MANAGEMENT OF COMPLEX FISTULA IN ANO WITH SPECIAL REFERENCE TO SETON

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HOW TO CITE THIS ARTICLE:

Anower Hossen Halder, I.C. Muduli, L. Bag, S.N. Mallick, Kalandi Barik, Subhash Chandra Bhartiya, Sarada Prasanna Sahoo, Sanjit Kumar Nayak. "Management of Complex Fistula in ano with special reference to Seton". Journal of Evolution of Medical and Dental Sciences 2013; Vol. 2, Issue 52, December 30; Page: 10117-10125.

ABSTRACT: The fistula in ano is commonly encountered problem in surgery and the treatment of complex fistula in ano poses a nightmare for the surgeons as there is no single technique appropriate for its treatment. The objective of this study was to determine the effectiveness of various surgical treatments in terms of recurrence and in continence. In this prospective study, total 35 patients of complex fistula in ano were treated with different surgical techniques from June 2011 to July 2013 and recorded incidence of recurrence and incontinence as follows. There was no recurrence in the patients treated with fistulotomy and cutting seton alone. But recurrence rate of 25%, 10% and 8.33% were recorded in fistulectomy, staged fistulotomy and fistulectomy with cutting seton respectively. The major and minor incontinence also occurred as follows, in fistulotomy 14.29% & 42.87%, in fistulectomy 25% & 50%, staged fistulotomy 0% & 30%, fistulectomy with cutting seton 8.33% & 16.66% but patients treated with cutting seton alone developed no incontinence.

KEY WORDS: Fistula in ano, complex fistula, fistulotomy, fistulectomy, seton, recurrence, Incontinence.

INTRODUCTION: Fistula in ano is a commonly encountered surgical problem with prevalence 1.2-2.8/10,000 population¹. It has a male predominance and commonly afflict the people in the third, fourth and fifth decade of life². Anal fistula may be found in association with a variety of specific condition like chron's disease, tuberculosis, malignancy of anorectum, HIV, radiation exposure, lymphogranuloma venerum, foreign body etc but most are non specific and in this group infection of an anal gland in the inter sphincteric plane may be the initiating pathology². Infection which had begun in the anal gland progresses into muscular wall of anal sphincters to cause an anorectal abscess. Following surgical or spontaneous drainage of abscess in the perianal skin, a granulation tissue lined track is left behind in 50% cases that gives rise to chronic fistula.³

Classification of fistula in ano as described by Parks is based on location of its tract in relation to the anal sphincter (Inter sphincteric, Trans sphincteric, Supra sphincteric & Extrasphincteric). The term complex fistula in ano is modification of the Park's classification.

The term complex fistula in ano includes fistulous track crossing >30% of external sphincter, anterior fistula in female, fistula with multiple tracks, Recurrent fistula, patient having preexisting incontinence, local irradiation, inflammatory bowel disease, anorectal tumor.⁴

Due to involvement of anal sphincter the treatment of fistula poses a high risk for impairment of continence.^{5,6} Due to lack of appropriate technique for the treatment of fistula in ano, treatment must be navigated by surgeon's experience and judgement. The surgeon has to keep in

mind the tradeoff between the extent of sphincter division, post-operative healing rate and functional loss.⁵

Whatever the type and extent of fistula are, the principles of fistula surgery are to get rid of the fistula, prevent recurrence and preserve sphincter function.

Most of the fistula in ano had been conventionally treated by either fistulotomy or fistulectomy, which have been proven to be effective,⁷ used to manage anal fistula for hundreds of years. However setons were commonly used only for high or complex fistula in order to prevent recurrence and incontinence.⁸

Seton is any string like material which, when tied through the fistula tract causes an inflammatory reaction which stimulates fibrosis that fixes and prevents retraction of the sphincter continuity when it is divided. In this way it maintains sphincter continuity during cutting process.⁹

Seton is typically made from a large silk, silastic vessel marker or rubber band, linen, polypropylene, nylon, cable tie so forth.

The reported incontinence and recurrence rate ranges from 0% to 62% and from 0% to 16% respectively with different materials used as seton¹⁰.

The present study was undertaken to observe the variation in clinical, radiological & surgical findings in diagnosing complex fistula in ano and to determine the effectiveness of different surgical treatments in terms of recurrence, incontinence.

MATERIAL & METHODS: During the period of 2 years from June 2011 to July 2013, 85 patients were admitted with fistula in ano in the department of surgery MKCG Medical College Brahmapur. Out of them 39 patients were found to have complex fistula in ano. Four patients were excluded from my study because two of them who had tuberculosis, one patient had chron's disease and one had pre-operative incontinence. At the time of admission a detailed history and clinical examination were carried out. All included patients were subjected to digital rectal examination, proctoscopy, fistulogram.

INCLUSION CRITERIA:

- I. Patients with complex fistula in ano that is Recurrent fistula, fistulous tract encompassing >30% of external Sphincter, fistula with secondary tracks, anterior fistula in female.

EXCLUSION CRITERIA

- I. Patients with simple fistula in ano that is subcutaneous fistula, intersphincteric fistula, low transsphincteric fistula.
- II. Patients with existing pre-operative incontinence, loss of follow up, inflammatory bowel disease, intestinal tuberculosis.

SURGICAL TECHNIQUE: In the present study Out of 35 patients of complex fistula in ano 12 (34.28%) patients underwent combined procedure that is fistulectomy of the lateral portion of the tract which was followed by insertion of cutting seton in the medial portion of the tract encircling the external sphincter. Ten (28.57%) patients were treated with staged fistulotomy, initially insertion of loose seton for control of local sepsis followed by fistulotomy. Seven (20%) patients were undergone fistulotomy. Four (11.43%) patients were treated with fistulectomy with or without sphincter repair. Two (5.72%) patients were treated with cutting seton.

No. 1 polypropylene was used as seton both as loose seton as well as cutting seton.

ORIGINAL ARTICLE

POST OPERATIVE CARE AND FOLLOW-UP: All the patients were treated with post-operative intravenous antibiotics for 5 days, sitz bath from first post-operative day, analgesic if pain, stool bulking agents, good peri anal hygiene.

All the patients were followed up for three months and clinically assessed for incontinence as per Parks' classification for incontinence. Patients were also followed up for detection of persistence or recurrence of local sepsis.

RESULTS: Out of 35 patients of complex fistula in ano included in my study the maximum incidence was in the age group 41-50 yrs (%) and the minimum incidence was in the age group <30 yrs (%). The oldest patient was a male of 68 yrs and the youngest patient was a female of 29 yrs.

Out of thirty five patients 7 patients were female and 28 patients were male. The female: male ratio was 1: 4.

In the classification of the primary tract, the clinical examination and surgical findings corresponds for 12 out of 35 patients (34.29%). In two patients, where clinical examination showed a high trans-sphincteric fistula, the surgeon found it as suprasphincteric fistula. In two cases and five cases where clinical examination low transsphincteric and inconclusive respectively were found to be high transsphincteric fistula during surgery. In 2, 1 & 3 cases where clinical examination found to be inter sphincteric, superficial fistula & inconclusive respectively were found to have low transsphincteric fistula. In 2, 2 & 4 cases where clinically found to have low transsphincteric, superficial fistula & inconclusive respectively were diagnosed to be cases of inter sphincteric fistula on surgical exploration (TABLE 1).

		SURGICAL EXPLORATION					
CLINICAL EXAMINATION		A	B	C	D	E	F
	A						
	B	2	6				
	C		2	4	2		
	D			2	2		
	E			1	2		
	F		5	3	4		

A=SUPRASPINCTERIC FISTULA

B=HIGH TRANSSPINCTERIC FISTULA

C=LOW TRANSSPINCTERIC FISTULA

D=INTER SPHINCTERIC FISTULA

E=SUPERFICIAL FISTULA

F=INCONCLUSIVE

TABLE 1: CLASSIFICATION OF PRIMARY TRACT BY CLINICAL EXAMINATION VS SURGICAL EXPLORATION

To detect an internal opening DRE & fistula gram corroborates with the surgical findings in 20 (57.14%) & 27 (77.14%) patients respectively. 12 patients & 5 patients where internal opening were not identified by DRE and fistulagram respectively identified during surgery. In 3 patients internal opening were not identified during surgery also.

ORIGINAL ARTICLE

In judging the presence of an secondary extension DRE corresponds with surgery in 5 (50%) patients whereas fistulogram corresponds with surgery in 2(20%) patients. Five(50%) patients found to have secondary extension during surgery were missed in DRE. Eight (80%) patients with extension were missed in fistulogram.

Out of 35 patients 10 (28.57 %) patients had low trans-sphincteric fistula (low TSF), 13 (37.14%) patients were having high trans-sphincteric fistula (high TSF), 10 patients (28.57 %) had inter-sphincteric fistula, and 2 (5.72 %) patients were having supra sphincteric fistula(TABLE 2).

PRIMARY TRACK	NO OF PATIENTS	PERCENTAGE
INTERSPHINCTERIC	10	28.57%
LOW TRANSSPHINCTERIC	10	28.57%
HIGH TRANSSPHINCTERIC	13	37.14%
SUPRASPHINCTERIC	2	5.72%
TOTAL	35	100%

TABLE 2: DISTRIBUTION OF PRIMARY TRACKS AMONG THE PATIENTS OF COMPLEX FISTULA IN ANO

Out of 35 patients of complex fistula in ano 12 (34.28%)patients were undergone combined procedure that is fistulectomy plus cutting seton(TABLE 3).Ten (28.57%)patients were treated with staged fistulotomy. Seven (20%) patients were undergone fistulotomy. Four (11.43%) patients were treated with fistulectomy with or without sphincter repair. Two (5.72%) patients were treated with cutting seton alone.

Name of surgery	High TSF	Low TSF	SSF	ISF	TOTAL
Cutting seton		1(ant in female)		1(ant in female)	2
Fistulotomy		5(recurrent)		2(recurrent)	7
Fistulectomy				4(recurrent)	4
Staged fistulotomy	3(with secondary extension)	4(secondary extension)		3(secondary extension)	10
Combined fistulectomy with cutting seton	10		2		12
Total	13	10	2	10	35

TABLE 3: SURGERY FOR COMPLEX FISTULA IN ANO BASED ON CLASSIFICATION ACCORDING TO PRIMARY TRACK

After surgery all the patients were followed up for 3 months. The patients treated with fistulotomy no patients had recurrence (TABLE 4).The patients treated by fistulectomy showed one(25%) recurrence. A single (10%) patient from staged fistulotomy group experienced recurrence. One (8.33%) patientfrom combined procedure (fistulectomy plus cutting seton) group had recurrence. There was no recurrence in patients who were treated by cutting seton alone.

Name of surgery	No. of patients	No of recurrence	Percentage of recurrence(%)
Fistulotomy	7	0	0
Fistulectomy	4	1	25%
Staged fistulotomy	10	1	10%
Combined fistulectomy plus cutting seton	12	1	8.33%
Cutting seton alone	2	0	0
Total	35	3	

TABLE 4: INCIDENCE OF RECURRENCE AMONG DIFFERENT SURGERY GROUPS

All the patients were followed up for 3 months for major incontinence (i. e incontinence to solid stool) as well as minor incontinence (i.e incontinence to liquid or gas).Out of 7 patients treated by fistulotomy 1 (14.29%) patients developed major incontinence & 3 (42.87%) patients developed minor incontinence(TABLE 5).Out of 4 patients treated by fistulectomy 1 (25%)patients developed major incontinence & 2 (50%)patients developed minor incontinence. Out of 10 patients treated by staged fistulotomy nobody developed major incontinence, 3 (30%) developed minor incontinence. Out of 12 patients treated by combined fistulectomy plus cutting seton one (8.33%)developed major incontinence but two (16.66%) patient developed minor incontinence. No patients developed incontinence in any form whose who were treated by cutting seton alone.

Surgery	Major incontinence	Percentage	Minor incontinence	Percentage
Fitulotomy	1(out of 7)	14.29%	3(out of 7)	42.87%
Fistulectomy	1(out of 4)	25%	2(out of 4)	50%
Two stage fistulotomy	0(out of10)	0%	3(out of 10)	30%
Combined fistulectomy and cutting seton	1(out of 12)	8.33%	2(out of12)	16.66%
Cutting seton alone	0(out of 2)	0%	0(out of 2)	0%
Total	3		10	

TABLE 5: INCIDENCE OF INCONTINENCE IN DIFFERENT SURGERY GROUPS

DISCUSSION: Perianal fistulas are associated with considerable discomfort and morbidity. It is unclear which factors affect the outcome of the surgical treatment of perianal fistulas.

ASPECTS OF DIAGNOSIS AND CLASSIFICATION: Examination under anaesthesia (EUA) has long been considered the golden standard for correct assessment of an anal fistula and thus the basis for decisions on therapy. Now MRI is regarded by many as equal to, or surpassing, examination under anaesthesia.

In the present study we used clinical examination (digital rectal examination), fistulogram(x-ray) and finally examination under anaesthesia.

Digital examination remains an important examination, Eckhardt and coworkers have shown its sensitivity and specificity in assessing anal sphincter competence is only 63 and 57 percent, even when performed by an experienced proctologist.¹¹

Buchanan et al compared the accuracy of digital rectal examination, anal endosonography and MRI in the preoperative assessment of anal fistula. One hundred and eight patients with anal fistula were studied prospectively by nine experienced clinicians of more than 9 years consultant practice and 10 senior registrars trained by the consultants. There was a significant linear trend ($P < 0.001$) in the proportion of fistula tracks correctly classified with each modality. Clinical examination correctly identified the anatomy of the fistula in 66 (61%), endosonography in 87 (81%) and MRI in 97 (90%).¹²

In a retrospective study, Kuijpers and coworkers showed that fistulography accurately predicted the location of the internal opening in only 28 percent of all patients. In a comparison with operative findings fistulography was unreliable with only 16 %¹³.

Weisman conducted a retrospective study in 27 patients. According to this author, fistulography resulted in a correct classification of the fistula in 89 percent of the cases patients¹⁴.

In this study, clinical examination(DRE)correctly identified the course of primary tract in 34.29% cases. To detect internal opening DRE was correct in 57.14% cases & fistula gram in 77.14% of cases. In judging the presence of a secondary extension DRE corresponds with surgical finding in 20% patients where as fistulogram and surgical finding corroborates in 50% patients.

Comparing with the study of Buchanan et al where anatomy of fistula were correctly identified in 61% of patients by clinical examination but in this study the primary tract was correctly identified in 34.29% of patients and internal opening was correctly identified in 57.14% of patients. The reason behind this reduced accuracy is supposed to be due to the fact that in this the study population was of the patients of complex fistula, out of them 37.14% have recurrent fistula where scar of previous surgery make it difficult to delineate the regional anatomy.

ASPECTS OF SURGICAL TREATMENT: In this study, there was no recurrence in the patients who were treated with fistulotomy. The patients treated by fistulectomy showed 25% recurrence. For staged fistulotomy recurrence rate was 10%. Combined fistulectomy plus cutting seton had recurrence rate of 8.33%. Whereas for cutting seton alone recurrence rate was 0%.

But patients treated by fistulotomy developed major incontinence in 14.29% cases. & minor incontinence in 42.87% cases. Patients treated by fistulectomy developed major incontinence in 25% of cases & minor incontinence in 50% cases. Patients treated by staged fistulotomy nobody developed major incontinence & minor incontinence in 30% cases. Patients treated by combined fistulectomy and cutting seton one patient (8.33%) developed major incontinence but minor incontinence in 16.66% cases. No patients developed incontinence in any form treated by cutting seton alone.

Comparing with the study done by Garcia Aguilar in 1998 on staged fistulotomy in complex fistula where there was minor incontinence in 50% of patients, major incontinence in 24% cases and recurrence was in 8% patients. Whereas in this study there was no major incontinence at all, minor incontinence developed in only 30% of cases but there is little high incidence of recurrence (10%), the higher recurrence was probably due to the fact that all the cases were not undergone total internal sphincterotomy before insertion of loose seton as done by Garcia Aguilar et al¹⁶.

Comparing with the study done by Isbister and Al Sanea et al in 2001 on cutting seton in complex fistula where there was major incontinence in 11% cases, minor incontinence in 36% of patients and recurrence occurred in 2% cases¹⁶. Whereas in this study there was no incontinence and recurrence where cutting seton alone was used but when cutting seton was used following excision of the lateral portion of the tract outside sphincter complex, there was major incontinence in 8.33% and minor incontinence in 16.66% of case only but there is higher incidence of recurrence (8.33%). Comparing the outcome of seton with conventional surgery there is higher incidence of major (14.29%) as well as minor incontinence (42.87%) in fistulotomy. Following fistulectomy there was also higher incidence of minor (50%) and major incontinence (25%) in spite of the fact that fistulotomy and fistulectomy were undertaken in intersphincteric and low trans-sphincteric fistula.

CONCLUSION: Though there are multimodalities of the treatment for complex fistula in ano but the results varies and almost in all cases the treatment result in defect of anal control. But use of seton in the treatment of complex fistula decreased the complication and in this study treatment with cutting seton developed no incontinence. However further study of large number of cases with long term follow up is necessary to evolve the best possible treatment.

REFERENCES:

1. Zanotti C, Martinez PC, Pascual I, Herreros D and Garcia D; Fistula in ano its incidence and prevalence; International journal of colo rectal disease, 2007, vol22, no12: p1459-1462.
2. Lunnis P, Nugent K. The anus and anal canal. In: Williams NS, Bulstrode CJK, O'Connell PR Editors; Baily & Love's SHORT PRACTICE of SURGERY; 26th Ed, Boca Raton, CRC Press, 2013: p1259-1261.
3. Bullard Dunn KM; Colon, Rectum and Anus. In: Brunickardi FC, Anderson DA, Billiar TR, Dunn DL, Hunter JG, Mathews JB, Pollock RE Editors: Schwartz's principles of surgery, 9th Ed, New York. McGraw Hill, 2010: p1583-98.
4. Nicholls J, Roger R D; The Anus; In: Surgery for colon and rectum, 10th edition, New York. MC Graw Hill, 1998: p255-67.
5. Parks AG, Gordon PH, Hardcastle JD. A classification of fistula-in-ano. Br J Surg 1976; 63: 1-12.
6. Hamalainen KP, Sainio AP. Cutting seton for anal fistulas: high risk of minor control defects. Dis Colon Rectum, 1997; 40: 1443-7.
7. Isbister WH, Al Sanea N. The cutting seton: an experience at King Faisal Specialist Hospital. Dis Colon Rectum 2001; 44: 722-7.
8. Dziki A, Bartos M. Seton treatment of anal fistula: experience with a new modification. Eur J Surg 1998; 164: 543 - 8.
9. Parks AG, Stitz RW. The treatment of high fistula-in-ano. Dis Colon Rectum 1976; 19: 487-99.
10. Van Tets WF, Kuijpers JH. Seton treatment of perianal fistula with high anal or rectal opening. Br J Surg 1995; 82: 895-7.
11. Eckardt VF, Kanzler G. How reliable is digital examination for the evaluation of anal sphincter tone? Int J Colorectal Dis 1993 Jul; 8(2): 95-7.

ORIGINAL ARTICLE

12. Buchanan GN, Halligan S, Bartram CI, Williams AB, Tarroni D, Cohen CR. examination, endosonography, and MR imaging in preoperative assessment of fistula in ano: comparison with outcome-based reference standard. *Radiology* 2004; 233(3): 674-681.
13. Kuijpers HC, Schulpen T. Fistulography for fistula in ano. *Dis Colon Rectum* 1985; 28: 103-4.
14. Weisman RI, Orsay CP, Pearl RK, Abcarian H. The role of fistulography in fistulo in ano. *Dis Colon Rectum* 1991; 34: 181-4.
15. Journal compilation _ 2007 The Association of Coloproctology of Great Britain and Ireland. *Colorectal Disease*, 9 (Suppl. 4), 18-50.

Suprasphincteric fistula treated by fistulectomy followed by cutting seton

A case of recurrent transsphincteric fistula treated by staged fistulotomy following loose seton.

A patient of recurrent high transsphincteric fistula treated by fistulectomy followed by cutting seton.

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Date of Submission: 04/12/2013.
Date of Peer Review: 05/12/2013.
Date of Acceptance: 17/12/2013.
Date of Publishing: 24/12/2013