ORIGINAL ARTICLE

COMPLEX ANAL FISTULA: CLINICO-PATHOLOGICAL VARIABLES AFFECTING CURE

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Abstract

Aim: The aim of this study was to evaluate different clinic-pathological variables affecting outcome of surgical management of complex anal fistulas in terms of recurrence and anal incontinence.

Methods: Ninety six patients with complex anal fistulae were included in this study. Fistulotomy operation was done for eighty two patients (85.4%). Fourteen patients (14.6%) with high anal fistulas were operated by two stages Seton technique. Post-operative recurrence and incontinence, as outcomes, were detected by the surgeon in outpatient clinic. Analysis of demographic, clinical and pathological criteria of these patients was done to determine factors affecting these outcomes.

Results: Recurrence occurred in eleven patients (11.5%), while minor incontinence was found in fifteen patients (15.6%). Surgical management of complex anal fistulas with multiple external openings showed significant increase in the incidence of recurrence, incontinence, and delayed wound healing. Female gender and older age showed significant relation with incontinence.

Conclusion: Female gender, older age and fistulas with multiple external openings are associated with increasing risk of recurrence, incontinence, and delayed wound healing. Sound understanding of the anatomy of the fistulous tract and its relation to anal sphincter in addition to factors affecting outcomes is a must for proper planning for surgical management of complex anal fistula.

Keywords: Complex anal fistula, Recurrence, Anal incontinence.

INTRODUCTION

A majority of anal fstulas have a single simple fistula track that is easily identified during surgery, and surgical treatment is generally successful.[1] However, 5% - 15% of anal fistula tracks have a more complicated course. These so-called complex fistulas include those with previous repeated recurrences, underlying specific pathology, irregular or atypical main track with multiple suppurative spaces, branched, spiral and horse-shoe fistulas, high fistulas (supra and extra-sphincteric), and fistulas with supra-levator extension.[2,3]

The majority of anal fistulas are cryptoglandular in origin. Trauma, Crohn's disease, malignancy, radiation, or unusual infections (tuberculosis, Schistosomiasis, actinomycosis, and chlamydia) may also produce fistulas. Repeatedly recurrent, non-healing fistulas or fistulas with atypical tracks and openings should raise the suspicion of one of these diagnoses.[4]

Surgery is the basic treatment of anal fistulas, aiming mainly at healing the fistulous tracts, eradication of infection, and preservation of anal sphincter muscles. Lay open technique is the commonest technique to be used for treatment of law anal fistulas. On the other hand, various approaches are used to treat complex anal fistulas indicating that there is no ideal procedure applicable to every patient. The surgeon should be able to identify the degree of complexity of the fistula and plan surgery accordingly. Complex fistulas should be treated by a surgeon with experience in the field of anal surgery.[5]

Recurrence of fistula and anal incontinence are the main two adverse sequelae of fistula surgery. Reported rates of recurrence are variable (range from 0 to 32%) and depend on the complexity of the fistula and the type of treatment. It is maximal within 1 year and rare after 2 years.[5,6] Recurrence of fistula can usually be successfully managed by re operation, but multiple fistula operations may result in hard, deformed scars and impairment of continence.[5,7,8] Postoperative anal incontinence rates after surgical treatment of complex anal fistulas (range from 0 to 63 %) and depend on how much sphincteric muscles remain.[7,9]

So the aim of this study was to evaluate different clinic-pathological variables affecting outcome of surgical management of complex anal fistulas in terms of recurrence and anal incontinence.

PATIENTS AND METHODS

This study is a prospective study that included 96 patients complaining of complex anal fistulas. They were admitted to the Unit of Colorectal Surgery – Alexandria Main University Hospital, during the period (Jan 2009 – Feb 2012). The minimum sample size for this study has been decided according to Swinscow and Cohen (2003), as follows: n=(Z2 X P X Q)/D2 where: n: Calculated sample size, Z: The z-value for the selected level of confidence = 1.96, P: Estimated prevalence in the population = 50%, i.e., 0.50. ,Q: (1 – P) =50%, i.e., 0.50, D:The maximum acceptable error [precision level]= 0.1. So, Calculated sample size = (1.962 X 0.50 X 0.50)/0.12 = (3.8416 X 0.25)/0.01 = 96

Inclusion criteria were; high fistulas (high-transsphincteric, suprasphincteric, and extrasphincteric), previous repeated recurrences, Underlying specific pathology, Irregular main track, fistula with multiple suppurative spaces and multiple tracks, spiral and horse-shoe fistulae, fistulas with supra-levator extension, anterior fistula in a female, and patient with preexisting incontinence.

Exclusion criteria were; simple fistula, and recto-vaginal fistula.

Preoperative evaluation: All patients in the present study subjected to the following: full history taking, thorough clinical examination, routine pre-operative laboratory work up, colonoscopy when indicated (inflammatory bowel disease was suspected), and magnetic resonance imaging (MRI). Wexner score (10) was done for all patients before surgery. An informed consent was taken from all patients. Preoperative preparation consisted of enema the night before surgery.

Operative work up: Anesthesia, whether general, or spinal, was decided by the anesthesiologists according to the patients' general condition and patients' concerns. All patients were operated by the same team of consultants of colorectal surgery in our department with experience in the field of anal surgery.

All patients were reexamined under anesthesia in lithotomy position on the operative table to verify the preoperative anorectal findings and the type of fistula. Fistulotomy operation was done for all cases except for patients with high anal fistulas (supra-sphincteric or extra- sphincteric fistulas) whom two stage Seton technique was done for them.

Fistolotomy: Laying open of the fistulous track(s) and all its branches after engaging the internal and the external openings in direct or segmental way, excision of excess wound edges and curettage of open cavities.

Seton technique: Seton tie (polypropylene) of any detected supra-sphincteric parts of the track. The tie was left loose and removed by lay open after 8 weeks from its insertion. (Figs. 1,2).

Biopsy was taken from all patients and sent for histopathology to detect fistulas due to specific causes.

Outcomes:

Primary endpoints:

- Recurrence which was detected by the surgeon in outpatient clinic at 3,6,9 and 12 months after the operation.
- Incontinence reassessment in comparison with the preoperative status using Wexner score by the surgeon before the surgery (base line) and at 3 and 6 months after the surgery during the outpatient clinic visits.

Secondary endpoints:

- Healing time (complete wound healing was defined as intact skin with no discharge or clinical signs of infection) detected by the surgeon in outpatient clinic during the monthly visits in the first 3 months.

Statistical analysis:

The Data was collected and entered into the personal

computer. Statistical analysis was done using Statistical Package for Social Sciences (SPSS/version 20) software.

Number and percent for each parameter was calculated, for categorized parameters, chai square test was used. The level of significant was 0.05.

Fig 1. Seton application in the supra-sphincteric parts of the track.

Fig 2. Seton is tied in a loose way around the upper part of anal sphincter.

RESULTS

The study included 96 patients. The demographic and clinical data of the patients are demonstrated in (Table 1). All patients were examined under anesthesia to determine the criteria of each fistula. Criteria of the fistulas are shown in (Table 2).

Table 1. Demographic and clinical data of the patients.

	All Patients (N=96)	Percentage (%)
Sex		
• Male	65	67.7
• Female	31	32.3
Age		
• <20y	5	5.2
• 20-50 y	84	87.5
• >50y	7	7.3
History of previous Surgery		
• Yes	43	44.7
• No	53	55.3
Etiology		
• Non specific	93	96.9
• Specific (Crohn's disease)	3	3.1

Table 2. Criteria of the fistulas detected by pre-operative MRI and examination under anesthesia.

	All Patients (N=96)	Percentage (%)
Number of external opening		
• Single	79	82.3
• Multiple	17	17.7
Radial site:		
• Anterior	29	30.2
• Posterior	67	69.8
Distance from the anal verge		
• <5cm	82	85.4
• >5cm	14	14.6
Internal opening		
• Above ARMR	3	3.1
• Below ARMR	93	96.9
Horseshoe fistula		
• Yes	11	11.5
• No	85	88.5

Eighty two patients were subjected to fistulotomy operation, while 14 patients were subjected to two stage Seton technique. As regards postoperative outcomes, recurrence was found in eleven patients, fifteen patients had minor continence impairment and eight patients had delayed wound healing.

Multivariate analysis of the demographic data and clinic-pathological data were done to detect factors affecting outcomes, they are showed in (Tables 3,4).

Table 3. Relation between fistula out come and demographic data.

	Recurrence "n=11"		Continence impairment "n=15"		Delayed wound healing "n=8"		Complete recovery "n=62"		Total	X2 p
	No.	%	No.	%	No.	%	No.	%		
Sex										
• Male	8	72.7	6	40.0	6	75	45	72.6	65	0.015*
• Female	3	27.3	9	60.0	2	25	17	27.4	31	
Age										
• <20y	0	0.0	0	0.0	0	0	5	8.1	5	
• 20-50 y	10	90.9	12	80.0	6	75	56	90.3	84	0.006*
• >50y	1	9.1	3	20.0	2	25	1	1.6	7	

*Significant (P <0.05).

Table 4. Relation between outcome and different clinical data.

	Recurrence "n=11"		Continence impairment "n=15"		Delayed wound healing "n=8"		Complete recovery "n=62"		Total	X2 p
	No.	%	No.	%	No.	%	No.	%		
History of previous Surgery										
• Yes	6	54.5	11	73.3	4	50	22	35.5	43	0.106
• No	5	45.5	4	26.7	4	50	40	64.5	53	
Etiology										
• Non specific	10	90.9	14	93.3	7	87.5	62	100.0	93	
• Specific (Crohn's disease)	1	9.1	1	6.7	1	12.5	0	0.0	3	0.445
Number of external opening										
• Single	4	36.4	9	60.0	4	50	62	100.0	79	0.0115*
• multiple	7	63.6	6	40.0	4	50	0	0.0	17	
Radial site:										
• Anterior	3	27.3	6	40.0	2	25	18	29.0	29	0.185
• Posterior	8	72.7	9	60.0	6	75	44	71.0	67	
Distance from the anal verge:										
• <5cm	9	81.8	10	66.7	5	62.5	58	93.5	82	0.322
• >5cm	2	18.2	5	33.3	3	37.5	4	6.5	14	
Internal opening:										
• Above ARMR	1	9.1	1	6.7	1	12.5	0	0.0	3	0.398
• Below ARMR	10	90.9	14	93.3	7	87.5	62	100.0	93	
Horseshoe fistula										
• Yes	3	27.3	3	20.0	2	25	3	4.8	11	0.108
• No	8	72.7	12	80.0	6	75	59	95.2	85	
Procedure										
• Fistulotomy	9	81.8	13	86.7	7	87.5	53	85.5	82	0.167
• Seton	2	18.2	2	13.3	1	12.5	9	14.5	14	

*Significant (P <0.05).

DISCUSSION

There are few studies on the surgical management of complex fistula-in-ano; therefore, factors associated with recurrence and incontinence have not been critically assessed. Furthermore, results from most retrospective studies are usually limited by short follow up.[11]

The recurrence rate after surgical management of anal fistula in general and for complex anal fistula in particular is considered one of the most important outcomes. The recurrence rate found in the present study

was 11.5%. This conforms to recurrence rates reported in the literature, which range from 0 to 39 percent.[12,13] This wide range is a result of the heterogeneous population selected in the different studies, difference in the percentage of complicated cases, the variability of techniques and the experience of surgeons which makes it difficult to compare the different outcomes.[5]

On assessment of the risk factors for recurrence, incontinence, and delayed wound healing in our series, we found that the presence of multiple external openings was associated with increasing risk of recurrence, and this conforms to what reported in St. Mark's hospital series.[8] Our results support the commonly held idea that fistula recurrence increases with complexity of the fistula. High recurrence rate seen in horseshoe fistulas suggests that uncertainty about the relationship of the fistula with anatomic structures of the anal region precludes effective treatment. The appropriate type of surgery is dictated by the course of the fistula tract. Significant potential morbidity, such as incontinence, contributes to the surgeon's reluctance to perform aggressive and invasive procedures resulting in non-eradication of infection and hence recurrence.[14] On reviewing literature, improper identification of internal opening was reported to be the most common cause of recurrence.[11] The presence of chronic specific inflammation; inflammatory bowel disease, failure to find a blind extension, to identify the ramification of the fistulous track, or to lay open the entire length were found to be less important causes of recurrence, however, sometimes the cause of recurrence was obscure and unclassified.[5,8,11,15]

In our study we found no significant statistical relation between recurrence and history of prior fistula surgery, however, there was increasing rate of recurrence among patients with Crohn's disease. This was also found in other studies.[8,11] In a retrospective study of 106 advancement flap procedures by Mizrahi et al., prior attempts at fistula repair were not associated with recurrence. However, Crohn's disease appeared to be correlated to fistula recurrence.[16] In spite in the current study there was no significant difference between fistulotomy and Seton as regards recurrence, review of literature showed that Seton has a higher recurrence rate (0-25%) than that of fistulotomy (1-9.7%).[5] This none statistically significant difference could be attributed in the current study to small number of cases in the study, higher selection of cases, and shorter period of follow up.

The other major concern in fistula surgery is the possibility of various degrees of incontinence. In our series complaints about disorders of continence have been reported in 15% of patients and there were no patients with major degree of postoperative incontinence. This result was within the reported ranges as disorders of continence have been reported in up to 56% of patients in different series.[17,18]

Many authors studied the clinico-pathological and technical variables associated with higher risk of continence disorders.[11,19] In this study, we found that there was a significant relation between the development of minor continence disorders and older age, female sex, presence of multiple external openings (branched fistula). In literature, the association of incontinence with complexity of fistula is statistically significant in univariate and multivariate analysis.[11,17,20] Furthermore, our results support the commonly held belief that division of the tissue encircled by the fistulous track carries a risk of incontinence that is proportional to the amount of muscle divided. Effort should be made to precisely define the relationship of the fistula with the sphincter mechanism.[11,20] Furthermore, in assessing the fistula tract, the important principle is not how much muscle is divided but how much is left. Sir Alan Parks, in his classic paper, stated that "as a general rule the whole of the internal and most of the external sphincter can be cut, with the exception of the puborectalis muscle, without any serious loss of function".[21] Previous fistula surgery appears to be a risk factor for incontinence, although non-significant, in our patients, this concur with what reported in literature.[8]

Clearly, one should be more conservative in women and particularly in those with anterior-based fistulae, as the canal tends to be shorter and there is the added problem of occult sphincteric injury secondary to child birth, estimated to be in the order of 30% after vaginal delivery and 80% after forceps-assisted delivery. This emphasizes the importance of an obstetric history during the pre-operative assessment.[7]

In the current study, treatment of anal fistulas by seton placement was an independent predictor of incontinence. No significant functional advantage with the use of Setons in comparison with simple fistulotomy was found. However, other studies in the literature[11] found that fistulotomy has a higher level of incontinence (0-27%) in comparison to that of draining seton (0-8%) and this difference could be explained by the small number of cases in the current study.

In conclusion, we found that, the presence of multiple external openings is associated with increasing risk of recurrence. In Addition to complexity of the fistula, factors like old age and female sex, have significant relation with minor incontinence after surgical management of complex anal fistula. Sound understanding of the anatomy of the fistulous tract and its relation to anal sphincter in addition to factors affecting outcome is a must for proper planning for surgical management of complex anal fistula.

We consider short period of follow up the main limitation of this study.

Conflicts of interest: None.

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