



ORIGINAL ARTICLE

RHOMBOID FLAP VERSUS PRIMARY CLOSURE AFTER EXCISION OF SACROCOCCIGEAL PILONIDAL SINUS (A PROSPECTIVE RANDOMIZED STUDY)

Hosam Roshdy, Yasser Ali, Waleed Askar, Ibrahim Awad, Mokhtar Farid, Mohammed Farid

General Surgery Department, Faculty of Medicine, Mansoura University, Egypt

Correspondence to: Hosam Roshdy, Email: hosam.roshdi@yahoo.com

Abstract

Aim: A pilonidal sinus refers to a tract or cavity under the skin that contain hair. The most common areas are in the sacrococcygeal (tailbone) area and the umbilicus. In spite of different treatment modalities there is no surgical procedure satisfies the principal, requirement an ideal treatment.

Objective To evaluate and compare between excision with primary closure of the wound and excision with Rhomboid flap reconstruction in the treatment of pilonidal sinus as regard duration of operation, healing time, hospital stay, complications and recurrence rate.

Methods: This study was conducted in general surgery department at Mansoura university hospital during the period from April 2008 to March 2010, 140 consecutive patients were treated (131 men and 9 women) the patients were randomized into two groups: group I underwent Rhomboid flap procedure; group II underwent excision and primary closure. The post operative follow up ranged from 8 month to two years (Mean Period was 18 months).

Results: Duration of operation was shorter in group I ($P=0.69$), hospital stay was longer in group II ($P=.009$), return to work was faster in group I ($P=0.001$), postoperative complications were higher in group II ($P=0.012$) and recurrence rate was lower in group I ($P=0.14$).

Conclusion: Excision and rhomboid flap is better than excision and primary repair in treatment of pilonidal disease because it flattens the natal cleft, avoid dead space, healing time is short, morbidity is low, shorter hospital stay and low rate of recurrence.

Keywords: Pilonidal disease, natal cleft, limberg flap.

INTRODUCTION

Pilonidal disease was first described by Herbert Mayo in 1833 as a hair- containing sinus.⁽¹⁾ The name of the disease originated from Latin, meaning nest of hair.⁽²⁾

During the second world war the condition was

common in jeep drivers, which led to it being known as 'jeep disease'.⁽³⁾ Pilonidal disease (PD) is widely accepted an acquired disease based on the observation that congenital tracts do not contain hair and are lined by cuboid epithelium⁽⁴⁾ The risk factors, increasing (PD) incidence are white race, young age, familial tendency,

excessive sweating, long sitting periods, sedentary life style, obesity, male gender and Trauma to coccyx.⁽⁵⁾

Pilonidal disease may occur in other body parts such as the clefts between the fingers of barbers or hair dressers.^(2,3)

Pilonidal disease may be asymptomatic for some time prior to presentation, which may be pain, discharge or swelling discovered by the patient while washing, or the characteristic midline pits found during a routine physical examination.⁽³⁾ Symptomatic disease usually presents as an acute pilonidal abscess, a chronic pilonidal abscess or complex/ recurrent pilonidal disease.⁽⁶⁾

The surgical management of a non complicated chronic pilonidal sinus include excision with primary closure, Excision and laying open the tract, Excision with reconstructive flap techniques.^(4,7)

Skin flaps have been described to cover a sacral defect after wide excision keeps the scar off the midline and flattens the natal cleft.⁽⁸⁾

In spite of different treatment modalities there is no surgical procedure satisfies the principal requirement of an ideal treatment.^(5,9,10)

The goal of the ideal procedure for the treatment of pilonidal disease include reliable wound healing with a low rate of post operative complication and recurrence rate a short period of hospitalization minimal inconvenience and time off work for the patient.^(8,9)

The aim of our study was to evaluate and compare between excision and primary closure procedure and Rhomboid flap technique for the treatment of patients with pilonidal sinus as regard duration of operation, time of healing, hospital stay, complications and recurrence rate.

PATIENTS AND METHODS

This study was conducted in general surgery department at Mansoura university hospital during the period from April 2008 to March 2010, One hundred and forty consecutive patient who were treated for pilonidal disease were eligible for the study.

Exclusion criteria pilonidal abscess (redness, hotness, severe pain, fever, rigors etc).

Inclusion criteria were chronic intermittent discharge from the sinus, pain or swelling.

Informed consent was obtained from all patients to be included in the study, after explanation of the nature of the disease and possible treatment (whether excision and primary closure or excision and rhomboid flap), the study was approved by the local ethics committee.

All patients were subjected to thorough history taking, clinical examination, and laboratory test. Randomization was achieved through a computer-Generated schedule and the results were sealed into envelopes. The envelopes were drawn and opened by a nurse in the operating room.

The patients were then randomized into two groups: group I underwent Rhomboid flap procedure; group II underwent excision and primary closure.

All patient, are operated under spinal anesthesia (safe to the patients and avoid complication of general anesthesia) 5 patients operated under general anesthesia after failed spinal anesthesia, the patient. Were placed in prone Jack-knife position (after 5-10 minutes from injection of marcaine to determine the level of anesthesia) with two adhesive straps in each gluted region to pull them laterally to allow better visualization of the natal cleft, then shaving off the hairs around the sinus and cleaning the area with povidone Iodine.

A prophylactic antibiotic in the form of a third generation cephalosporin was administered 30 minutes before the operation and for 3 days after operation.

Group I: A rhomboid is drawn around the sinus and the flap is marked out. Excision of the sinus down to the sacral periosteum and to the gluteal fascia at its lateral margins . the Rhomboid flap is mobilized by incising the gluteal fascia and then transposed to fill the defect. suction drain was placed to prevent collection deep to the flap, the flap was stitched using deep stitches of vicryl 2/0 and the skin stitched with proline 0 .

Group II: Excision and primary closure of the wound [Removing an ellipse of skin that encompasses all pilonidal opening: all the diseased tissue was removed en bloc. Then the wound is closed by deeps sutures passed through the midline of presacral fascia using proline 1]. Suction drain was placed across the deep sutures of the wound

Meticulous homeostasis is obtained by diathermy and temporary packing with hydrogen peroxide soaked swabs.

Patients were discharged when clinically free after the operation, oral antibiotics in the form of Erythromycin and metronidazol was given.

Removal of the drain 4 – 5 days after operation.

(Figs. 1-3) show different stages in rhomboid flap technique (Pre-operative marking of the rhomboid flap on the patient (prone Jack-knife position), Intra operative excision and rhomboid flap repair with subcutaneous drain, post-operative after removal of the stitches)



Fig 1. Pre-operative marking of the rhomboid flap on the patient (prone Jack-knife position).



Fig 2. Intra-operative after excision and rhomboid flap repair with subcutaneous drain.



Fig 3. Post-operative after removal of the stitches.

Follow up:

- All patients were advised to visit outpatient clinic 12–14 days post operative for removal of stitches.
- All patients were recommended to walk freely but not to exercise until removal of stitches.
- All patients are advised to shave the area well around the operative site at least monthly.
- The post operative follow up ranged from 8 month to two years (Mean period was 18 months).

Statistical analysis: The statistical analysis of data done by using excel program and SPSS program statistical package for social science version 10.

The description of the data done in form of mean (+/-) SD for quantitative data .And Frequency & proportion for Qualitative data.

The analysis of the data was done to test statistical significant difference between groups.

For quantitative data student t-test was used to compared between two groups.

Chi square test was used for qualitative data.

N.B: P is significant if $< \text{ or } = 0.05$ at confidence interval 95%.

RESULTS

During the study 140 consecutive patients were treated (131 men and 9 women) in which 19 patients were less than 20 years,94 patients from 21 to 30 years, 22 patients from 31 to40 years and 5 patients more than 40 years .

Group I (70 patients) the mean age was 25.7 ± 6 years (range17-43 years) (67 men and 3 women).

Group II (70 patients) → The mean age 25.3 ± 5 . years (range 15-41years) (64 men and 6 women).

There is no significant difference regarding age, sex and duration of symptoms between two groups, And there is highly significant difference regarding number of opening, operative time, return to work, healing time and hospital stay. Table 1.

The most common representing symptoms were discharge then pain and indurations Table 2.

As regard complication of the studied groups, there is significant difference in the occurrence of complication($P=0.012^*$) with higher occurrence in group II especially wound infection and disruption. Table 3.

Patients in group I are more satisfied than group II (accepted cosmosis,chronic pain, numbness ...) Table 4.

Table 1. Sociodemographic data of studied groups.

	GP 1	GP 2	P
Age	25.72± 6.09	25.37± 5.30	.71
Sex	Male Female	64 91.4% 6 8.6%	.30
Duration of symp	1.43 ± 0.82	1.49± 0.90	.69 #
No of opening	2.7± 1.5	2.05± 0.83	<0.001***
Op. time	55.14± 7.8	40.7± 6.9	<0.001***
Return work	15.9± 2.3	22.6± 3.3	<0.001***
Healing time	13.9± 3.04	18.8± 3.5	<0.001***
Hospital stay	2.3± 1.4	3.5 ± 1.8	0.009**

Table 2. Representing symptoms of studied groups.

	GP 1	GP 2	P
Discharge	46 65.7%	51 72.9%	
Pain	14 20.0%	10 14.3%	0.78
Induration	4 5.7%	3 4.3%	
More than one symptoms	6 8.6%	6 8.6%	

Table 3. Complication of the studied groups.

	GP 1	GP 2	P
No complications	15 21.4%	45 64.2%	0.012*
Wound infection	2 2.9%	10 14.3%	0.01*
Collection	5 7.1%	7 10.0%	0.54
Haematoma	1 1.4%	3 4.3%	0.31
Chronic pain	3 4.3%	9 12.9%	0.07
Recurrence	2 2.9%	6 8.6%	0.14
Disruption	2 2.9%	10 14.3%	0.016*

Table 4. Patient satisfaction in studied groups.

			Group		Total
			GP I	GP II	
Satisfaction	Excellent	Count	46	23	69
		% within group	65.7%	32.9%	49.3%
	Good	Count	17	26	43
		% within group	24.3%	37.1%	30.7%
	Somewhat Satisfied	Count	5	14	19
		% within group	7.1%	20.0%	13.6%
	Unsatisfied	Count	2	7	9
		% within group	2.9%	10.0%	6.4%
Total	Count		70	70	140
	% within group		100.0%	100.0%	100.0%

DISCUSSION

A pilonidal sinus refers to a tract or cavity under the skin that contain hair. The most common areas are in the sacrococcygeal (tailbone) area and the umbilicus.⁽¹²⁾

Natal cleft is a favorable environment for sweating maceration bacterial contamination and penetration of hairs. Thus for treatment and prevention these causative factors must be eliminated.

In spite of high incidence of pilonidal disease affecting young population and the disabling period caused by it, surgeons have not reached to the best treatment for this condition.⁽¹¹⁾

The most important factor in causing post operative discomfort is wound infection and recurrence.⁽¹³⁾

The most important factor in causing recurrence is incomplete excision. Complete excision of the sinus is a most common practice but controversy on how to manage the wound after excision still remains.

Excision and primary suture might be thought to be the most effective treatment. However, tension on the suture line and the formation of a serosanguineous collection in the subcutaneous layer lead to infection and breakdown of the wound,⁽⁹⁾ with average rate around 10% for this reason other procedures have been advised to improve these results.⁽⁹⁾

In the literature the incidence of pilonidal diseases in males is much higher than in females due to coarse hair,

trauma to coccyx ...and this is achieved in our study[131 males 93.5% and 9 females 6.5%].

In our study: the duration of symptoms in both groups were nearly equal (1.43 years in group I & 1.49 years in groups II)

Operative time in group I was longer than group II (55.14 ± 7.8 minutes to 40.79 ± 6.9 minutes). this is consistent with Akca et al⁽¹⁴⁾ as they found that duration of operation was longer in rhomboid flap than primary closure (P=0.001).

Return to work in group I was earlier than in group II (15.94 ± 2.3 days to 22.66 ± 3.4 days) and this is achieved by Gilani et al⁽¹⁵⁾ who found that the mean time to return to work after primary closure was 25.5 days. while Eryilmaz et al⁽¹⁶⁾ reported the mean time to return to work after primary closure was 15 days (range,12-26).while Lieto et al⁽¹⁷⁾ found thatthe mean time to return to work was 7 days in patients with rhomboid flap.

Complete healing was faster in group I than in group II (37.92 ± 6 to 48.84 ± 6.59).(P=0.002). and this is also achieved by Eryilmaz et al and Muzi et al.⁽¹⁸⁾

In our study recurrent rate in group I was lower than in group II {(2) cases 2.9% group I. (6) cases 8.6 in group II. Muzi et al⁽¹⁸⁾ found that recurrence was observed in 3.84% versus 0% in the primary closure versus rhomboid flap group. While Lieto et al reported that recurrence was observed in 2.3% in patients with

rhomboid flap. The reported rate of recurrence of pilonidal sinus varies widely in the literature from 0% - 43%.⁽¹⁾

Disruption of the wound in group I was lower than in group II (2 cases 2.9% in group I & (10) cases 14.3% in group II). The reported rate of wound disruption in the literature is approximately 6%.⁽¹²⁾

In our study there is a significant relation between number of opening of pilonidal sinus and the operative time as there was increase in operative time with increase number of opening (p value 0.001) and also between duration of symptoms and return to work p. value 0.046).

Infection was considered as leakage of purulent secretion through the surgical wound and not only perianal hyperemia.⁽¹²⁾

In our study the rate of infection in group I was 2 cases (2.9%) & in group II was 10 cases (14.3%).

Timenez Romero et al⁽¹⁹⁾ found that the rate of infection after excision and primary closure of around 10%.

In our study we found Patient satisfaction (accepted cosmesis, chronic pain and numbness) in group I was higher than in group II and this achieved by interrogation with the patients on follow up.

In our study we found that post operative complication such as infection, non-infected collection (seroma, haematoma) and wound dehiscence were lower in group I than group II. as found by Ertan et al⁽²⁰⁾ and Jaschke et al.⁽²¹⁾

All these findings are consistent with several other studies. Muzi et al found that there is a significant difference in operative time, infection and recurrence between two groups while no significant difference was found in time to return to work and wound disruption.

In summary, the goal for treatment of pilonidal disease in 2 fold, the first is excising and healing with low rate of recurrence the second is minimizing patient inconvenience and morbidity after surgical procedure.

In conclusion the excision and rhomboid flap is better than excision and primary repair in treatment of pilonidal disease because it flattens the natal cleft avoid dead space, healing time is short, morbidity is low, shorter hospital stay and low rate of recurrence.

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