

Recent Trends in Management of Perianal Fistula

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ABSTRACT

Background: Perianal fistula is a tract lined by infected granulation tissue that connects anal canal or rectum to the skin around anus. Its wall is made of inflammatory granulation as well as fibrous tissue. Perianal fistulae occur in approximately 10 out of 10,000 persons. **Objective:** The aim was to discuss the classification, diagnosis and management of perianal fistula with special emphasis on most recent trends.

Patients and methods: The study was carried out on 50 Egyptian patients suffering from perianal fistula. Patients were managed in Sayed Galal University Hospital. The study was controlled prospectively. Ethical approval from the local Ethics Committee of Surgery Department was obtained. The patients were divided into two groups group A diagnosed by endoanal U\S and B by MRI fistulogram.

Results: The current results on difference between Seton operation and other types. Regarding surgical data, there was localization of the internal opening occurred in 60% of patients operated with Seton technique. Among those operated with Seton technique, 80% had no complications, while recurrence occurred in 13.3%.

Conclusion: In this study, seton technique was the best surgical technique in management of perianal fistula with less post-operative complication than other techniques.

Keywords: Management, Perianal Fistula, Seton, MRI.

INTRODUCTION

Fistula in ano is defined as abnormal communication, lined granulation tissue between the anal canal and the exterior i.e. the skin, which causes a chronic inflammatory response. Most commonly these fistulae develop following an anal abscess, due to inadequate drainage or a spontaneous rupture of the abscess. Tuberculosis, inflammatory bowel diseases such as Crohn's disease and ulcerative colitis, and chronic anal fissure can also lead to development of anal fistulae ⁽¹⁾.

Parks ⁽²⁾ developed a classification system in which fistulae are divided into intersphincteric fistula, transsphincteric fistula, suprasphincteric fistula and extrasphincteric fistula. However, the type of treatment depends not on the location of fistula tract but on the level of the internal opening in the anal canal ⁽²⁾.

The role of pre-operative imaging is to demonstrate clinically undetected sepsis, to serve as a guide at the time of the initial surgery, to determine the relationship of the fistula tract to the sphincter mechanism and to reveal the site of sepsis in a recurrent fistula, all serving to decrease recurrence rates associated with fistula surgery. Imaging may take the form of fistulography, endoanal ultrasound, and magnetic resonance imaging (MRI) ⁽³⁾. Magnetic resonance imaging (MRI) describes infectious foci in the perianal region better than any other investigation modality and allowing the characterization and classification of the fistula based on its relation with the pelvic diaphragm and the anal sphincter ⁽⁴⁾.

The goal of treatment of fistula in ano is eradication of sepsis without sacrificing continence because fistulous tracks encircle variable amounts of the sphincter complex. Surgical treatment is dictated by the

location of the internal and external openings and the course of the fistula ⁽⁵⁾. The treatment of fistula has remained a challenging job for the surgeons. Different surgical techniques have been described in the literature. These included fistulectomy, fistulotomy, insertion of seton, two staged fistulectomy, advancement mucosal flaps, repair of fistula using fibrin adhesive glue and rerouting the fistula ⁽⁶⁾.

AIM OF THE WORK

The aim was to discuss the classification, diagnosis and management of perianal fistula with special emphasis on most recent trends.

PATIENTS AND METHODS

Patients: The study was carried out on 50 Egyptian patients suffering from perianal fistula. Patients were managed in Sayed Galal University Hospital. The study was controlled prospectively. **Ethical approval from the local Ethics Committee of Surgery Department was obtained.**

Inclusion criteria:

- Patients aged 18 years to 60 years old males and females. Diagnosis of intersphincteric, transsphincteric, suprasphincteric and extrasphincteric fistula.
- Patients able to comply with the study protocol.
- Signed and dated informed consent by the patient.
- Absence of any exclusive criteria.

Exclusion criteria:

- Pregnant females.
- Patients below age 18 years old and above 60 years old.
- Patients with known abdominal malignancies.

- Patients with previous anal surgery for short time.
- Patients with fecal incontinence or rectal prolapse.
- Patients refuse to do surgical intervention.

Pre-operative work up:

All patients were subjected to:

- History taking.
- Clinical examination (general and local).
- Investigation:
 - 1) Laboratory investigation: CBC, FBS, ALT, AST, ALT, urea and creatinin.
 - 2) Imaging:
 - If the internal opening of the fistula is palpable: endoanal U/S or MR fistulogram.
 - If the internal opening of the fistula is not palpable: colonoscopy.

Intra- operatively:

- Operative procedure:
 - Group (A): 25 patients undergoing fistulotomy, fistulectomy, fistulectomy, V-Y advanced flap or myocutaneous flap techniques.
 - Group (B): 25 patients undergoing seton fistulotomy or LIFT techniques.
- Operative findings.

Post-operative workup:

- Post-operative complications.
- Post-operative follow-up for six months.

Pictures for different surgical techniques did during this study in management of perianal fistula:



Fig. (3): Tight Seton technique



Fig. (4): Tight Seton technique



Fig. (5): Loose Seton technique



Fig. (1): Probing fistula in ano for fistulectomy.



Fig. (2): Fistulectomy technique



Fig. (6): Simple cutaneous advanced flap after fistulotomy

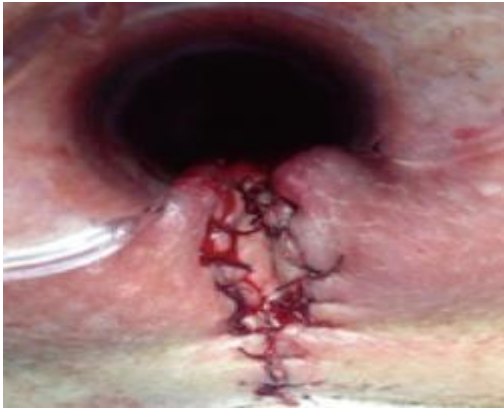


Fig. (7): Application of advancement flap after loose Seton placement.



Fig. (8): LIFT technique

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± standard deviation (SD). Qualitative data were expressed as frequency and percentage.

The following tests were done:

- Independent-samples t-test of significance was used when comparing between two means.
- Chi-square (x²) 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:
 - Probability (P-value)
 - 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 current study aimed to discuss the classification, diagnosis and management of perianal fistula. It included 50 Egyptian patients suffering from perianal fistula.

As presented in table (1), the mean age of the study subjects was 41.6 ± 11.4 ranging from 20-65 years. Males were represented more than females (64% and 36% respectively). It was found that 16% of the

subjects previously had a fistula surgery. The most common type of fistula among the study subjects was low-sphincteric fistula (38%) while the least common were extra-sphincteric and supra-sphincteric types (4% each). Pre-operative incontinence was present in 14% of cases.

Table (1): Basic data of the study subjects

	Parameters	No.	%
	Age (mean ± SD, range)	41.6 ± 11.4	20-65
Gender	Males	32	64
	Females	18	36
	Previous fistula surgery	8	16.0

Table (2) showed different types of perianal fistula among the study subject. The most common type of fistula among the study subjects was low-sphincteric fistula (38%) while the least common were extra-sphincteric and supra-sphincteric types (4% each). Pre-operative incontinence was present in 14% of cases.

Table (2): Types of perianal fistula among the study subjects

Parameters	No.	%
Type of fistula		
Extra-sphincteric	2	4.0
Female anterior fistula	3	6.0
High trans-sphincteric	7	14.0
Horse-shoe	5	10.0
Inter-sphincteric	12	24.0
Low trans-sphincteric	19	38.0
Supra-sphincteric	2	4.0
Preoperative incontinence	7	14.0

Table (3) showed the postoperative complications and follow up after 6 months among the study subject. No post-operative complications were detected in 74% of cases. Post-operative complications included healing failure, post-operative incontinence and post-operative sepsis. Follow up after 6 months showed 74% with no complications, 6% with incontinence and 20% with recurrence.

Table (3): Postoperative complication and follow up after 6 months of the study subject

Parameters	No.	%
Postoperative complications		
No complications	37	74.0
Healing failure	2	4.0
Postoperative Incontinence	3	6.0
Postoperative Sepsis	8	16.0
Follow up after 6 months		
Normal	37	74.0
Incontinence	3	6.0
Recurrence	10	20.0

Table (4) showed that there was no difference regarding the mean age and sex of the patients had Seton operation and other types of operations. Only one patient had previous fistula was operated with Seton technique. Among patients who were operated by Seton technique, 46.7 % had low trans-sphincteric fistula and 26.7% had inter-sphincteric fistula.

Table (4): Difference between Seton operation and other types regarding the basic data of the patients.

Parameters	Type of surgery		P value
	Seton (15)	Other types (35)	
Age (mean \pm SD, range)	41.1 \pm 11.7	41.8 \pm 11.5	0.840
Gender			
Males	10(66.7%)	22(62.9%)	0.797
Females	5(33.3%)	13(37.1%)	
Previous fistula surgery	1(6.7%)	7(20.0%)	0.407
Type of fistula			
Extra-sphincteric	1(6.7%)	1(2.9%)	0.882
Female anterior fistula	1(6.7%)	2(5.7%)	
High trans-sphincteric	1(6.7%)	6(17.1%)	
Horse-shoe	1(6.7%)	4(11.4%)	
Inter-sphincteric	4(26.7%)	8(22.9%)	
Low trans-sphincteric	7(46.7%)	12(34.3%)	
Supra-sphincteric	0(0.0%)	2(5.7%)	
Incontinence preoperative	2(13.3%)	5(14.3%)	

Table (5) showed that localization of the internal opening occurred in 60% of patients operated with Seton technique. Among those operated with Seton technique, 80% had no complications, while recurrence occurred in 13.3%.

Table (50): Difference between Seton operation and other types regarding surgical data

Parameters	Type of surgery		P value
	Seton (15)	Other types (35)	
Localization of internal opening			
Failed	9(60.0%)	26(74.3%)	0.333
Succeeded	6(40.0%)	9(25.7%)	
Postoperative complications			
No complications	12(80.0%)	25(71.4%)	0.751
Healing failure	1(6.7%)	1(2.9%)	
Postoperative Incontinence	1(6.7%)	2(5.7%)	
Postoperative Sepsis	1(6.7%)	7(20.0%)	
Follow up after 6 months			
Normal	12(80.0%)	25(71.4%)	0.863
Incontinence	1(6.7%)	2(5.7%)	
Recurrence	2(13.3%)	8(22.9%)	

As presented in table (6), there were 6 cases suffering from incontinence pre-operative who had their incontinence cured post-operative, while 1 case continued to suffer post-operative. On the other hand, there were 2 cases who didn't complain from incontinence pre-operative but suffered from incontinence post-operative.

Table (6): Difference in occurrence of incontinence preoperative and postoperative

Preoperative	Postoperative			P value
	Absent	Present	Total	
Absent	41(82.0%)	2(4.0%)	43(86.0%)	0.289
Present	6(12.0%)	1(2.0%)	7(14.0%)	
Total	47(94.0%)	3(6.0%)	50(100.0%)	

DISCUSSION

A Complex perianal fistulae (CPF) such as high perianal, rectovaginal (RVF), pouch-vaginal (PVF), rectourethral (RUF), and pouch-urethral are among the most challenging diagnoses encountered in the colorectal practice. The definition of "complex" can vary somewhat among authors, but usually includes large fistulas and those associated with Crohn's disease, radiation, pre-existing incontinence, or multiple failed attempts at repair. Fistulae cause significant discomfort and have profound sexual and social implications. Several surgical techniques have been developed with variable results. To date, there is no consensus or widely accepted guidelines for the treatment of CPF. Herein, they described the most commonly used procedures as well as new emerging techniques in the treatment of this complex pathology⁽⁷⁾.

The current results on basic data of the study subjects as in table (1) cleared that the mean age of the study subjects was 41.6 ± 11.4 ranging from 20-65 years. Males represented more than females (64% and 36% respectively). In this study, as described in table (1), the perianal fistula is more common in male than female. This result agrees with those of **Nelson *et al.***⁽⁸⁾ and **Niyogi *et al.***⁽⁹⁾ where they reported that the mean age for presentation of anal abscess and fistula disease is 40 years (range 20 to 60). In addition, **Abcarian *et al.***⁽¹⁰⁾ reported that, adult males are twice as likely to develop an abscess and/or fistula compared to women.

Meanwhile, the current results disagree with those of **Ibrahim *et al.***⁽¹¹⁾ where they reported that the female have a higher perianal fistula than male. It was found that 16% of the subjects previously had a fistula surgery. The most common type of fistula among the study subjects was low-sphincteric fistula (38%) while the least common were extra-sphincteric and supra-sphincteric types (4% each). Pre-operative incontinence was present in 14% of cases.

The results cleared in table (2) that, the main types of fistula observed in examined patients included, extra-sphincteric, female anterior fistula, high trans-sphincteric, horse-shoe, inter-sphincteric, low trans-sphincteric and supra-sphincteric.

Also, these results agree with those of **Shawki and Wexner**⁽¹²⁾ where they reported that, based on the relationship with the anal sphincter muscles, fistulas are classified into 5 main types: (1) Submucosal: the fistula track passes superficially beneath the submucosa and does not involve any sphincter muscle. (2) Inter-sphincteric fistula: the track passes through the internal sphincter and continues in the inter-sphincteric plane to the perianal skin, not including the external anal sphincter. (3) Trans-sphincteric fistula: the track cross through the internal and external anal sphincter on its exit towards the perianal area. The amount of involved external anal

sphincter further subdivides the type of fistula into low when up to one-third of the distal external anal sphincter or less is involved. High if a larger area of the external sphincter is included. (4) Suprasphincteric fistula: the fistulous tract passes through the internal sphincter but traverses the external sphincter below the puborectalis muscle. (5) Extrasphincteric fistula: the fistulous track may pass outside the sphincter complex through the ischiorectal fossa to the perianal skin. In this case, the origin of the fistula is not from the dentate line but could be from a rectal, pelvic or supralevator origin, usually secondary to an inflammatory or neoplastic process.

Management of the perianal fistula may be achieved by one of the following methods: (1) keep the track from closing around a remnant septic focus preventing further abscess formation using a non-cutting Seton. (2) Expose the track and let it heal secondarily heal following a fistulotomy. (3) Excise the whole fistulous tract: fistulectomy. (4) Excise the internal opening and cover the defect with healthy mucosa as an advancement flap. (5) Obliterate the fistulous track with glue, or a collagen and fistula plug. (6) ligate and disconnect the fistula tract in the intersphincteric plane as a LIFT (ligation of the intersphincteric fistula tract) procedure. (7) Ablate the tract and induce scarring with radiofrequency waves. (8) induce regeneration in the tract with biologic agents or stem cells⁽¹²⁾.

In this study, the post-operative complication after 6 months included: healing failure in 4% of patients, post-operative incontinence in 6% and post-operative sepsis in 16%, while 74% of patient had no complication after 6 months of follow up.

These results agree with those of **Shawki and Wexner**⁽¹²⁾ which described that the most common post-operative complication of perianal fistulae surgery is sepsis, which occurred in 15% of cases and incontinence which occurred in 3% of cases after 1 year of follow up.

Meanwhile, the current results disagree with **Ibrahim *et al.***⁽¹¹⁾ who reported that the postoperative incontinence occur in 14% of cases.

The results on the difference between Seton operation and other types regarding the basic data of the patients as in table (4), cleared that, there was no difference regarding the mean age and sex of the patients had Seton operation (A Seton, silk string or rubber band) that was employed in a couple of different manners. In the first, Seton used to create scar tissue around part of the sphincter muscle before cutting it with a knife. This tissue provides much needed protection for the delicate muscle. Another method is to allow the Seton to slowly cut all the way through the muscle over the course of several weeks. This allows the body to repair the tissue as the Seton cuts deeper. This has proven to

be less traumatic than full surgery and other types of operations. Only one patient had previous fistula was operated with Seton technique. Among patients who operated by Seton technique, 46.7 % had low trans-sphincteric fistula and 26.7% had inter-sphincteric fistula. These results agree with those of **Izadpanah et al.** ⁽¹³⁾ where they reported that Seton gradually passes through external sphincteric muscle till it is displaced outwards or removed by a surgeon via a small incision. 94% of patients treated by this method accomplished their treatment completely without recurrence. None of the patients developed permanent fecal or gas incontinence. Only 5% of patients developed with recurrence of fistula. Since Seton traction is not permanent in this technique, Seton cuts external sphincter slowly, and minimal rate of incontinence is reported.

Many surgical procedures are used for treatment of anovestibular and rectovestibular fistulae, which include cut back, perineal anal transplant, Y V and XZ plasty, colostomy followed by minimal posterior sagittal anorectoplasty, sacroperineal repair, neutral sagittal, and anterior sagittal anorectoplasty ^(14,15). The cut back anoplasty results in a poor functional and aesthetic outcome with vulvar soiling ⁽¹⁶⁾.

The current results on difference between Seton operation and other types regarding surgical data as in table (5) showed that the localization of the internal opening occurred in 60% of patients operated with Seton technique. Among those operated with Seton technique, 80% had no complications, while recurrence occurred in 13.3%. The current results agree with those of **Ibrahim et al.** ⁽¹¹⁾ where they observed that, perianal fistula occurred in 3 of patients, resulted in anterior migration of the rectum and discharge of feces anterior to the skin bridge which was divided and the wound was left for spontaneous healing. Redo anal transposition was done after 6 months.

Management of anal fistula poses problems because of competing goals of cure and maintenance of continence. There is increasing recognition of significant rates of incontinence after sphincter-dividing anal surgery ⁽¹⁷⁾.

The results on the difference in occurrence of incontinence pre-operative and post-operative as in table (6), cleared that the follow up after 6 months of patients who had Seton operation and other types. There was 6 cases suffering from incontinence pre-operative who had their incontinence cured post-operative, while 1 case continued to suffer post-operative. On the other hand, there were 2 cases didn't complain from incontinence pre-operative but suffered from incontinence post-operative. The current results agree with those of **Agha et al.** ⁽¹⁸⁾, where they reported that the main complication of surgical treatment of the perianal fistula is the occurrence of incontinence but its

incidence in Seton operation was very low than the other types of surgical operations of perianal fistula treatment.

This results agreed with the literature of **Bokhari and Lindsey** ⁽¹⁷⁾ where they examined one hundred and twenty-eight patients (out of whom 71% were male subjects, age range 17-82, median age 45 years). Fifty-two percent of the fistulae were complex and 48% were simple, of which 51% and 85% underwent sphincter division respectively. Healing rates were higher for sphincter division than conservation (87% vs 73%, P = 0.06). Complex fistulae undergoing sphincter division led to a higher rate of major incontinence (13%) than sphincter conservation (0%) (P = 0.03). For simple fistulae treated by sphincter division, major (5%) and minor incontinence (11%). They concluded that, though cure rates are excellent, incontinence rates remain unacceptably high following sphincter division for complex fistulae and are not insignificant even for simple fistulae. More sphincter conservation should be undertaken.

Conclusion

Pelvic MRI and rectal EUS are all reasonably accurate ways of classifying perianal disease. The combination of either pelvic MRI or rectal EUS may be the optimal approach to patients with perianal fistula or abscess. The exact imaging modality used should depend on the local expertise available.

The recent surgical techniques in management of perianal fistula include fistulotomy, fistulectomy, seton technique, advanced flaps (as V-Y falp) and LIFT technique.

According to the type of fistula (superficial, intersphincteric, transsphincteric, suprasphincteric and extrasphincteric), surgeons should select the best surgical technique to avoid the occurrence of post-operative complications.

RECOMMENDATIONS

- MRI fistulography and endoanal U/S should be widely used and gradually improved, and that new applications of the method should be found.
- Treatment of perianal fistula is basically surgical (fistulotomy, fistulectomy, Seton replacement, V-Y flap, LIFT technique and VAAFT).
- More rigorous prospective randomized controlled trials with a larger sample size and longer follow-up are urgently needed.

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