

Fistula Excision with Sphincter Repair and/ or Approximation Leaving Long Braided Sutures for Drainage of Intersphincteric Space for Management of Fistula in Ano

Mahmoud S. Ahmad*

Lecturer of MRCS Eng, Faculty of Medicine, Aswan University, Aswan, Egypt

*Corresponding author: Mahmoud S. Ahmad, Mobile: (+20) 01005651501, E-mail: Mahmoud.znaty@yahoo.com

ABSTRACT

Background: Fistula-in-ano is the most common form of perineal sepsis. Typically, a fistula includes an internal opening, a track, and an external opening. The external opening might acutely appear following infection and/or an abscess, or more insidiously in a chronic manner.

Objective: To analyze the results of surgical excision of intersphincteric, transsphincteric or suprasphincteric perianal fistula by fistula excision with sphincter repair and / or approximation leaving braided sutures for drainage

Patients and method: In this prospective study a group consisted of 124 patients with intersphincteric, transsphincteric or suprasphincteric perianal fistulae were treated with fistula excision followed by sphincter repair and / or approximation leaving the ends of the threads long for drainage of intersphincteric space. All patients were observed along one year after surgery for complications, recurrence and / or incontinence

Results: The technique was done under spinal anesthesia for 92 patients (74 %) and under general anesthesia for the other 32 patients (26 %). The median operative time was 30 minutes; ranging from 25 to 40 min. there were no postoperative deaths. Hospital stay was less than 24 hrs for all patients. The overall recurrence rate was 4.8 %, with no permanent incontinence.

Conclusion: This technique has shown to be highly effective and applicable for management of intersphincteric, transsphincteric or suprasphincteric perianal fistula with low recurrence rate (4.8%), no permanent incontinence and good patient satisfaction.

Keywords: Fistula in ano, Sphincter repair, Fistulectomy.

INTRODUCTION

Fistula-in-ano (FIA) is one of the most common benign anal conditions in daily surgical practice. It is defined as an epithelized abnormal tract connecting two surfaces, usually the rectal mucosa and perianal skin ⁽¹⁾.

Anal fistula is a devastating problem that most commonly occurs in healthy subjects with cryptoglandular infection being the most widely accepted etiological factor ⁽²⁾.

Successful surgical management of anal fistulae depends upon accurate knowledge of anal sphincter anatomy and fistulas course through it. The most comprehensive and practical classification is Park's classification. Four main groups exist: intersphincteric, transsphincteric, suprasphincteric and extrasphincteric ⁽³⁾. Most fistulas have been surgically treated by fistulotomy or fistulectomy which have both proven to be effective however these techniques even for simple fistulas result in some form of incontinence in approximately 12 - 39% of patients ⁽⁴⁻⁶⁾.

Despite the advancement in preoperative road mapping of fistula tracts by magnetic resonance imaging (MRI) and endo anal ultrasound (EAUS) ⁽⁷⁻⁸⁾, there is a significant recurrence rate of 4% up to 45% ⁽⁹⁻¹⁴⁾. Modification of conventional surgical treatment for

closure of fistula tract by primary closure, endorectal advancement flap, fibrin glue injection and fistula plug has been extensively investigated in the prevention of recurrence.

The results regarding reduction of recurrence are not impressive. Either recurrence is due to the natural history of the disease itself, or the choice of surgery has not been clearly identified in past literature ⁽¹⁵⁻¹⁸⁾.

In this prospective study aimed to investigate surgical outcomes of this technique, which is considered as a modification or a combination of more than one techniques aiming mainly at decreasing the recurrence rate and maintaining continence with proper patient satisfaction.

Ethical Consideration: The Institutional Ethics Committee of the Faculty of Medicine, Aswan University, Egypt approved this study.

All patients gave informed consent before participation in this study. The study conducted in accordance with the ethical guidelines of the 1975 Declaration of Helsinki and International Conference on Harmonization Guidelines for Good Clinical Practice.

PATIENTS AND METHODS



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124 patients [92 (74%) males and 32 (26%) females]. They were classified as 64 intersphencteric (51.6%), 38 transsphencteric (30.6%) and 22 suprasphencteric (17.7%) perianal fistulae. Classification was depending on careful clinical examination, preoperative MRI assessment and confirmed with intraoperative findings.

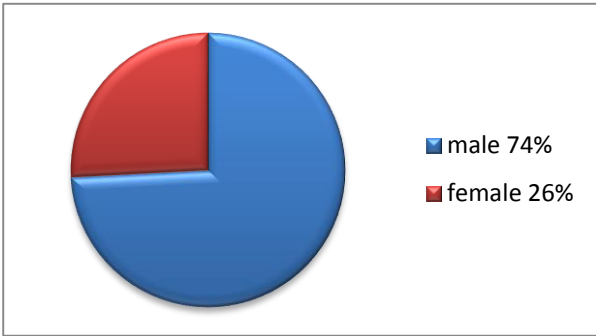


Chart (1): Gender Classification.

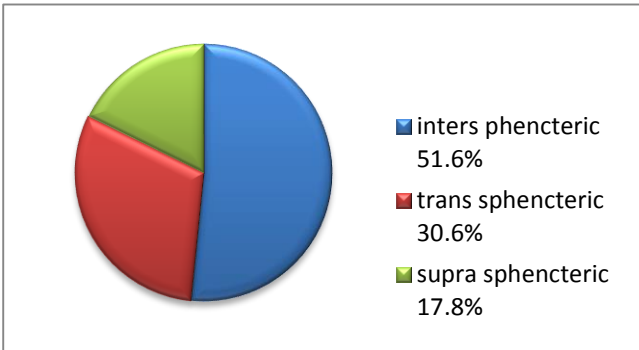


Chart (2): Fistula type classification.

They had undergone fistulectomy followed by sphincter repair and/ or approximation using vicryle No 1 size leaving the ends of the threads long and braided together for drainage of intersphencteric space. This study was done in Aswan University Hospital between 2014 and 2019 by a one surgeon. The median age of these 124 patients was 37 years ranging from 22 to 55. BMI ranged from 24 to 38 Kg/m² where the mean BMI was 32 Kg/m². All these patients presented with chronic perianal fistula of crypto glandular in origin. All these patients had a history of previous perianal suppuration drained surgically or spontaneously. I waited at least 6 months after drainage of first suppuration. Most of these patients received oral antibiotic course about 7days preoperative to control any active suppuration preoperatively. 12 patients (9.67 %) had previous surgery for perianal fistula 8 males and 4 females.

Clinical assessment involved five essential points:

1. Location of the internal opening ,
2. Location of the external opening
3. Course of the primary tract,
4. Presence of any secondary extensions,
5. Presence of other diseases complicating the fistula.

Technique:

- General anesthesia
- Lithotomy position
- Examination under anesthesia
- Proctoscopic assessment.
- Probing was avoided to avoid creation of a false track.
- Instillation of hydrogen peroxide via the external opening , followed by methylene blue while proctoscope still in place to prove the position of the internal opening and guide dissection of the fistula track during surgery .
- Elliptical skin incision was done around the external opening or openings (figure 1).

Fig. (1): Elliptical incision around the external opening



(s).

- I proceeded dissecting the track using both bipolar diathermy and sharp scissor dissection, keeping close to the track toward the internal openings (Figure 2).



Fig. (2): Dissection of the fistulous tact.

- At the end of dissection the mucosa started to appear in the depth of the core. I dealt with the internal opening either by leaving it opened if it was low or ligated or by repairing the mucosa with 3/0 vicryle for higher or wider internal openings (Figure 3).



Fig. (3): Dealing with the internal opening at the level of the mucosa.

- The cavity left after excision of the fistula track was dealt with by repairing and /or approximating the cut sphincters ends with multiple figure of eight stitches using vicryle No. 1, ensuring not to leave any dead space deep to the repaired muscles. I kept the ends of the sutures 5 to 8 cm long, leaving the skin and the subcutaneous tissue opened (Figures 4, 5 & 6).



Fig. (4): Sphincter repair and /or approximation (a).



Fig. (4): Sphincter repair and /or approximation (b).

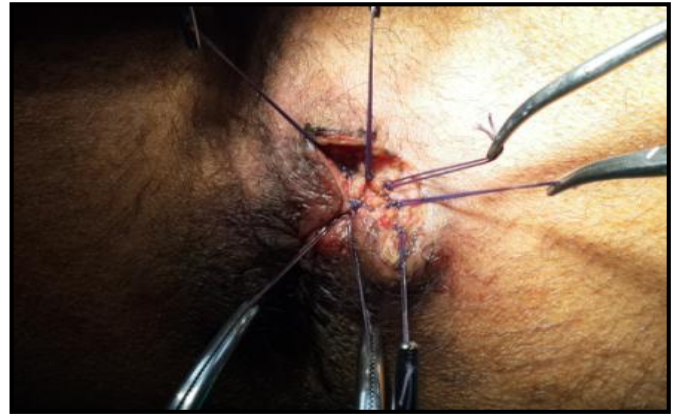


Fig. (5): Completing the sphincter repair and /or approximation.



Fig. (6): Braiding the nearby sutures together (other case).

- The long ends of the sutures were braided together and left in place for drainage of intersphincteric and deep spaces.
- After ensuring perfect hemostasis packing the wound with gauze soaked with betadine and a small anal pack was left (Figure 7).



Fig. (7): Braiding all sutures together as a drainage Seton

- Dressing removed after 6-12 hours after surgery, training the patient and his partner was done for regular cleaning with warm water and antiseptic solutions.
- Oral antibiotics in selection between quinolones or alpha clindamycin were given about 7 to 14 days postoperatively.

- Weekly follow up was done.
- The long braided ends of the sutures were removed 2-3 weeks postoperatively and it should be cut at the level of the newly formed granulation tissue under direct visualization with adequate light and proper patient positioning with no need of any type of anesthesia (figure 10).
- Complete healing took around 5 to 8 weeks (Figures 8, 9, 10 & 11).



Fig. (8): 2 weeks.



Fig. (9): 3 weeks.



Fig. (10): 5 weeks.



Fig. (11): 5 weeks.

Statistical analysis

Recorded data were analyzed using the statistical package for social sciences, version 20.0 (SPSS Inc., Chicago, Illinois, USA).

Quantitative data were expressed as mean \pm standard deviation (SD). Qualitative data were expressed as frequency and percentage. Independent-samples t-test of significance was used when comparing between two means. Chi-square (χ^2) test of significance was used in order to compare proportions between two qualitative parameters.

The confidence interval was set to 95% and the margin of error accepted was set to 5%. The p-value was considered significant as the following: P-value ≤ 0.05 was considered significant. P-value < 0.001 was considered as highly significant. P-value > 0.05 was considered insignificant.

RESULTS

The technique was done under spinal anesthesia for 92 patients (74 %) and under general anesthesia for the other 32 patients (26 %). The median operative time was 30 minutes; ranging from 25 to 40 min. There were no postoperative

deaths. Hospital stay was less than 24 hrs for all patients.

Early complications during the first week included urine retention in 12 male patients (9.6 %), superficial wound infection in 16 patients (13%) [10 males (8%) and 6 females (4.8%)] with 2 male patients had significant early postoperative bleeding (1.6%).

Table (1): Early complications.

	Total no.	Males	Females
Urine retention	12 9.6%	12 9.6%	0 0%
Superficial wound infection	16 13%	10 8%	6 4.8%
Early Postoperative bleeding	2 1.6%	2 1.6%	0 0%

During follow up period from the 2nd week until complete healing, partial wound dehiscence occurred in 9 patients (7.2%) and needed only rest, frequent cleaning and laxatives and no additional surgical interference. Temporarily partial incontinence and soiling occurred in 16 patients (12.9%) managed by reassurance and more frequent cleaning and all were improved after complete healing. Persistent mucous anal discharge occurred in 19 patients (15.3 %) who needed just reassurance and frequent cleaning. Reactionary post-operative bleeding happened in 2 male patients (1.6%) and controlled only by packing and bed rest. No deep infection or abscess formation was recorded during follow up period.

As a final result after at least one year follow up postoperatively after complete healing. Recurrence of fistula occurred in 6 patients (4.8%) [5 males (4.03%).and 1 female (0.8%)]. As regards type; 1 was intersphincteric (16.67%), 3 were transsphincteric (50%) and 2 were suprasphincteric (33.33%). 4 cases recurred as a low fistula and treated surgically after 6 months by the same technique (Fig.12) and the 5th case recurred as a high fistula type after 1 month of complete healing and needed redo surgery after 6 months. In the 6th case recurrence occurred 4 months post-surgery that was associated with bloody diarrhea and reinvestigated with colonoscopy and diagnosed as Crohn's disease and treated medically. There was no permanent incontinence in all patients included in this study (0 %).

Table (2): Complications from the 2nd week until complete healing.

	Total no.	Males	Females
Partial wound dehiscence	9 7.26%	7 5.6%	2
Temporarily partial incontinence	16 12.9%	9 7.26%	7 5.6%
Mucous anal discharge	19 15.3%	12 9.7%	7 5.6%
Secondary postoperative bleeding	2 1.6%	2 1.6%	0 %
Deep infection or abscess formation	0 0%	0 0%	0 0%

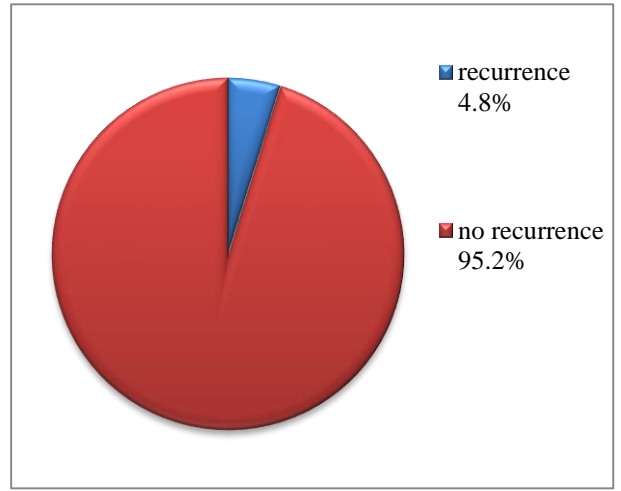


Chart (3): Recurrence rate.

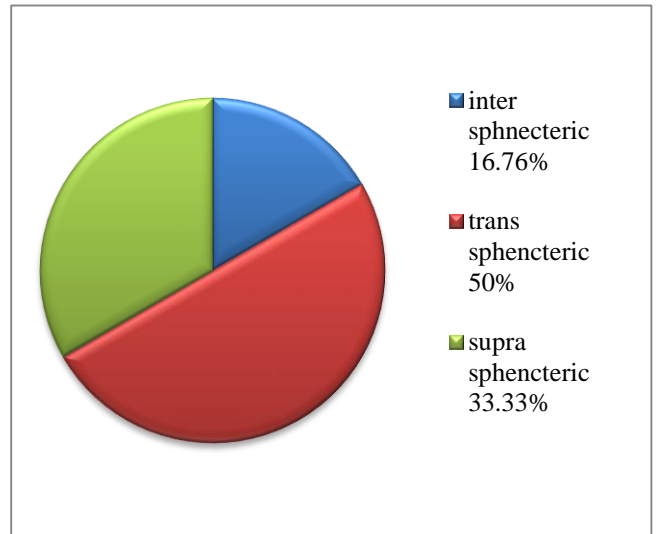


Chart (4): Recurrence rate, fistula type.

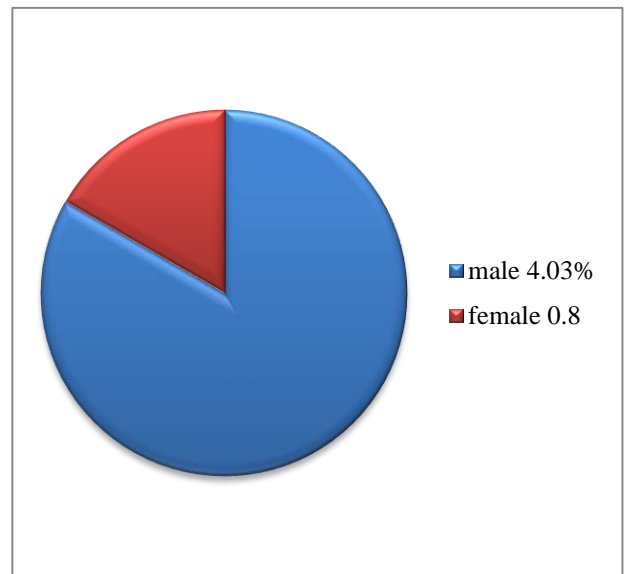


Chart (5): Recurrence rate, gender.



(A)



(B)

Fig. (12): (A) recurrent cases; low fistula, (B) The same recurrent case; operated.

Patient satisfaction during the follow up period, and about the final result showed that 12 patients (9.6%) was not satisfied with the length of the follow up period, 10 patients (8%) were annoyed from the threads and mucous discharge and 6 patients (4.8%) were not satisfied about the temporarily partial incontinence. As regards the final result 4 out of the 6 recurrent cases (3.2%) were not satisfied with the result in spite of discussing the expected percentages of recurrence and incontinence and other possible complications with them during counseling before surgery.

DISCUSSION

The management of the high perianal fistulas needs to balance the outcomes of cure and continence, putting in our consideration a reasonable time until complete healing or cure. There is a risk of sphincter muscle damage during fistulectomy and this might lead to an unacceptable risk of anal incontinence⁽⁸⁾.

The degree of incontinence depends on:

- The amount of the damaged muscle
- Preexisting sphincter damage
- Scarring of the anal canal

There are many surgical procedures advocated for fistula in ano, ranging from simply laying open the track up to colostomy. In between there are many several alternative treatment strategies have been

practiced in order to preserve sphincter mechanism including draining seton, cutting seton, rectal mucosal or full thickness advancement flaps, rerouting, two stage seton fistulotomy, fistulectomy and fistula plug, ligation of intersphincteric fistula tract (LIFT) and fistulectomy with reconstruction of sphincter mechanism or fibrin glue⁽¹⁹⁾.

Successful management of high perianal fistula depends on complete fistulectomy and good management of the anal sphincter. Primary repair of the anal sphincter is essential with open fistulectomy but repair by traditional method may need fecal diversion (colostomy) and produce closed space leading to wound infection⁽²⁰⁾.

With this technique, I aimed at treating different types and levels of fistula-in-ano with minimal internal and external sphincter muscle damage. The idea of this technique depends on doing open fistulectomy preserving as much sphincter muscle fibers as possible, then following the track towards the internal opening at the level of the anal or rectal mucosa. The internal openings were dealt with by left opened if it was low or by ligation or repairing the mucosa with for higher or wider internal openings.

The remaining cavity after fistula excision is dealt with simply by repairing and/or approximating the anal sphincters by multiple interrupted figure of eight braided absorbable sutures at different levels and in different directions aiming at obliterating any dead spaces deep to or in-between the repaired sphincter muscles. The number and direction of stitches was variable according to the size of the residual cavity to allow good superficial and deep approximation with the least possible tension. The ends of each suture was kept long enough (4-8cm) and braided together to help in drainage of spaces deep to or in-between the approximated or repaired sphincters.

The skin and the subcutaneous tissue layers were left opened and in some cases were trimmed to allow perfect deep healing of the sphincter muscles before attempts of the skin to heal along the whole length of the ano-rectal wound. This help in decreasing the possibility of recurrence significantly.

Parkash et al.⁽²¹⁾ reported a series of 120 patients with fistula-in-ano treated by fistulotomy and immediate reconstruction of the divided musculature with primary wound closure. The reported results were: 88% of wounds had healed in 2 weeks, 4% recurrence rate and all patients were satisfied with the functional outcome. However, 118 of the 120 fistulas were classified as low intersphincteric or simple trans-sphincteric perianal fistula types and the authors admitted that similar success would not be expected with more complex perianal fistulas. In our study the recurrence rate is

comparable with **Parkash *et al.*** ⁽²¹⁾ results where recurrence rate was 4.8% in spite of including more complex fistula types with 0% permanent incontinence.

Lewis ⁽²²⁾ advocated fistulectomy by a core-out technique rather than excision of the track, once the track has been cored out, from the external opening towards the internal opening using either scissors or diathermy dissection. The decision as to whether the tunnel left after the core-out can be safely laid open is made. For a nonrecurrent single transsphincteric tracks, **Lewis** ⁽²²⁾ recommended simple anatomical closure of the cored out tunnel, with mucosal closure and closure of the holes in the muscles and the wound outside the sphincters is lightly packed. Of 67 low fistulas treated by **Lewis** ⁽²³⁾ between 1985 and 1992 by coring out and laying open the resultant tunnel, there was one recurrence. Of 32 patients with high transsphincteric or suprasphincteric perianal fistulas treated between 1972 and 1992 by core out and simple anatomical closure, a temporary colostomy was raised in 4 and there were 3 recurrences ⁽²³⁾.

In this technique we have some malleability in using the same technique with either intersphincteric, transsphincteric or suprasphincteric perianal fistulae types without the need for colostomy and with lower recurrence rate and no permanent incontinence.

Setons for fistula-in-ano may be classified as loose, tight or chemical according to their different properties and modes of action. Similarly, a loosely tied thread can be used as a drain of acute sepsis, to allow subsidence of acute inflammatory changes and safer definitive fistula surgery.

More specifically in the field of sphincter and continence preservation, the loose seton can be used in three ways: to preserve the entire external sphincter, to preserve part of the voluntary muscle or as part of a staged fistulotomy in order to reduce the consequences of division of large amounts of muscle in one procedure. Later, at St Mark's the loose Seton was used for fistula-in-ano with the aim of entire external sphincter preservation. Tracks and extensions outside the sphincters were widely laid open.

A series of 34 patients with complex transsphincteric perianal fistulas treated at St Mark's Hospital between 1977 and 1984 showed that cure of the fistula without recourse to external sphincter division occurred in 44% ⁽²⁴⁾. In our study, I tried to mimic the benefit of drainage seton by leaving the long braided sutures to help in drainage of sepsis in the intersphincteric spaces during the first 2 to 3 weeks postoperative, which decreased the incidence of superficial infection with no deep infection or abscess formation.

CONCLUSION

Fistulectomy with sphincter repair leaving long braided sutures can be popularized due to the simplicity of the procedure and the availability of the equipment needed. This technique has shown to be highly effective in management of intersphincteric, transsphincteric and suprasphincteric perianal fistulas with low recurrence rate (4.8%) and no risk of subsequent permanent incontinence and a good patient satisfaction.

Conflicts of interest: No conflicts of interest were encountered.

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