

# Comparison between Rubber Band and Ethelon Suture as A Cutting Seton in Perianal Fistula

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## ABSTRACT

**Background:** fistula-in-ano is a commonly encountered surgical problem. There is a risk of sphincter muscle damage during fistulectomy. Seton suture is used to decrease this risk. Different types of Setons are used for this purpose.

**Aim:** to compare 2 types of cutting Seton as regard Postoperative pain, duration until Seton cut through, post operative faecal incontinence and recurrence.

**Methods:** this study was conducted on 80 patients in 2 groups with high perianal fistula or low perianal fistula associate with abscess cavity. Patients with inflammatory bowel disease, history of malignancy, and previous recto-anal operations were excluded from this study. One group with insertion of sterilized rubber band and silk suture was applied at the anal verge the other with Ethilon sutures. Follow up and tightening of the seton done as outpatient.

**Results:** about half (46.25%) had low perianal fistulas with abscess cavity, and 53.75% had high perianal fistulas. Group (A) patients had 10% wound infection and group (B) had 5%, all responded to conservative management. The mean VAS score of the patients on the 1st day was (3.7±1.14), and (2.85±0.92) and on the 7th day was (1.28±0.85) and (0.88±0.88) respectively. Seton fell down after a mean time (26.35 days ± 5.12 days) in group (A) and (27.65 days ± 6.84 days) in group (B). Complete healing was achieved in 77.5% of group (A) and in 60 % of group (B) after 1 month and 40 patients (100%) in both groups at 3 months. 7.5% of recurrence in group (A) and 2.5% case of recurrence in group (B).

**Conclusion:** rubber band Seton is easy and cheap and provide slow and steady cutting of the sphincter maintaining continence.

**Keywords:** Seton; Cutting Seton; Rubber band Seton

## INTRODUCTION

Fistula-in-ano is one of the commonly encountered surgical problems with prevalence of 1.2 to 2.8/10,000 in some European countries <sup>(1)</sup>.

As simple, low anal fistulas can be treated safely only by fistulotomy, the management of complex fistulas needs to balance the outcomes of cure and continence.

There is a risk of sphincter muscle damage during fistulotomy, and this might lead to an unacceptable risk of anal incontinence (AI) of varying degrees <sup>(2)</sup>.

The degree of incontinence depends on the amount of damaged muscle, preexisting sphincter damage, and scarring of the anal canal.

Several alternative treatment strategies have been practiced in order to preserve the sphincter mechanism, including draining Setons, cutting Setons <sup>(3)</sup>, rectal mucosal or full-thickness advancement flaps <sup>(4)</sup>, rerouting <sup>(5)</sup>, two-stage Seton fistulotomy <sup>(6)</sup>, fistulectomy, anal fistula plug <sup>(7)</sup>,

ligation of the intersphincteric fistula tract (LIFT) <sup>(8)</sup>, fistulotomy with reconstruction of the sphincter mechanism <sup>(9)</sup>, or fibrin glue <sup>(10)</sup>.

The oldest and theoretically the simplest technique is to use a Seton, the well-known variations in modern surgical practice being cutting Setons, drainage Setons, and two stage Seton fistulotomy <sup>(11)</sup>. The long-term loose draining Seton, while not placing the sphincter at risk, is simply palliative with only marginal rates of complete healing <sup>(12)</sup>.

The tight or cutting Seton, on the other hand, has resulted in unacceptable rates of both severity and frequency of AI <sup>(13)</sup>.

Setons have been used to manage anal fistula from hundreds of years; however, in the literature, Setons were commonly used only for high or complex anal fistula in order to avoid faecal incontinence and recurrence <sup>(14)</sup>.

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<sup>(13)</sup>.

Different types of Setons are used for this purpose like silastic tube, silk, linen, braided silk, rubber band, braided polyester, vascular loop, polypropylene, nylon, cable tie, and so forth<sup>(13)</sup>. The reported incontinence and recurrence rate ranges from 0% to 62%<sup>(13)</sup> and from 0% to 16%<sup>(15)</sup> respectively, with different materials used as Seton.

**Aim:**

To compare 2 types of cutting Seton (Ethelon stitch and rubber band) as regard Postoperative pain, duration until Seton cut through, postoperative faecal incontinence and recurrence.

**PATIENTS AND METHOD**

This study was conducted on 80 patients with perianal fistulas in both Ain Shams University hospitals in Cairo, Egypt and As-Salama hospital in AlKhubar, Saudi Arabia in the period between 1-1-2014 and 1-4-2016. The protocol was approved by the research ethics committee of general surgery department, faculty of medicine, Ain Shams University. Informed written consent was obtained from all patients.

Patients were divided into 2 groups. Group (A) included 40 patients where the operation was done with 2 Ethelon stitches one as cutting Seton and one as drainage Seton and Group (B) included 40 patients where the operation was done with rubber band as cutting Seton.

All patients with high perianal fistula or low perianal fistula associate with abscess cavity attending to the outpatient clinic were included in this study. Patients with inflammatory bowel disease, history of malignancy, and previous recto-anal operations were excluded from this study.

Diagnosis was done by clinical examination, fistulogram, and MRI anal region in cases where the inner part of the fistula and the internal opening was not seen in the fistulogram and in suspected branched or complicated fistulas and diagnosis is confirmed by examination under anesthesia.

**Statistical analysis**

Data are summarized as mean  $\pm$  standard deviation (SD) and/or range for continuous factors and as frequency and percentage for categorical variables. Continuous variables were compared by t-test and categorical variables by the  $\chi^2$  test or Fisher's exact test, as appropriate. Significance level was set at 0.05. A P-value less than that was considered statistically significant. Statistical analysis was performed using SPSS version 20.0 (SPSS Inc., Chicago, IL, USA).

**Surgical technique**

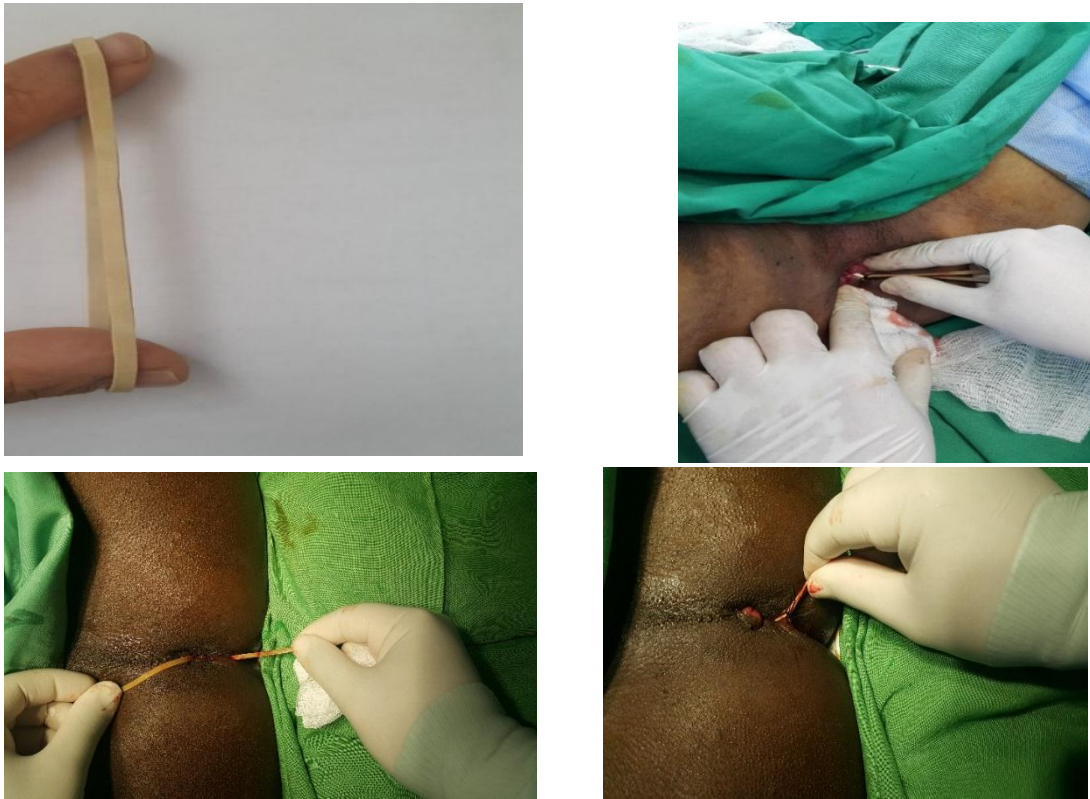
All operations were done under caudal anesthesia with the patient in lithotomy position. In both groups, examination under anesthesia was done at first and incision and drainage was done when there was anal infection associated with the fistula. In group (A) patients probing of the fistula tract was done and insertion of 2 Ethelon (1) sutures over the probe and tying one of the Ethelon with Roeder's knot and slided tightly to the anal canal and the other was tied loosely for drainage. In group (B) probing of the fistula tract was done. Sterilized rubber band was inserted and silk suture was applied at the anal verge.

In both groups an anal pack was inserted using sofratull gauze. Patients were discharged next day and followed after 1 week where the Seton is tightened by pulling the knot in the Ethelon suture for group (A) patients and by applying silk sutures to the rubber band in group (B) patients.

Follow up was done every 2 weeks with tightening of the Seton until it fell down.

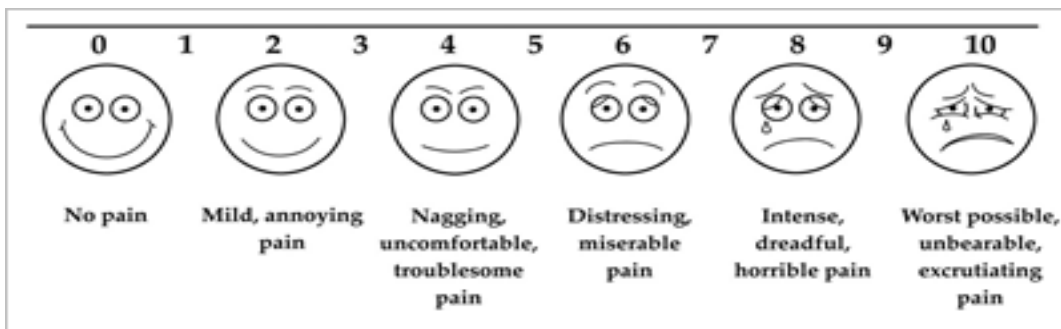


**Figure (1-3):** operative procedures group (A).



**Figure (4-7):** operative procedures group (B).

Patients were assessed for post-operative pain on the 1<sup>st</sup> and 7<sup>th</sup> day using the visual analogue score (VAS)<sup>(16)</sup> (figure 8).



**Figure (8):** VAS score.

Cutting Seton acts by slow and steady cutting in the muscles. This slow and steady cutting allows time for the muscle to heal by fibrosis help in to cause dissection of the fistulous tract without injuring the sphincter mechanism.

The period required for the Seton to cut through was recorded. Faecal incontinence was assessed with the Cleveland Clinic Incontinence Score (CCIS) system and the quality of life with the Faecal Incontinence Quality of Life Index (FIQLI) preoperatively before admission and postoperatively at 6 months. Patients were followed up at 3, 6, 12 and 18 months for recurrence. Recurrence was defined as the reoccurrence

of fistula or development of another fistula at or near to the original fistulous tract.

**RESULTS**

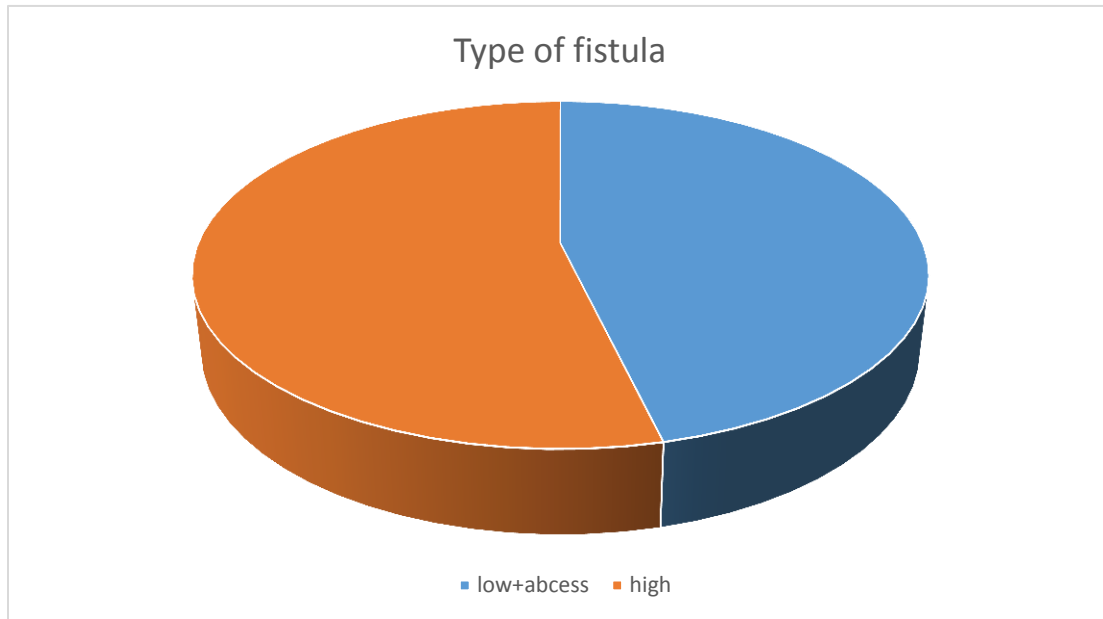
In the 80 patients above 76 patients were men (95%) and 4 patients were females (5%) aging between 17 and 50 years old with non-significant difference between the two groups for mean age (33± 9.01) for group (A) and (32.5 ± 9.05) for group (B) (table 1). 37 patient (46.25%) had low perianal fistulas with abscess cavity, and 43 patient (53.75%) had high perianal fistulas (chart 1). Preoperative CCIS and FIQLI showed no significant difference between both groups.

**Table (1):** demographic data showing equal distribution

		A		B		Fisher exact test	
		N	%	N	%	p value	sig.
Sex	Male	38	95.0%	38	95.0%	1	NS
	Female	2	5.0%	2	5.0%		
		Mean	SD	Mean	SD	t -test	
Age		33.00	9.01	32.50	9.05	0.805	NS

**Chart (1):** Types of fistulas.

All patients were discharged after the first or second day postoperative, no readmissions.



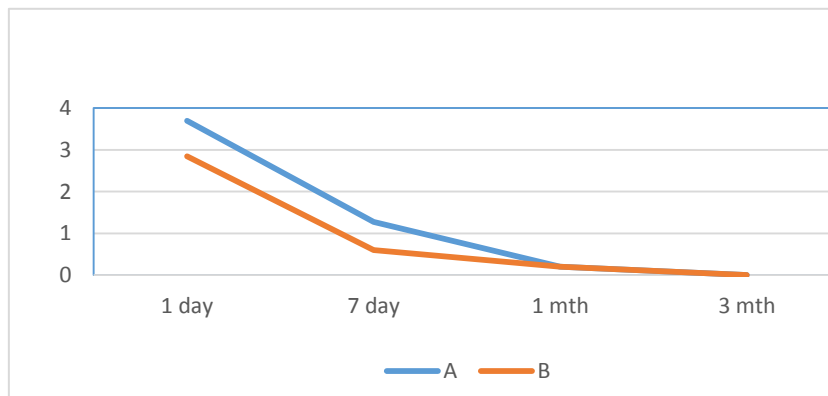
**Chart 1:** Types of fistula

Wound infection and pus discharge from the wound was present in 4 patients (10 %) of group (A) and 2 patients (5%) of group (B) but it was non-significant statistically (P value 0.675) and all of the patients responded to the conservative management. The mean VAS score of the patients was significantly less in group (B) with P value <0.001 after 1 day and after 7 days, on the 1<sup>st</sup> day the score was (3.7±1.14) for group (A) and (2.85±0.92) for group (B) and on the 7<sup>th</sup> day was (1.28±0.85) and (0.88±0.88) respectively (chart 2, 3), (table 2). 1 patient (2.5%) in group (A) had severe pain after 7 days and at 1 month and required prolonged analgesia until the Seton fell and 1 patient (2.5%) in group (B) had severe pain after 7 days and 1 month and required prolonged analgesia and eventually removal of the last silk suture to loosen the pressure. In Group (A) patients Seton fell down after a period from 2 weeks to 9 weeks with mean time (26.35

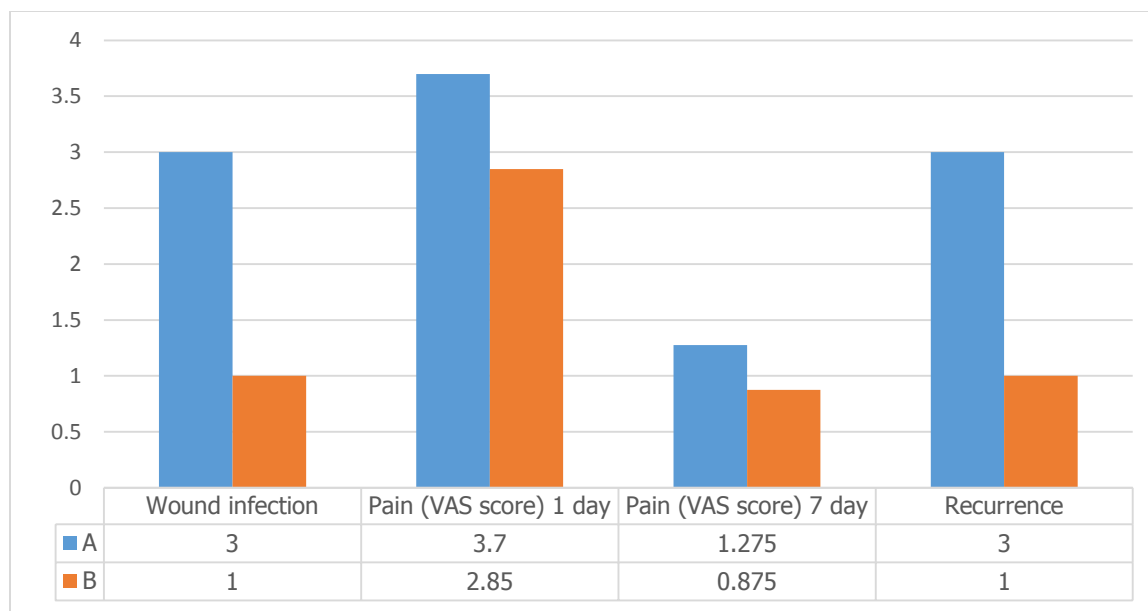
days ± 5.12 days) while in group (B) the period for falling of Seton was from 3 weeks to 11 weeks with mean of (27.65 days ± 6.84 days) which was non-significant with P value 0.339. Complete healing was achieved in 31 patients (77.5%) of group (A) and in 24 patients (60 %) after 1 month and 40 patients (100%) in both groups at 3 months. CCIS and FIQLI was assessed and showed 1 case (2.5%) transient flatus incontinence in group (A) which lasted for 9 days and improved and no significant difference from the preoperative score in group (B). Median Follow up for group (A) was 16 months (ranging from 12 to 21 months) while in group (B) it was 14 months (ranging from 9 to 18 months) revealed 3 cases (7.5%) of recurrence in group (A) and 1 (2.5%) case of recurrence in group (B) with non-significant p value of 0.615.

**Table (2):** Comparison between the 2 groups regarding VAS, Seton fall days, Wound infection and recurrence

		A		B		t test	
		Mean	SD	Mean	SD	p value	sig.
VAS score 1 d		3.70	1.14	2.85	.92	<0.001	S
VAS score 7 d		1.28	.85	.88	.88	0.042	S
Seton fall days		26.35	5.12	27.65	6.84	0.339	NS
		N	%	N	%	Fisher exact test	
Wound inf	no	36	90.0%	38	95.0%	0.675	NS
	yes	4	10.0%	2	5.0%		
Recurrence	no	37	92.5%	39	97.5%	0.615	NS
	yes	3	7.5%	1	2.5%		



**Chart 2:** VAS score with 3 month results.



**Chart 3:** Post-operative complications

**DISCUSSION**

Seton techniques are widely accepted methods of treatment of perianal fistulas but the material of the Seton is point of personal preference. Rubber Seton was first described in 1966<sup>(17)</sup>, but not much papers are discussing their use in the fistula treatment although some papers discussed the use of hybrid rubber bands taken from gloves as a Seton stitch. This paper aimed at comparing the use of rubber Seton to the Ethelon Seton.

The surgical use and manipulation of the rubber Seton was much easier than the Ethelon suture intraoperative and postoperative on adjustment of the Seton. No special sutures were needed, only applying silk suture at the required level.

As for pain, in group (A) (Ethelon suture) patients, we found that 2 (5%) patients experienced severe anal pain compared to only 1 patient (2.5%) in group (B) with VAS score 4 or more after 1 week. Mean VAS score was (3.7±1.14) in group (A) and (2.85±0.92) in group (B) on the 1<sup>st</sup> day and on the 7<sup>th</sup> day was (1.28±0.85) in group (A) and (0.88±0.88) in group (B) as compared to (3.23) 1<sup>st</sup> day and (0.61) after 1 week respectively in Ege *et al.*<sup>(18)</sup> study in their study of elastic cutting hybrid Seton in high perianal fistula. Statistically this pain was significantly less for the group (B) patients for 1 day and 7 days.

The time for seton to cut through the muscles was (28 days ±1.8 days) in group (A) and in group (B) it was (32 days ± 2.3 days) which was less for the

Ethelon suture to cut through the fistula tract due to the hard nature of the Ethelon suture as compared to the elastic rubber band which cut slowly through the muscles although it was non-significant statistically. The time that was taken in Ege *et al* study was shorter than that recorded in both groups by mean of (18.81 ± 2.8 days)<sup>(18)</sup>.

4 patients (10%) in Group (A) and 2 patient (5%) in group (B) had infection at the site of the Seton and pus discharge from the wound after falling of Seton but it responded to the conservative treatment of sitz baths and oral antibiotics and was non-significant with p value 0.675. All patients achieved complete healing of the fistula by 3 months.

In Vial *et al* systematic review of 18 studies of cutting or tight Seton sutures, with over 440 patients, they found a recurrence rate 5.0% for patients in whom the internal sphincter was not divided at the initial surgery, and 3.0% when they divided the internal sphincter<sup>(15)</sup>. In our study we had 3 cases (7.5%) recurrences in group (A) and only 1 case of recurrence (2.5%) in group (B) which was nonsignificant statistically P value 0.615. Recurrence rate in Menten *et al* study on elastic cutting Seton in high fistula was 1 case (5%)<sup>(19)</sup> and 2 cases (1.5%) in Ege *et al* study<sup>(18)</sup>.

In this study in group (A) we had 1 (2.5%) patient with transient flatus incontinence which was attributed to the rapid cutting in the muscle. No

significant incontinence found in group (B) by comparing preoperative and postoperative CCIS and FIQLI.

### CONCLUSION

To conclude, Rubber band Seton is easy and cheap procedure and provide slow and steady cutting of the sphincter maintaining continence making it more convenient and more effective in some aspects as compared to the Ethelon Seton. It is easier in manipulation with less pain scores than the Ethelon sutures. The slow and steady cutting provides safe and effective cure of perianal fistula.

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