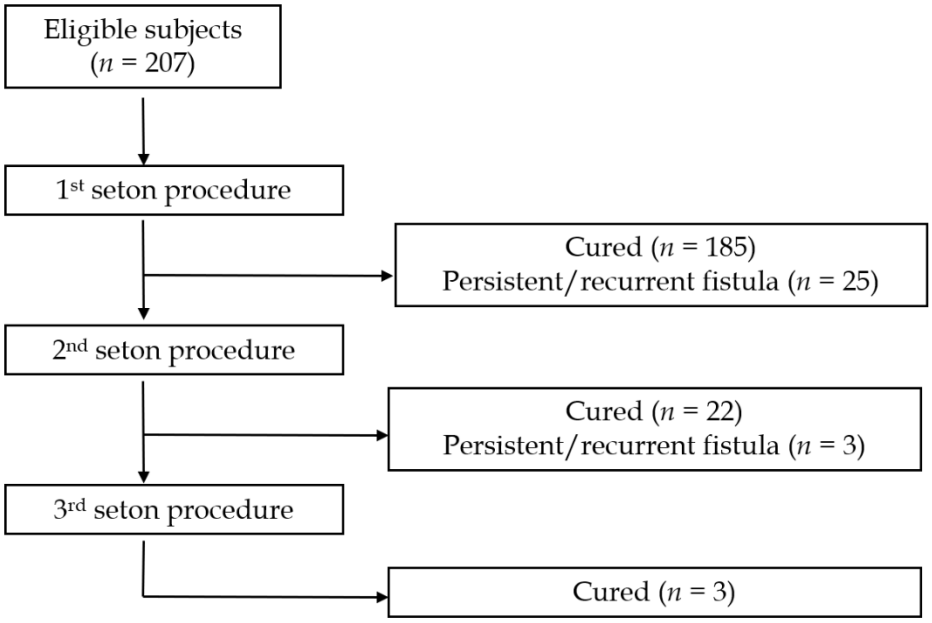


Figure 1 Patient flow diagram. The number of patients undergoing first, second, and third cutting seton procedures are shown along with their final cure status.

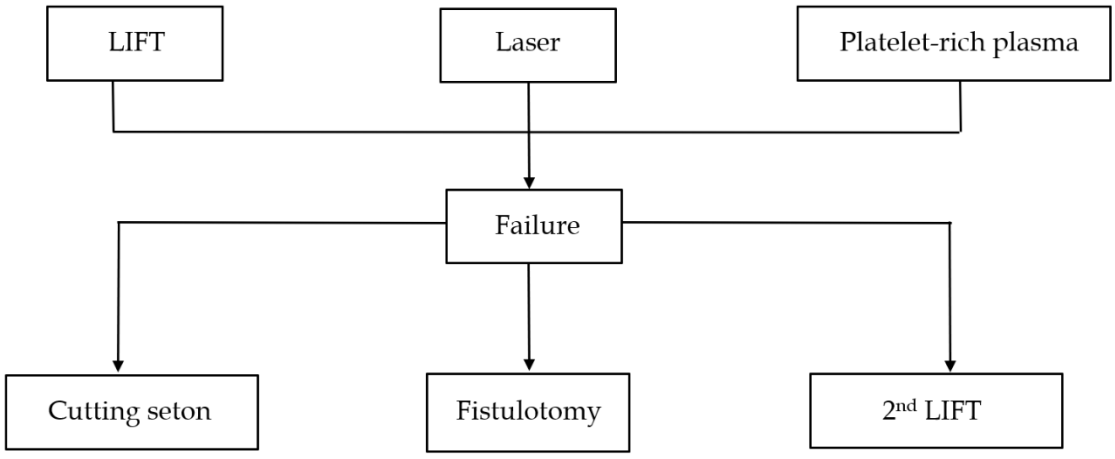


Figure 2 Algorithm for treatment of anal fistula when the intersphincteric plane is preserved. LIFT: Ligation of the intersphincteric fistula tract.

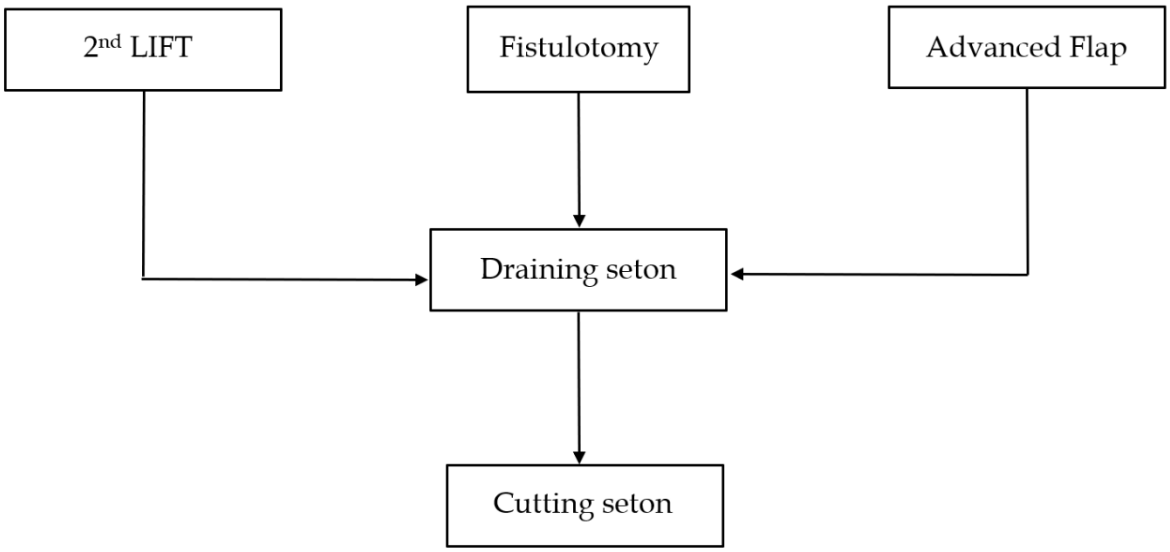


Figure 3 Algorithm for treatment of anal fistula when the intersphincteric plane is not preserved. LIFT: Ligation of intersphincteric fistula tract.

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Table 1 Baseline demographics and clinical characteristics (*n* = 207), *n* (%)/mean ± SD

Feature	Values
Age in years	48 (22-89)
Sex	
Male	176 (85.0)
Female	31 (15.0)
BMI in kg/m^2	30.8 ± 5.8
DM	41 (19.8)
Smoking	36 (17.4)
Steroids use	6 (2.9)
Preoperative Pezzer catheter insertion	21 (10.1)
Previous anal surgery for fistula	117 (56.5)
Hemorrhoidectomy	13 (6.3)
Lateral sphincterotomy	3 (1.4)
Previous abscess drainage	125 (60.4)

BMI: Body mass index; DM: Diabetes mellitus.

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Table 2 Anal fistula characteristics, *n* (%)/mean ± SD

Characteristic	Values
Type of fistula	
High	102 (49.3)
Low	85 (41.1)
Horseshoe	14 (6.8)
Duration of history in days	22.34 ± 30.7
Recurrent fistula	52 (25.1)
Fistula type based on MRI	
Supra-sphincteric	1 (0.5)
Extra-sphincteric	1 (0.5)
Trans-sphincteric	14 (6.8)
Inter-sphincteric	36 (17.4)
Low-sphincteric	4 (1.9)
Horseshoe sphincteric	3 (1.4)
Level of internal opening	
Below anal crypts	23 (11.1)
Above anal crypts	17 (8.2)
At anal crypts	125 (60.4)
Postoperative Pezzer insertion	14 (6.8)
Position of internal opening	
Anterior	36 (17.4)
Posterior	78 (37.7)
Right lateral	42 (20.3)
Left lateral	49 (23.7)
Distance external opening from anal verge in cm	3.90 ± 9.41
Position of external opening	
Anterior	37 (17.9)

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Posterior	63 (30.4)
Right lateral	67 (32.4)
Left lateral	75 (36.2)

MRI: Magnetic resonance imaging.

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Table 3 Univariate and multivariate logistic regression analysis for the parameters affecting recurrence (*n* = 207) for different parameters

Fistula characteristics	Univariate		Multivariate[1]	
	***P* value**	**OR (95%CI)**	***P* value**	**OR (95%CI)**
Duration of history	0.002[a]	0.134 (0.038-0.467)	0.566	0.593 (0.100-3.533)
Internal opening				
Below anal crypts	0.320	0.353 (0.045-2.754)	NA	NA
Above anal crypts	0.874	1.133 (0.241-5.321)	NA	NA
At anal crypts	0.038[a]	3.280 (1.068-10.074)	0.056	4.212 (0.966-18.373)
postoperative Pezzer catheter insertion	0.004[a]	5.752 (1.730-19.119)	0.021[a]	8.330 (1.384-50.136)
Position of internal opening				
Anterior	0.624	0.727 (0.203-2.601)	NA	NA
Posterior	0.022[a]	0.232 (0.066-0.810)	0.067	0.242 (0.053-1.103)
Right lateral	0.795	0.860 (0.275-2.690)	NA	NA
Left lateral	0.345	1.589 (0.608-4.153)	NA	NA
Incontinence postoperative	0.018[a]	3.075 (1.216-7.775)	0.399	1.726 (0.486-6.132)
Tightening	0.035[a]	2.627 (1.073-6.435)	0.099	0.197 (0.029-1.356)

[a]$P \leq 0.05$.

[1]All variables with $P < 0.05$ were included in the multivariate analysis.

OR: Odds ratio; CI: Confidence interval; NA: Not available.

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Table 4 Preoperative and postoperative incontinence status according to Cleveland Clinic Fecal Incontinence Score (*n* = 207), *n* (%)

Status	Frequency	Preoperative	Postoperative	*P* value
Incontinence		18 (8.7)	43 (20.8)	
Gas incontinence	Rarely	7 (3.4)	11 (5.3)	
	Sometimes	11 (5.3)	21 (10.1)	
Liquid incontinence	Rarely	5 (2.4)	7 (3.4)	
	Sometimes	3 (1.4)	7 (3.4)	
Solid incontinence	Rarely	2 (1.0)	1 (0.5)	
	Sometimes	0	1 (0.5)	
Seepage	Rarely	1 (0.5)	3 (1.4)	
	Sometimes	5 (2.4)	7 (3.4)	
Pad use	Rarely	4 (1.9)	4 (1.9)	
	Sometimes	0	0	
Lifestyle effect	Rarely	6 (2.9)	5 (2.4)	
	Sometimes	0	4 (1.9)	
CCFIS, mean (95%CI)		1.62 (1.14-2.10)	2.12 (1.58-2.66)	0.197

In the Cleveland Clinic Fecal Incontinence Score: Rare defined as once every 4 weeks and sometimes defined as more than once every 4 weeks but less than once per week. CCFIS: Cleveland Clinic Fecal Incontinence Score; CI: Confidence interval.

Table 5 Postoperative pain assessed using the Visual Analog Scale (*n* = 180), *n* (%)

Postoperative pain	*n* (%)
Mild (1-3)	161 (89.4)
Moderate (4-6)	15 (8.3)
Severe (7-10)	4 (2.2)
Mean (95%CI)	2.39 (2.21-2.57)

CI: Confidence interval.

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