

The Outcome of Draining Setons in the Management of Complex Transsphincteric Fistulas and Recurrence Rates

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ABSTRACT

Objectives: The purpose of the study was to determine the role of draining seton in the management of patients with fistula-in-ano concerning the duration of hospital stay and recurrences.

Method: This hospital-based prospective observational study included patients with trans-sphincteric fistula where complete debridement was possible with a minimum of 3-month follow-up after removal of seton. Loose seton was inserted at the time of surgery after excision of the tract with regular follow-up after surgery and post-seton removal to know about recurrences.

Results: Twenty-six patients were included in the study and all of them presented with a chief complaint of perianal discharge followed by perianal itching and pain. Duration of symptoms ranged from 4 to 48 months. Twenty-two out of 26 cases had undergone surgical procedures in past, with a total of 40 surgical procedures and a mean of 1.81 surgical procedures in each patient. Postoperative hospital stays ranged from 1 to 6 days with a mean hospital stay of 2.38 days. Duration after which seton was removed ranged from 13 to 24 weeks with a mean duration of 19.53 weeks and recurrence in the form of low fistulas was seen in 3 patients.

Conclusion: The use of loose setons in complex anal fistula is efficacious as a supplementary treatment to reduce recurrence rates and /or downstage the fistula.

Keywords: Hospital Stay, Fistula in ano, Recurrence, Seton, Complex fistula

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INTRODUCTION

Fistula is an abnormal communication between two hollow organs or between a hollow organ and the skin with epithelial lining and in fistula in ano (FIA), fistula tract connects the perianal skin with the anal canal or rectum. Anal abscesses and FIA form about 70% of perianal diseases that require surgical intervention and account for up to 5% of proctological consultations^{1,2}. Cryptoglandular perianal fistulas have a prevalence of 0.86 per 10,000 population, whereas Crohn's disease-associated fistulas have a prevalence of 0.76 per 10,000 population; the overall prevalence of perianal fistulas is 1.69 per 10,000 population³.

Anal fistula as a disease has been described virtually from the beginning of medical history with Hippocrates

suggesting FIA was caused by “contusions and tubercles occasioned by rowing or riding on horseback” around 430 BCE⁴. The crypto-glandular theory proposed by Eisenhammer and Parks is the most plausible explanation for the initiating event in most cases of idiopathic anal sepsis^{5,6}. The other causes of FIA are Inflammatory bowel disease, Infection (tuberculosis, actinomycosis, lymphogranuloma venereum, chlamydia, syphilis), perianal trauma, pelvic radiation, postoperative (episiotomy, hemorrhoidectomy, prostatectomy), malignancy (carcinoma, leukaemia, lymphoma), diverticulitis and foreign-body reactions.

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The symptoms of FIA vary based on the location of the external opening, the complexity of the tract, the patient's tolerance, as well as the underlying cause. Generally, most patients with anal fistula require little if any work-up beyond a physical exam and anoscopy. Preoperative imaging is reserved for cases with multiple external openings, unidentified internal openings on physical examination either preoperatively or intraoperatively or recurrence following surgical procedures, particularly fistulotomies where a cure was expected.

According to American Society of Colon and Rectal Surgeons (ASCRS), an anal fistula may be termed "complex" when one or more of the following findings are present: the tract crosses more than 30 % of the external anal sphincter (high transsphincteric with or without a high blind tract, suprasphincteric, and extrasphincteric), horseshoe configuration, anterior location in a female, multiple tracts, recurrent fistulas, Crohn's disease, prior radiotherapy, or baseline incontinence. In addition, anorectal fistulas with the following anatomical configurations and etiologies are considered complex: rectovaginal fistula, rectourethral fistula, anastomotic fistula following colorectal surgery, post-traumatic fistula, and malignant fistula⁷.

The primary goal of operative treatment of FIA is to obliterate the internal fistulous opening along with any associated epithelialized tracts and to preserve anal sphincter function. Treatment modalities include insertion of various types of setons, two-stage fistulotomy, primary fistulectomy with closure of the internal opening, fistulotomy with primary repair of the sphincter, endorectal advancement flaps, anocutaneous advancement flap, repair of fistula using fibrin adhesive glue and re-routing the fistula tract⁸.

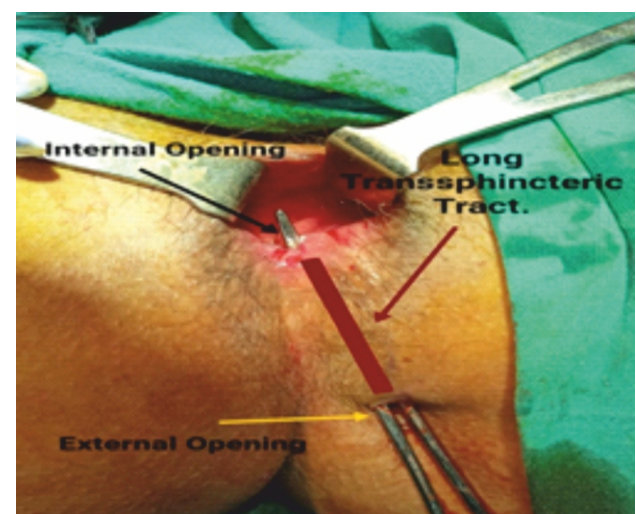
The term "Seton" comes from the Latin word "seta", meaning "bristle." It refers to any foreign material that can be inserted into the fistula tract to encircle the sphincter muscles. Setons may be used for marking, draining, cutting, or staging. A draining seton passes through a fistula tract to provide long-term drainage of a septic process and may be used as a bridge to definitive surgical therapy or be left in place for long periods. For complex fistulas involving more than 30 per cent of the sphincter, or proximal to the dentate line, or are high trans sphincteric fistulas, draining setons are used at the time of the first operation to preserve the sphincter muscles and help to eradicate the septic focus⁹.

Properly placed draining setons can be left in situ indefinitely, as long as they are effective in relieving symptoms, or they can be taken out at the time of the definitive fistula repair with one of the methods discussed above after 6 weeks from the time of seton insertion.

MATERIAL & METHODS

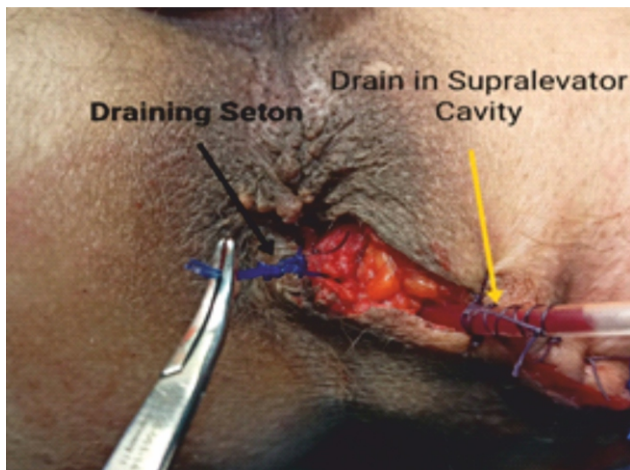
This hospital based prospective observational study was conducted over a period of 18 months in the Colorectal Division, Department of General and Minimal Invasive Surgery, Sher-i-Kashmir Institute of Medical Sciences, Srinagar after the study was approved by the Institutional Ethics Committee (IEC No. RP 58/2020). Aims was to investigate role of seton in FIA concerning Hospital stay duration and recurrences. Patients with anal fistula and trans sphincteric tract where complete debridement was possible, and with a minimum of 3 months follow up after seton removal were included in the study. Exclusion criteria include fistulas where complete debridement is not possible, non-cooperative patients, fistulas caused by crohns disease, malignancy and immune-compromised patients.

All procedures were performed by a colorectal consultant after informed consent regarding the nature and possible complications of the procedure. The procedure was started by examination under anaesthesia (EUA) in the lithotomy position using the operating proctoscope to detect the internal opening of the fistula and to exclude any associated anal or rectal pathology (Picture 1). Methylene blue or betadine was used to locate the internal opening and a



Picture 1: Intraoperative photograph showing internal and external opening of fistula track.

malleable metallic probe was inserted through the external opening and directed gently until its end came out through the internal opening of the fistula. Using electrocautery, the coring of the fistulous tract around the external opening was done until the point where the track passed beneath the external anal sphincter muscles. Any arising from the primary track were identified and excised with electrocautery along with careful curettage of supra levator extensions and cavity. The superficial part of the track was excised and sent for histopathological examination. Doubled Polypropylene (prolene) No.1 thread was attached to the end of the metallic probe and then withdrawn from the external opening along with the probe. The thread was loosely tied around the remaining part of the track and the anal sphincter muscles without cutting mucosa or skin (Picture2).



Picture 2: Intraoperative photograph showing draining seton with drain in supralelevator cavity.

The seton was removed after three months upon complete healing of the superficial wound and when there were no signs of perianal discharge; in cases of delayed healing or development of perianal sepsis the removal of seton was postponed. Complete healing was defined as complete epithelization of the wound with no evidence of external opening of the fistula or perianal discharge. Patients were followed in the outpatient clinic after the placement and removal of seton at regular intervals.

RESULTS

Twenty-six patients were included in the study, twenty (77%) were males and six (23%) were females with the mean age of the study population being 47 years with the

youngest patient being 25 years old and the eldest patient 75 years old. The mean age of the male group was 48.1 years and the mean age of the female group was 43.3 years. Duration of symptoms in patients ranged from 4 months to 48 months with a mean duration of 12.57 months. Twenty-two patients (84.6%) out of 26 studied cases, had undergone surgical procedures in past for perianal fistula or perianal abscess outside our hospital. These 22 patients had undergone a total of 40 surgical procedures in past with a mean of 1.81 surgical procedures in each patient. Out of these 40 surgical procedures done in 22 patients, 14 (35% of surgical procedures) were fistulectomies and 26 (65% of surgical procedures) were incision and drainage of perianal abscesses. All patients had complex fistula in ano as standards practice task force of the American Society of Colon and Rectal Surgeons. MRI was done in 24 (92.30%) cases out of 26 cases given recurrent disease and the nature of it being a complex fistula. On examination under anaesthesia 18 (69.2%) patients had a solitary external opening, 4 (15.4%) had two external openings and 4 (15.4%) had three external openings. Four patients (15.4%) had supra levator and secondary tracts were seen in tracts seen in 6 (23%) patients and the internal opening was located in all patients intraoperatively.

Post-operative hospital stays ranged from 1 day to 6 days with a mean hospital stay of 2.38 days (Figure 1). Duration after which setons were removed ranged from 13 to 24 weeks with a mean duration of 19.53 weeks.

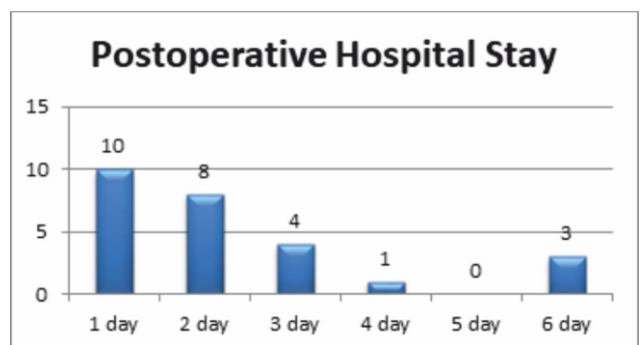


Fig. 1: Bar graph depicting Postoperative hospital stay in days.

Duration of follow-up after seton removal ranged from 15 weeks to 64 weeks with a median follow-up of 37 weeks. Post-seton removal patients were followed monthly to look for recurrence and recurrence of fistula was recorded in 3 (11.53%) patients after a mean duration of 46.6 weeks (range 38-54 weeks) after removal of seton. Recurrence

was in the form of low fistula in all 3 patients (Figure 2). Two of the recurrent fistulas had supralelevator extension at the time of seton insertion, with a previous history of fistulectomy and one patient had a previous history of incision and drainage of perianal abscess 4 times in the past.

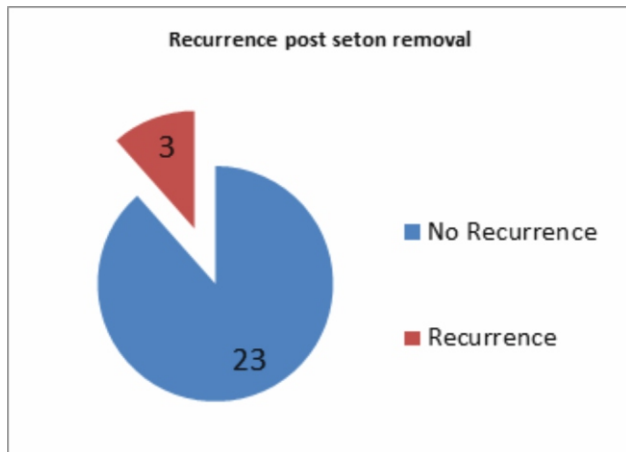


Fig. 2: Pie chart showing Post seton removal recurrence in patients.

DISCUSSION

The perianal fistulous disease significantly impacts patients' quality of life and the primary goal of operative treatment for FIA is to obliterate the internal fistulous opening and any epithelialized tract. No single technique is universally appropriate for all fistulas and the management of high and complex FIA has been a real challenge with the ongoing search for the ideal procedure.

There is no consensus on the best method to treat acute or chronic FIA. The American Society of Colon and Rectal Surgeons does not offer a clear recommendation, citing moderate to low-quality evidence for all currently available techniques, including simple fistulotomy (quality of evidence 1B), debridement and fibrin glue injection (2B), anal fistula plug (2B), endoanal advancement flaps (1B), cutting seton (2B), staged fistulotomy (1B), and ligation of the intersphincteric fistula tract (1B)⁷. This is because none of these methods is perfect in every situation, and all of these techniques are compromised by varying rates of recurrence and faecal incontinence.

A draining seton traverses a fistula tract to provide long-term drainage of a septic process and it may be used as a bridge to definitive surgical therapy or be left in place for long periods. Properly placed draining setons can be left in situ indefinitely if they effectively relieve symptoms or can

be removed during definitive fistula repair.

Duration of hospital stay has a direct financial impact on patients and inpatient care providers. Post-operative hospital stays ranged from 1 day to 6 days with a mean hospital stay of 2.38 days in our study. In a study by I. Kristo et al., the mean length of hospital stay was 2.5 days while Yukihiro Tokunaga and colleagues reported 4-5 days for trans- and supra-sphincteric fistulas^{10,11}. Post-operative hospital stay was longer in patients with supra levator extension in whom drain was placed intra-operatively for irrigation of cavity or tract and needed regular dressings given large and complex perianal wounds.

The overall recurrence rate in our study was around 11.5% after a median follow-up of 37 weeks which falls within the range (0-22%) reported by a recent literature review¹². However, the highest recurrence rate (22%) in that review was recorded in one study that used setons in FIA secondary to Crohn's disease which may explain higher recurrence incidence¹³. Montes et al. and Choi et al. reported lower recurrence rates than our study^{14,15}. It can be explained by the fact that around 84.6% of the patients in this study had undergone previous surgery for FIA rendering these cases technically difficult and more prone to recurrence and complications. As a tertiary care institute our centre receives complex and recurrent FIA cases. Zbar and associates¹⁶ reported a comparable recurrence rate of 11% while Eitan and colleagues¹⁷ reported nearly twice the recurrence rate of our present series. The overall recurrence rate in a study by Mohammed Sobhy Taema et al¹⁸ was 12% (6/50 patients). According to Emile et al¹⁹ in their study, the recurrence was recorded in 26 patients (10.3%, 95%CI= 7.2-14.7) after a mean duration of 12.2 ± 3.9 months (range, 6-22) after removal of seton, and recurrences were in the form of low fistula in ano in 22 patients who were managed with fistulotomy, and high trans-sphincteric fistula in four patients who had another seton. Eitan et al.¹⁷ reported an overall recurrence rate was 19.4 %. This wide variation in the recurrence rates can be attributed to the different indications, methods employed for seton placement and types of seton used. The type of seton may affect the incidence of recurrence and the patient's comfort level and life quality¹¹.

Out of 3 recurrences in our study two had supralelevator extension at the time of seton placement with a history of fistulectomy in past and one patient had a history of incision

drainage of perianal abscess four times in past. Recurrence in all the cases was in the form of simple FIA i.e. fistula was staged and were managed with fistulectomy. The risk factors for recurrence after seton placement were the presence of supra-levator extension and previous fistula surgery. These findings are in line with the study of Memon and colleagues who found high trans-sphincteric fistulas to be a predictive factor for recurrence²⁰. Visscher et al. also recognized the presence of secondary tracks and previous fistula surgery as significant risk factors for the recurrence of fistula in ano after mucosal advancement flap and fistulectomy²¹. Furthermore, Garcia-Aguilar and coworkers²² stated that factors associated with the recurrence of fistula in ano after various procedures were complex fistula, horseshoe extension, previous fistula surgery and the surgeon's experience. These fistulas have the possibility of the presence of secondary tracks that are missed during the initial procedure leading to recurrence. In addition, previous surgical intervention for FIA causes fibrosis of the area and sometimes loss of anatomic landmarks which may predispose to potential missing of branches or extensions of the primary track. For this reason, surgery for recurrent fistula in ano is often more difficult and carries a higher incidence of re-recurrence coping with findings that recurrent fistula in ano is around two and half times more likely to recur than the primary type^{21,23}.

CONCLUSION

Management of complex anal fistula still proves a significant challenge to treating surgeons whose aim is to eradicate disease and decrease recurrence rates. The results of the present study asserted the previously reported satisfactory outcome of seton placement in high trans-sphincteric fistula in ano concerning recurrence rates. The use of loose setons in complex anal fistula is efficacious as a supplementary treatment to reduce recurrence rates and /or downstage the fistula.

Conflict of Interest: None

Funding: None

Written Consent: Taken

REFERENCES

1. Sugrue J, Nordenstam J, Abcarian H, Bartholomew A, Schwartz JL, Mellgren A, Tozer PJ. Pathogenesis and persistence of cryptoglandular anal fistula: a systematic review. *Tech Coloproctol*. 2017 Jun;21(6):425–32.
2. Felt-Bersma RJ, Bartelsman JF. Haemorrhoids, rectal prolapse, anal fissure, peri-anal fistulae and sexually transmitted diseases. *Best Pract Res Clin Gastroenterol*. 2009;23(4):575–92.
3. Garcia-Olmo D, Van Assche G, Tagarro I, Diez MC, Richard MP, Khalid JM, et al. Prevalence of Anal Fistulas in Europe: Systematic Literature Reviews and Population-Based Database Analysis. *Advances in therapy*. 2019 Dec;36(12):3503–18.
4. Adams F. On fistulae. In: *The Genuine Works of Hippocrates: Translated from the Greek with a Preliminary Discourse and Annotation*. New York, NY: William Wood; 1849.
5. Eccles M, Mason J. How to develop cost-conscious guidelines. *Health Technol Assess* 2001; 5(16): 1–69.
6. Eisenhammer S. A new approach to the anorectal fistulous abscess based on the high intermuscular lesion. *Surg Gynecol Obstet* 1958 May; 106(5): 595–9.
7. Jon D. Vogel, Eric K. Johnson, Arden M. Morris, Ian M. Paquette, Theodore J. Saclarides, Daniel L. Feingold, Scott R. Steele. Clinical Practice Guideline for the Management of Anorectal Abscess, Fistula-in-Ano, and Rectovaginal Fistula. *Dis Colon Rectum* 2016 Dec; 59(12): 1117–1133.
8. Gurer A, Ozlem N, Gokakin AK, Ozdogan M, Kulacoglu H, Aydin R. A novel material in seton treatment of fistula-in-ano. *American Journal of surgery*. 2007 Jun;193(6):794–6.
9. Durgun V, Perek A, Kapan M, et al. Partial fistulotomy and modified cutting seton procedure in the treatment of high extrasphincteric perianal fistulae. *Dig Surg*. 2002; 19(1):56–8.
10. Yukihiro Tokunaga, Hirokazu Sasaki ,Tohru Saito. Clinical role of a modified seton technique for the treatment of trans-sphincteric and supra-sphincteric anal fistulas. *Surg Today*. 2013 Mar;43(3):245–8..
11. I. Kristo, A. Stift, C. Staud, A. Kainz, T. Bachleitner-Hofmann, P. Chitsabesan and S. Riss. The type of loose seton for complex anal fistula is essential to improve perianal comfort and quality of life . *Colorectal Dis* .2016 Jun;18(6):O194–O198.

12. Subhas G, Bhullar J, Al-Omari A, Unawane A, Mittal V, Pearlman R. Setons in the Treatment of Anal Fistula: Review of Variations in Materials and Techniques. *Dig Surg*. 2012;29(4):292–300.
13. Faucheron JL. Long-term seton drainage for high anal fistulas in Crohn's disease – a sphincter-saving operation? *Dis Colon Rectum*. 1996 Feb;39(2):208–211.
14. Montes BB, Oktemer S, Tezcaner T, et al. Elastic one-stage cutting seton for the treatment of high anal fistulas: preliminary results. *Tech Coloproctol*. 2004 Nov;8(3):159–162.
15. Choi D, Sung Kim H, Seo HI, Oh N: Patient performed seton irrigation for the treatment of deep horseshoe fistula. *Dis Colon Rectum*. 2010 May;53(5):812–816.
16. Zbar AP, Ramesh J, Beer-Gabel M, et al: Conventional cutting versus internal anal sphincter-preserving seton for high transsphincteric fistula: a prospective randomized manometric and clinical trial. *Tech Coloproctol* 2003 Jul;7(2):89–94.
17. Eitan A, Koliada M, Bickel A. The use of the loose seton technique as a definitive treatment for recurrent and persistent high trans-sphincteric anal fistulas: a long-term outcome. *J Gastrointest Surg*. 2009 Jun;13(6):1116–9.
18. Mohammed Sobhy Taema, Abd El Fattah Morsi Saied, Mustafa Mohammed Ahmed EL Sheikh. Predictive Factors for the High Perianal Fistula Recurrence After Placement of Seton. *The Egyptian Journal of Hospital Medicine*. 2019 Oct; 77 (5): 5514-5519.
19. Emile SH, Elfeki H, Thabet W, Sakr A, Magdy A, El-Hamed TMA, Omar W, Khafagy W. Predictive factors for recurrence of high transsphincteric anal fistula after placement of seton. *J Surg Res*. 2017 Jun; 213: 261-268.
20. Memon AA, Murtaza G, Azami R, Zafar H, Chawla T, Laghari AA. Treatment of Complex Fistula in Ano with Cable-Tie Seton: A Prospective Case Series. *ISRN Surgery*. 2011;2011:636952.
21. Visscher AP, Schuur D, Slooff RA, Meijerink WJ, Deen-Molenaar CB, Felt-Bersma RJ. Predictive factors for recurrence of cryptoglandular fistulae characterized by preoperative three-dimensional endoanal ultrasound. *Colorectal Dis*. 2016 May;18(5):503–9. doi:10.1111/codi.13211.
22. Garcia-Aguilar J, Belmonte C, Wong DW, Goldberg SM, Madoff RD. Cutting seton versus two-stage seton fistulotomy in the surgical management of high anal fistula. *Br J Surg*. 1998;85:243–245.
23. Garcia-Aguilar J, Belmonte C, Wong WD, Goldberg SM, Madoff RD. Anal fistula surgery. Factors associated with recurrence and incontinence. *Dis Colon Rectum*. 1996 Jul;39(7):723–9.