The New Ropanasuri Journal of Surgery

Volume 7 | Number 1 Article 11

6-23-2022

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Recommended Citation

Putranto, Agi S. and Layardi, Winda J. (2022) "Review: Management of Complex Anal Fistula," *The New Ropanasuri Journal of Surgery*: Vol. 7: No. 1, Article 11.
DOI: 10.7454/nrjs.v7i1.1118
Available at: https://scholarhub.ui.ac.id/nrjs/vol7/iss1/11

The New Ropanasuri Journal of Surgery
OPEN ACCESS
Published by Department of Surgery
Faculty of Medicine, Universitas Indonesia

Review: Management of Complex Anal Fistula

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Corresponding author: winda.layardi@yahoo.co.id Received: 27/Feb/2022 Accepted: 8/May/2022 Published: 23/Jun/2022
Website: https://scholarhub.ui.ac.id/nrjs/ DOI: 10.7454/nrjs.v7i1.1118

Abstract

Introduction. Complex anal fistula has a high postoperative recurrence rate and incontinence as well. There have been many emerging surgical techniques, but there are no new recommendations for managing complex anal fistula. One of the critical parameters in evaluating surgical technique outcomes is the recurrence rate and incontinence. This study describes postoperative results in recurrence rates and incontinence in various surgical techniques in managing complex anal fistula.
Method. This review commenced with literature searches on online databases, including Cochrane Library, MEDLINE (PubMed), ScienceDirect, and CINAHL (EBSCOhost).
Results. The study enrolled two RCTs, four systematic reviews, 14 retrospective and prospective studies, and a case series. The recurrence rate and incontinence of fistulotomy, seton drainage, advancement flap, were 4-19% and 0-4%, 3-47% and 0-7%, 20-27%, and 0-38%, respectively. The recurrence rate of LIFT, VAAFT, PERFACT, and TROPIS were 7-16.1%, 7.5-33%, 20-26.7%, and 14%, respectively; no change in pre– and postoperative continence scores.
Conclusions. According to this study, the lowest recurrence rate was in the TROPIS procedure and the highest in fistulotomy. Meanwhile, the lowest incidence of incontinence was in LIFT, VAAFT, PERFACT, and TROPIS, and the highest was in the advancement flap procedure.

Key words: complex anal fistula, fistulotomy, seton, advancement flap, LIFT, VAAFT, PERFACT, TROPIS

Introduction

An anal fistula is a chronic abnormal connection that connects two epithelial-lined surfaces, usually with an internal opening in the anal canal and an external opening in the skin around the perineum.[1] As many as 5 to 10% of all cases of an anal fistula are complex anal fistula. Complex anal fistula cases require special attention and are a challenge in their management for colorectal surgeons.[2,3] Patients with complex anal fistula experience more pain significantly and have impaired quality of life. Regardless of the procedure chosen to treat it, complex anal fistula has a relatively low cure rate with a high recurrence rate and marked defecation disorders, so it is not uncommon for patients to undergo repeated medical procedures.[4,5,6,10]

There are some surgical and nonsurgical techniques for managing complex anal fistula. These surgical techniques are fistulotomy, advancement flap, seton drainage, and ligation of the intersphincteric fistula tract (LIFT). In 2011, the American Society of Colon and Rectal Surgeons recommended a stepwise fistulotomy technique, seton drainage, and advancement flap to manage complex anal fistula. However, these recommendations were of moderate–quality–evidence. After the recommendations, there have been emerging surgical techniques for complex anal fistulas, such as proximal superficial cauterization procedures, emptying regularly fistula tracts, and curettage of tracts (PERFACT), the transanal opening of intersphincteric space (TROPIS) procedures, or modified LIFT.[4,7] Currently, there are no new recommendations in the surgical management of complex anal fistulas. One of the critical parameters in evaluating surgical techniques is the outcome. Based on the problems that remain occurred and there are no recommendations for the surgical management of complex anal fistula, it is necessary to learn the outcomes: recurrence and incontinence for each technique in managing complex anal fistula.

Methods

This literature review proceeded through literature searching in online databases, i.e., Cochrane Library, MEDLINE (PubMed), ScienceDirect, CINAHL (EBSCOhost), with keywords: (anal fistula OR fistula in ano) AND (complex) AND (management) AND (surgery OR operation OR surgical) AND (incontinence or recurrence). The studies included in this literature review were experimental and full-text analytical observational trials in subjects with complex anal fistula treated with surgical procedures according to the American Society of Colon and Rectal Surgeons criteria in 2011.[2] The literature search proceeded according to the PRISMA (Figure 1).

Results

Out of 223 articles found, 168 duplications were excluded, and out of 55 articles screened, we found 21 articles were eligible for the criteria. The study enrolled two randomized control trials (RCTs), four systematic reviews, 14 retrospective and prospective studies, and a case series, as shown in Tables 1 and 2.

Based on the studies obtained, subjects who underwent fistulotomy procedures had a recurrence rate of 4-19% and incontinence 0-4%, seton drainage had a recurrence rate of 3-47% and incontinence 0-7%, advancement flap had a recurrence rate of 20-27% and incontinence 0-38%, LIFT has a recurrence rate of 7-16.1%, VAAFT has a recurrence rate of 7.5-33%, PERFACT has a recurrence rate of 20-26.7%, TROPIS

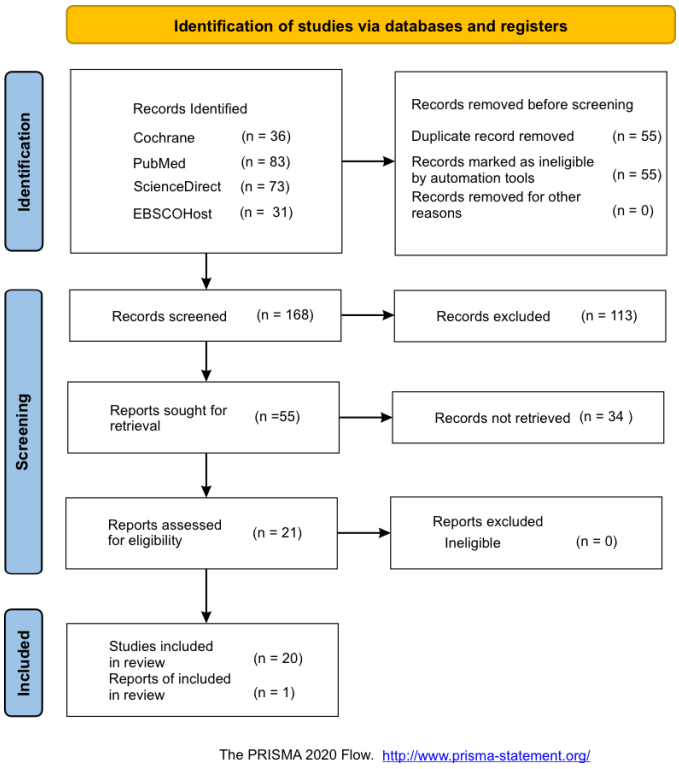

Figure 1. Literature search in accordance to PRISMA protocol found 21 eligible studies and report.

has a recurrence rate of 14%, and there is no change in pre and postoperative continence score in LIFT, VAAFT, PERFACT, and TROPIS procedures.

Discussion

Lay open fistulotomy is the first line in managing simple anal fistula, especially low-lying intersphincteric or trans sphincteric fistulas. The decision to perform a lay open fistulotomy in complex fistulas is quite complicated. It takes considerable experience to differentiate between high position fistulas that can and cannot be opened.[8] In both studies, the incidence of post-fistulotomy incontinence was 4-19%. Partial or complete fecal incontinence is a severe complication that can cause considerable psychosocial problems. In addition, an excessive sphincter separation and dissection during surgery or muscle damage resulting from an abscess may lead to postoperative incontinence.[44] Before surgery, the surgeon should assess the site of the internal opening and the anal sphincter involvement. Anterior fistulas in women cannot be laid open because of the short anterior anal canal. Surgeons should also assess the secondary extension, especially the elevated intersphincteric extension, the subject's bowel habits, the presence of IBD, and the quality of external sphincter contraction.[8] Postoperative flatus incontinence with loose seton is significantly lower than after fistulotomy.[8,9] The loose seton lets the fistula tract be as short as possible without compromising the anal sphincter muscle. Fung et al. have proven in their study that there is no incontinence after lay open fistulotomy combined with seton. However, this study used no objective assessment (for instance, an incontinence scoring system) but subjectively from the subject's testimony.

Table 1 Summary of studies that meet the eligibility criteria

Author (year)	Study design (LOE)	Samples	Age (years)	Types of complex anal fistula	Surgical technique (Intervention [I])	Comparative surgical technique, if any (Control [C])	Recurrence rate	Anal incontinence
Atkin et al. (2011)	Retrospective study (2C)	158	43	Transsphincteric, intersphincteric, and subcutaneous fistula high Low-lying fistula	Lay open fistulotomy with seton	No	4%	4%
Fung et al. (2013)	Retrospective study (2C)	46	42	Transsphincteric fistula Suprasphincteric fistula high Intersphincteral fistula	Lay open fistulotomy with seton	No	19%	No
Omar et al. (2019)	RCT (1B)	60	40.3 – 45.4	High transsphincteric fistula Suprasphincteric fistula Horseshoe fistula	External anal sphincter-sparing seton with rerouting technique	Conventional seton drainage	I: 3% C: 13%	I: 7% C: 10%
Galis-Rozen et al (2008)	Retrospective cohort (2B)	77	48	High transsphincteric fistula Suprasphincteric fistula with or without Crohn's disease	Staged seton fistulotomy for patients without CD, Seton drainage for CD patients	No	40 – 47%	6%

Table 1 Summary of studies that meet the eligibility criteria (continued)

Author (year)	Study design (LOE)	Samples	Age (years)	Types of complex anal fistula	Surgical technique (Intervention [I])	Comparative surgical technique, if any (Control [C])	Recurrence rate	Anal incontinence
Choi et al. (2010)	Retrospective cohort (2B)	24	43.5 – 45	Horseshoe fistula	Seton fistulotomy with Penrose drain and Jackson-Pratt drain for independent irrigation.	Conventional seton fistulotomy	I: 8.3% C: 16.7%	Score: 2.3*
Van der Hagen et al. (2005)	Prospective study (2C)	30	43	High transsphincteric fistula Suprasphincteric fistula Extrasphincteric fistula with an internal opening at the top of the anal canal; with or without cryptoglandular disease	Installation of a seton followed by fistulotomy or flap advancement mucosal	No	22%	No
Schulze et al. (2014)	Prospective cohort (2B)	75	49.5	Complex fistula due to cryptoglandular disease with or without a history of recurrence	Seton drainage with partial fistulotomy, followed by LIFT	No	12%	1%
Soltani and Kaiser (2010)	Systematic review (2A)	1654 of 35 studies	42.4	Cryptoglandular fistula and Crohn's disease	Endorectal advancement flap	No	No	0 to 35%
Jarrar and Church (2011)	Prospective cohort (2B)	98	53	Cryptoglandular fistula and Crohn's disease	Endorectal advancement flap	No	No	38%
Nelson et al. (2000)	Prospective cohort (2B)	65	N/A	Transsphincteric fistula	Dermal island flap	No	20%	No
Del Pino et al. (1996)	Case series (4)	11	N/A	Transfingster fistula with or without Crohn's disease	Island flap anoplasty	No	27%	No
Liu et al. (2013)	Retrospective cohort (2B)	38	42	High transsphincteric fistula	LIFT	No	No	0%
Alasari and Kim (2013)	Systematic Review (2A)	453	N/A	Transsphincteric fistula Suprasphincteric fistula Horseshoe fistula Rectovaginal fistula Intersphincteral fistula	LIFT	No	7.58%	0%
Wen et al. (2018)	Retrospective cohort (2B)	62	34	High transsphincteric fistula High intersphincteric fistula Rectovaginal fistula	LIFT with modification	No	16%	0%
Mushaya et al. (2012)	RCT (1B)	39	47.5 – 48.2	Transsphincteric fistula of cryptoglandular origin	Seton post-drainage elevator	Anorectal advancement flap, post seton drainage	I: 8% C: 7%	I: 0% C: 7%

Table 1 Summary of studies that meet the eligibility criteria (continued)

Author (year)	Study design (LOE)	Samples	Age (years)	Types of complex anal fistula	Surgical technique (Intervention [I])	Comparative surgical technique, if any (Control [C])	Recurrence rate	Anal incontinence
Emile et al. (2017)	Systematic review (2A)	788 patients from 11 studies	39.5	Whole anal fistula complex	VAAFT	No	7.5% to 33.3%	No
Garg and Singh (2017)	Systematic review and meta-analysis (2A)	786 patients from 8 studies	N/A	High position fistula: suprasphincter or extrasphincter Transsphincteric fistula high Rectovaginal fistula Fistula due to radiation or Crohn's disease	VAAFT	No	No	0%
Garg and Garg (2015)	Prospective cohort (2B)	44	42.7	Whole anal fistula complex	PERFACT	No	20%	No
Garg (2016)	Prospective cohort (2C)	17	41.1	Supralevator intersphincteral fistula Supralevator transsphincteric fistula Fistula with multiple tracts	PERFACT	No	35%	No
Garg (2017)	Prospective cohort (2B)	61	42.3	Horseshoe fistula Supralevator fistula Recurrent fistula	TROPIS	No	No	No

Note: LOE: level of evidence, RCT: randomized clinical trial CD: Crohn's disease, N/A: not available I: Intervention, C: Control, *Wexner or Cleveland Clinic incontinence scale.

The use of setons in the management of anal fistulas proceeds with seton drainage and cutting setons. Many surgeons have used seton drainage for the first step in managing complex fistulas.[10,11] In addition to the conventional seton drainage method, Omar et al. tried to evaluate the EAS-sparing drainage model and found that the incidence of incontinence was much lower in the EAS-sparing model than in the conventional model, which is 10% and 7%. However, the difference between the two groups was insignificant and transient, with spontaneous improvement after a few months. Less muscle fiber involvement in the EAS-sparing seton results in significantly less muscle fiber traction than the conventional drainage seton. That is why the pain scale in the EAS-sparing seton is much lower. The limitation of the EAS-sparing seton is a longer duration of the procedure than the conventional seton. The issues were dissection, repositioning of the fistula tract, and repairing the external sphincter ani.[12]

Fistulas are a complication of Crohn's disease, with a prevalence of 12% to 92%.[13] The approach to complex perianal fistula in Crohn's disease differed from those without Crohn's. Surgery is the last option, but conservative management that aims to induce remission and resolution of the fistula is preferred. There were various surgical approaches to treating complex fistula, one of which is the use of loose setons, either permanent or indwelling in Crohn's disease patients, with the aim of drainage to prevent abscess formation. However, the placement of loose setons will trigger a fibrotic reaction that can result in primary closure or trigger migration of the fistula tract. Although postoperative incontinence is relatively low, the postoperative recurrence rate is high in patients with (40%) or without Crohn's disease (47%).[14] This is in line with the findings in several previous studies, where the recurrence rate after setting on loose in complex fistulas reached 41-44%.[15,16] Compared with other procedures in this study, the recurrence rate after seton loose was the highest.

Another procedure for managing complex anal fistulas is the endorectal advancement flap. The incidence of postoperative incontinence ranges from 0 to 35%. Injury due to stretching the sphincter complex during surgery may contribute to incontinence. In addition, the use of partial-thickness or full-thickness flaps can potentially disrupt the proximal part of the internal sphincter muscle. Ectropion that occurs due to advancement of the flap beyond the fistula boundary in the dentate line can interfere with sensory function in the anal canal, causing fecal incontinence.[17]

LIFT, VAAFT, PERFACT, and TROPIS are sphincter-sparing procedures with comparable recurrence rates and incontinence. The recurrence rate in patients undergoing LIFT procedures varied (7,58-16,1%). Disadvantages of the LIFT procedure are the difficulty of performing LIFT on high-positioned fistulas since technical expertise is required and the problem of keeping the intersphincteric space open for a significant period to ensure secondary healing (especially in supralevator fistulas). In four studies, no postoperative incontinence was reported.[18]

VAAFT is a sphincter-saving technique; in both studies reviewed, there was no incidence of incontinence. However, the postoperative recurrence of VAAFT remains relatively high (7,5-33%).[40,41] From procedural points, the disadvantage of this technique is that VAAFT cannot be performed in some cases of chronic anal fistula without an external opening (e.g., non-symptomatic fistula, acute abscess without external opening, submucosal fistula with posterior rectal abscess).[19] Another obstacle is the high cost of the tools used and additional costs if using a stapler.[20]

The PERFACT procedure is a new, simple, and effective method for managing complex anal fistulas. There have been no reported cases of incontinence. Following several advantages of PERFACT over other procedures, PERFACT is effective in complex cases where other methods have not worked well, such as fistulas with supralevator extension, fistulas due to abscesses, and undetected internal openings.

The PERFACT procedure is cost-effective since it requires no expensive instruments, a short duration of surgery, and a short length of stay. The incision is minimal, and there is minimal scarring and anatomical distortion. The procedure is relatively simple for a surgeon. However, the two studies found that recurrence was relatively high, namely 20% and 26,7%.[21]

Merely two studies reported the TROPIS procedure. A study showed postoperative incontinence lower than other methods for complex anal fistula (14%). However, it is too early to judge a study report,[22] a more long-term study with sufficient size is directed in the future. In the TROPIS procedure, the internal opening and the intersphincteric space are cauterized and left to heal intermittently, letting the infection of the internal and intersphincteric area may be drained sufficiently. As for the external tract, cauterization and drain application ensure optimal drainage.

Conclusions

The methods for complex anal fistula should be highly selective due to the failure–risk and postoperative incontinence. Fistulotomy, seton fistulotomy, advancement flap, LIFT, VAAFT, TROPIS, and PERFACT procedures are options for managing complex anal fistulas. The lowest recurrence was in the TROPIS procedure, the highest in the fistulotomy procedure. The lowest incidence of incontinence was in the LIFT, VAAFT, PERFACT, and TROPIS procedures, and the highest was in the advancement flap.

Disclosure

Authors declare no conflict of interest

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