

Total Excision of Fistulous Track with or without Seton: An Effective Treatment of Fistula in ANO**R. Ram Raj¹, Uma Narayanan²**¹Senior Consultant Surgeon, Department of General Surgery, Cosmopolitan Hospital Postgraduate Institute of Health Science and Research, Trivandrum, Kerala, India.²Postgraduate, Department of General Surgery, Cosmopolitan Hospital Postgraduate Institute of Health Science & Research, Trivandrum, Kerala, India.

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Abstract**Background:** Management of fistula in ano, has been considered a clinical challenge for centuries. The risk of recurrence and incontinence being the most feared complications following its surgery.

Up to date, surgery is the main modality in treating anal fistula, but there is no simple technique that can completely heal complex anal fistula. The present study analyses the results of fistulectomy with the use of cutting seton in treating fistula-in-ano recurrence rate, healing time, and continence status

Material & Methods: This observational analytical study was conducted on 62 patients admitted in the Department of General Surgery for definitive management of fistula in ano from September 2017 to September 2020. All the patients undergoing fistulectomy as a treatment of fistula in ano were taken up for this study, after proper optimisation and management of suppuration, the patients were taken up for complete fistulectomy along with cutting seton which was used in fistula with internal opening above 1cm from anal verge. The fistulas were classified as follows as per the MRI findings and operative findings.**Results:** Among the total 62 patients included in the study, the mean age of the study population was 37.2 years with majority being males in number (56.4%). The Average Healing time among the patients included in the study was 52days. Out of total 62 patients who have undergone surgery recurrence was for only 1 patient, he was a case of carcinoma prostate post-irradiation and 7 patients required revision procedure or repeat deroofting.**Conclusion:** Fistula in ano is a complex issue that is affecting an individual to a great extent. Of the different treatment options available for treatment total excision of the fistulous track with seton placement is an effective treatment with very low recurrence rate.**Keywords:** fistulectomy, seton, recurrence, incontinence.This is an Open Access article that uses a funding model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.**Introduction**

The anal fistula is an abnormal communication usually lined by some degree of epithelium and granulation tissue, which runs outward from the anorectal lumen (internal opening) to the external opening in the skin of the perineum. The primary opening is deep in the anal canal or rectum and the superficial openings, which may be multiple, are around the perianal skin.

Fistula-in-ano is one of the commonly encountered surgical problem imparting significantly on patients' quality of life with a reported incidence of 8.6 per 100,000 per year.[1]

The first time a classification for this surgical illness was proposed by Park and colleagues in 1976. In British journal of surgery, Parks A.G.et al based on the level of fistula with respect to sphincter, classified fistula in ano into four

types.[2] The Park's classification system separates them into four categories depending on the location of tract in relation to the sphincter muscle: intersphincteric, trans sphincteric, suprasphincteric, and extrasphincteric.

In article published in Germany, Strittmatter B, described various forms of fistula establishing the entire course of the tract was the important factor in achieving cure of the disease and most of the fistula can be treated by fistulotomy or fistulectomy when tract is established.[3]

Fistula-in-ano has always tested the patience of even the most experienced surgeons. The various options available in the management of fistula in ano stated in the literature are advancements flaps, fibrin glue, setons, anal fistula plug, LIFT, VAAFT, fistulotomy and fistulectomy. Fibrin glue is mixture

of fibrinogen, thrombin, and calcium ion. When injected into the fistulous tract, it combines and forms fibrin clot by conversion of fibrinogen into fibrin[4]. Setons are one of the oldest means of treating perianal fistulas with cutting setons to externalize trans-sphincteric fistula tracts and draining setons to control sepsis within fistula tracts. Ligation of intersphincteric fistula tract (LIFT) procedure is a relatively novel therapy introduced in 2007 which involves accessing the fistula tract through the intersphincteric space and interrupting and ligating both ends of the fistulous tract[5]. Video- assisted Anal Fistula Treatment (VAAFT) is a minimally invasive and sphincter saving technique for treating complex fistulas, in which a long rigid fistuloscope is passed through the external opening, cauterize the lining of the fistula tract and semicircular or linear stapler seal off the internal opening or by a cutaneous or mucosal flap. Synthetic cyanoacrylate is injected to reinforce the staple/suture line[6]. Fistulotomy means laying open or unroofing of the fistulous tract from its termination (external opening) to its source (internal opening)[7]. Fistulectomy involves complete excision of the fistula tract including its openings. It involves coring out of the fistula by either sharp dissection or diathermy cauterly.

There has been no consensus on surgical options for treating fistula in ano. The existing options have not yielded satisfying results; hence, there is a need to discover new options.

In this study we have performed fistulectomy (total excision of the fistulous tract) as the management in fistula in ano with the use of cutting seton for all fistulas with internal opening 1cm above the anal verge.

Materials and Methods

This observational analytical study was conducted on 62 patients admitted in the Department of General Surgery for definitive management of

fistula in ano. The period of study was from September 2017 to September 2020. The patients were subjected to thorough physical examination and salient points in history were recorded. Emphasis was given to the predisposing causes of fistula in ano and the duration of symptoms. Patient was appropriately pre-optimised with special emphasis to optimisation of diabetic status, hypothyroidism etc. The infective suppuration was managed with antibiotics and once the infection was subsided patients were taken up for the surgery.

Basic investigations were carried out and references to the other concerned specialities were made when necessary. All patients underwent routine blood examinations consisting of haemoglobin estimation, total count, differential leucocyte count, Erythrocyte Sedimentation Rate, blood sugar, blood urea, serum creatinine, serum sodium and serum potassium. X-ray chest and ECG (all leads) were included in the list of investigations. Magnetic resonance imaging fistulogram was done for all patients undergoing surgery for fistula in ano. The anatomic delineation of the fistulous tract was done and planned pre operatively to avoid missing of a secondary fistulous tract which may be missed in an endorectal ultrasound or MR fistulogram.

All the patients undergoing fistulectomy as a treatment of fistula in ano were taken up for this study, after proper optimisation and management of suppuration, the patients were taken up for complete fistulectomy along with cutting seton which was used in fistula with internal opening above 1cm from anal verge. The fistulas were classified as follows as per the MRI findings and operative findings

Simple, low trans-sphincteric, high trans-sphincteric and complex, horse shoe and supralelevator extension.

Operative Technique

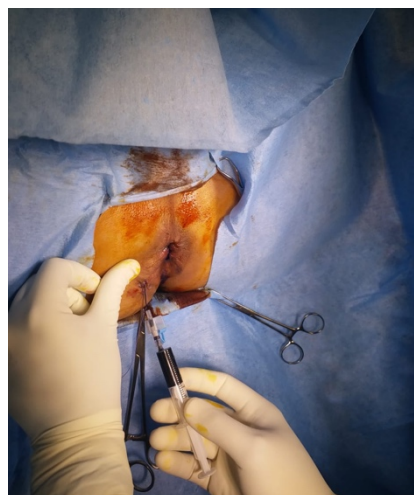


Figure 1: Methylene blue being injected into the fistulous tract to delineate it at the time of dissection

After adequate optimisation and obtaining consent for fistulectomy with or without cutting seton, the patient was placed on table in lithotomy position. Surgery is done under spinal anaesthesia. An elliptical incision is made around the external opening and deepened, and tissue dissected in

either side of the tract. Methylene blue dye was injected, it acts as a guide that prevents the fistulous tract from accidental injury. If sphincter muscles come across during dissection, it is separated from the tract.

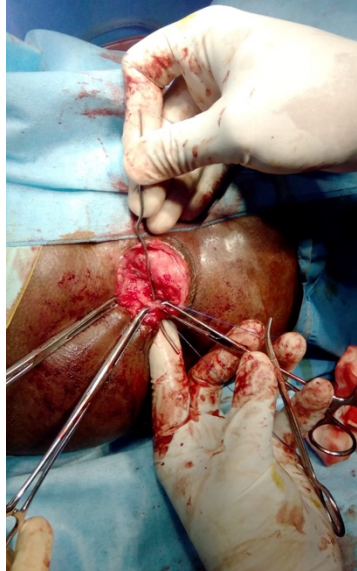


Figure 2: Illustration of fistulous tract layed open with seton in position in a high trans-sphincteric fistula

Dissection is done till the internal opening is reached, after that the entirety of the fistulous tract is excised from the external opening, dissecting close to the core of fibrosed tissue to the extent that the entirety of epithelial lining is excised including the internal opening there by converting the fistula to one with no epithelial lining. In case the tract ends abruptly and without internal opening, the dissection completed up to the level of methylene blue staining and tract excised. It is ensured that all the methylene blue stained tissues are cored out, hence a complete fistulectomy is ensured.

In patients with internal opening of the fistulous tract 1cm above the anal verge a cutting seton insertion is also done along with fistulectomy. Patient placed in lithotomy position, internal and external openings identified with blunt probe

following cored out the fistulous tract. Then the seton is passed through the external opening through the tract into internal opening and the end is brought out through anal canal. The ends of the metallic seton is obliterated by pludget like dressing as illustrated in the figure 2.

The seton is tightened down and secured with a separate silk tie. The anal canal is packed with saline gauze. The patients were monitored in postop period. Prophylactic antibiotics and laxatives along with sitz bath were given. The patients are discharged once they pass motion.

The patients are reviewed in OPD to look for proper healing of the wound and wound care. The patients were reviewed weekly, and adequate wound care was given and proper healing of the wound was ensured.



Figure 3: Metallic seton placed in fistulous tract after total excision and tightened, end obliterated by pludget like dressing as illustrated

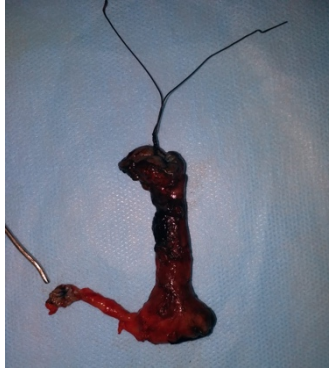


Figure 4: Specimen showing total excision of fistulous tract, metallic pointer indicates internal opening and anal mucosa seen, the track can be visualised with skin surface indicated by purse string suture



Figure 5: Total excision of a fistulous tract- complex horse shoe fistula with bilateral supralevator extension

After a period of 7 to 10 days, the cutting seton was tightened, so as to cut through the anal sphincter progressively. The cutting seton is serially tightened at frequent intervals so that the sphincter gets cut from above downwards and the wound heals subsequently by secondary intention, allowing the fibrosis of the sphincter muscle above seton. The seton is exteriorised by around a period of 6 – 8 weeks. The patients were followed up for minimum period of 1 year following surgery at frequent intervals based on the wound healing and outcome.



Figure 6: Total excision of horse shoe fistula with seton being tightened on left side

Persistence of anal fistula was defined as the failure of complete healing of the anal fistula for more than six months following surgery and recurrence defined as clinical reappearance of the fistula after complete healing of the surgical wound, within 1 year of the procedure.



Figure 7: Specimen showing total excision of a horse shoe fistula

Results

The study included 62 patients admitted in the general surgery department in cosmopolitan hospital from September 2017 to September 2020.

Age Group

Among the total 62 patients included in the study, the age group ranged from 12 years to 74 years. The mean age of the study population was 37.2 years. The age distribution is as follows

Table 1: Age Group

Age group	Number of patients	Percentage
12- 20	2	3.2%
21 – 30	18	29%
31- 40	17	27.4%
41- 50	14	22.6%
51 – 60	8	12.9%
61- 70	2	3.2%
71 – 80	1	1.6%

Gender Distribution

The figure 8 shows the gender distribution of the study population. Among the 62 patients included in the study, majority were males 35 in number (56.4%) and females were 27 in number (43.5%).

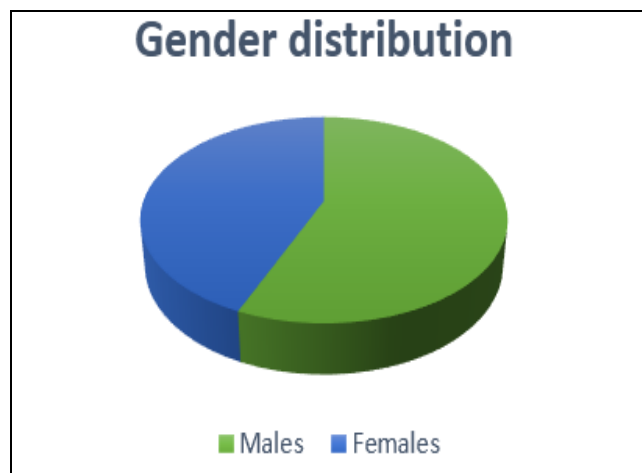


Figure 8

Types of fistulous tracks

The fistulous tracks were classified based on MRI and operative finding. Out of 62 patients, 8 had simple fistula, 29 patients had low trans-sphincteric fistula, 18 patients had high trans-sphincteric fistula. Complex or horseshoe or fistula with supralelevator extension was found in 7 patients.

Table 2: Type of fistula

Type of fistula	Number of patients
Simple fistula	8
low trans-sphincteric fistula	29
high trans-sphincteric fistula	18
Complex or horseshoe or fistula with supralelevator extension	7

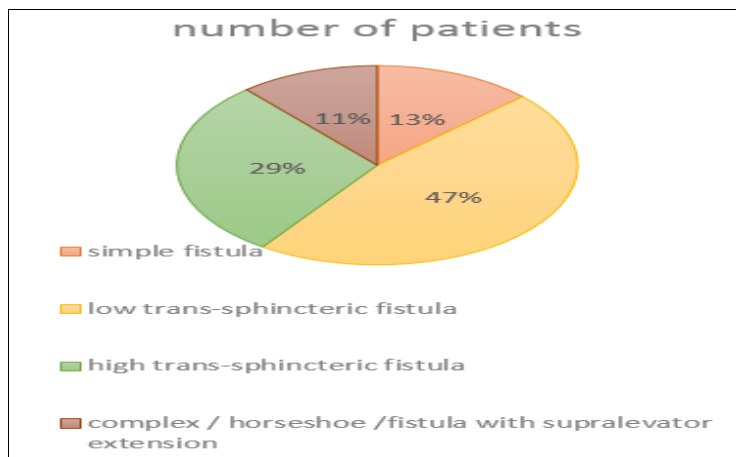


Figure 9

Healing Time

The Average Healing time among the patients included in the study was 52days. Out of 62 patients, 19Patients had their wound healed within a period of 1month. About 28 patients took a period of 1-2months. It took more than 2months for 15patients as shown in table 3.

Table 3: Healing time

Average healing time	Number of patients
< 1month	19
1-2month	28
>2months	15

Biopsy Report

The Biopsy report of the fistulectomy specimen showed chronic non-specific inflammatory lesion in 58 patients (93.5%), 1patient had Malignancy (Squamous Cell Carcinoma), one report showed post – radiation necrosis following irradiation for carcinoma prostate, Crohn’s disease, and endometriosis at biopsy site each.

Table 4: Biopsy Report

Biopsy Report	Number Of Patients
Non-specific inflammatory lesion	58
Malignancy	1
Post-irradiation necrosis	1
Crohn’s disease	1
Endometriosis	1

Number of attempts of surgery

Among the patients studied 25 patients underwent the surgery for first time, 22 patients had 2nd attempt of surgery, 12 were undergoing surgery for 3rd time. 2 patients had the 4th attempt and 1 patient 8th attempt both of them needed defunctioning colostomy.

Table 5: Number of attempts in surgery

Number of attempts	Number of patients
First	25
Second	22
Third	12
Fourth	2
Eighth	1

Type of surgery done

The total excision of the fistulous track and laying open was done for 26 patients, total excision of track and setonization with steel wire was done for 33 patients. Three patients have undergone total excision with setonization and temporary defunctioning colostomy.

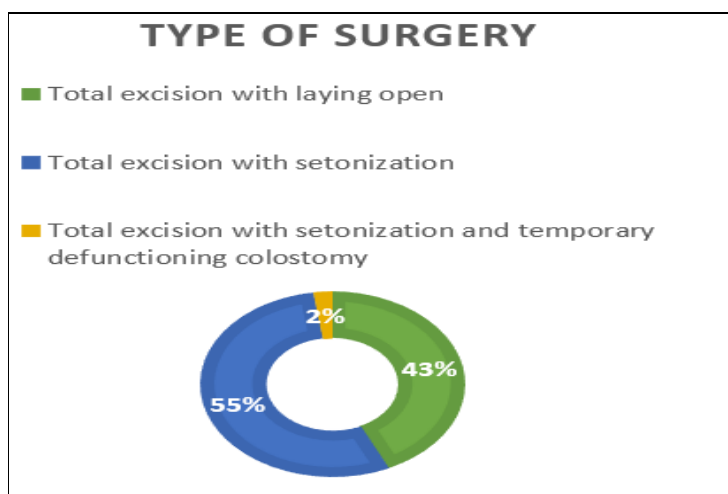


Figure 10

Assessment of anal continence

The anal continence was assessed by digital rectal examination. The assessment was done at the following intervals:

1. Immediately post-op after recovery from anaesthesia
2. One month after surgery
3. Two months after surgery
4. 6 months after surgery
5. 1 year following surgery

Findings were classified as follows

Table 6: Assessment of anal continence

	1 st week	1 month	2 months	6 months	1 year
Subtle laxity	6	5	4	3	3
Moderate laxity	3	3	2	2	1
Totally lax sphincter	None	None	None	None	None
Stricture or tight anal canal	6 patients – needed y-u advancement flap or transposition flap later.				

Recurrence

Out of total 62 patients who have undergone surgery recurrence was for only 1 patient, he was a case of carcinoma prostate post-irradiation and 7 patients required revision procedure or repeat deroofing.

Discussion

Our study included 62 patients admitted in the Department of General Surgery for definitive management of fistula in ano for a period of 3 years from September 2017 to September 2020. Among the study population the age distribution shows about 50 % were between the age group of 30 – 50 years. This is comparable to the study conducted by litakemunjusha et al[8] and quazi et al[9].

The gender distribution shows more males 56.4% compared to females 43.5%

In our study we have attempted fistulectomy, where we have cored out the whole of fistulous tract along with or without cutting seton placement which was tightened in the follow up sittings to help healing of the sphincter from depth after ensuring adequate wound healing. Out of 62, 26 patients needed total excision with laying open of the track alone, 33 patients needed total excision of tract with setonization with steel wire where 3 patients also needed a temporary defunctioning colostomy

Most of the patients wound healed within a period of 2 months, the histopathology studies showed mainly non-specific inflammatory lesion with 1 case each of Crohn’s disease, post- irradiation necrosis, malignancy, and endometriosis.

The patients were assessed for wound healing and sphincter laxity during the visits at 1st week, 1 month, 2 months, 6 months and 1 year. No one of the study group had a totally lax sphincter. At the end of 1 year 3 had subtle laxity and 1 had moderate laxity of sphincter. The results are comparable with the study conducted by Ramachandra ML et al.[10] Six patients who had tight sphincter on evaluation (stricture) needed Y-V advancement flap or transposition flap later. These patients mainly included the patients who had multiple recurrence of fistula in ano. Among the study population recurrence was noted in only 1 out of 62 patients, he was a known case of carcinoma prostate who underwent irradiation for the same, hence the fistula never healed. Out of 62 patients 7 needed revision procedure, for whom repeat deroofting was done.

The recurrence rates noted in this study 1.62% which is much lesser compared to the previous studies 25% seen in study conducted by Ramachandra ML et al., (10)9.8 % by study conducted by Salah M. Raslan et al also and 9.5 % in study by D. Abhivardhan et al [11] comparable to the study by (1.2 %)Fakhrolsadat Anaraki et al.[12]

Conclusion

Fistula in ano is a complex issue that is affecting the mind and body of an individual to a great extent. Of the different treatment options available for treatment total excision of the fistulous track with seton placement is an effective treatment with very low recurrence rate.

Reference

- Sainio P. Fistula-in-ano in a defined population. Incidence and epidemiological aspects. In *Annales chirurgiae et gynaecologiae* 1984 Jan 1 (Vol. 73, No. 4, pp. 219-224).
- Parks AG, Gordon PH, Hardcastle JD. A classification of fistula-in-ano. *Br J Surg.* 1976;63(1):1-12.
- Ommer A, Herold A, Berg E, Fürst A, Post S, Ruppert R, et al. German S3 guidelines: anal abscess and fistula (second revised version). *Langenbecks Arch Surg.* 2017;402:191-201.
- Han JG, Wang ZJ, Zhao BC, Zheng Y, Zhao B, Yi BQ, et al. Long-term outcomes of human acellular dermal matrix plug in closure of complex anal fistulas with a single tract. *Dis Colon Rectum.* 2011;54(11):1412-8.
- Bleier JI, Moloo H, Goldberg SM. Ligation of the intersphincteric fistula tract: an effective new technique for complex fistulas. *Dis Colon Rectum.* 2010;53(1):43-6.
- Meinero P, Mori L. Video-assisted anal fistula treatment (VAAFT): a novel sphincter-saving procedure for treating complex anal fistulas. *Tech Coloproctology.* 2011;15(4):417-22.
- Tang CL, Chew SP, Seow-Choen F. Prospective randomized trial of drainage alone vs. drainage and fistulotomy for acute perianal abscesses with proven internal opening. *Dis Colon Rectum.* 1996;39:1415-7.
- Litake Manjusha M, Sudheer K. A comparative study of treatment of fistula in ano-fistulectomy versus Seton.
- Qazi AR, Memon JM, Solangi RA, NAQVI SQH. Outcome analysis of partial fistulotomy with seton. *Pak J Surg.* 2008;24(1):15-8.
- Ramachandra ML, Garg M. A comparative study in the management of fistula in ano using various modalities. *Int Surg J.* 2018;5(6):2223-7.
- Abhivardhan D, Sivakumar C, Ramarao K, Balaji K, Sujatha M, Ramu L. Comparative Study between Fistulectomy and Seton in Fistula in ANO Regarding Healing and Postoperative Complications.
- Anaraki F, Etemad O, Abdi E, Bagherzadeh G, Behboo R. Assessment of fistulectomy combined with sphincteroplasty in the treatment of complicated anal fistula. *J Coloproctology Rio Jan.* 2017;37:232-7.