

## ASYMMETRIC EXCISION AND PRIMARY CLOSURE WITH A LATERALIZED WOUND FOR SACROCOCYGEAL PILONIDAL DISEASE IS A SIMPLE AND EFFECTIVE TREATMENT

By

Waleed Omar MD

Colorectal Surgery Unit, Mansoura University Hospital, Mansoura Faculty of Medicine, Egypt

**Aim:** this prospective study was undertaken to evaluate the results after asymmetric excision and primary closure with a lateralized wound in patients with Sacrococcygeal pilonidal sinus disease (SPSD).

**Methods:** from February 2002 to November 2004, a total number of 40 patients with SPSD (recurrent in 9 patients) were treated by asymmetric excision and primary closure with a lateralized wound in our colorectal surgery unit. They were 32 males and 8 females with a mean age 26.02 years. Patients were followed up thereafter for about 6- 31 months (mean  $20.02 \pm 6.49$ ).

**Results:** recurrence had occurred in 2(5%) patients; wound infection had occurred in 1(2.5%) patient, wound dehiscence in 2(5%) patients and subcutaneous seroma in 3 (7.5%) patients. the mean hospital stay was  $6.6 \pm 2.2$  days and complete healing was achieved in a mean period of 15.8 days

**Conclusion:** the asymmetric excision with a lateralized wound closure is simple and excellent option for treatment of primary or recurrent SPSD with a low recurrence rate, low morbidity, short hospital stay and good long-term results.

**Keywords:** pilonidal sinus; hair insertion; Karydakis operation; a symmetric excision; primary closure.

### INTRODUCTION

Sacrococcygeal pilonidal sinus disease (SPSD) is a common chronic intermittent condition. It afflicts mainly young adults after puberty especially in patients with increased sweat activity associated with buttock friction, local hirsutism and reduced personal hygiene.<sup>(1)</sup> In the past, it was believed that the condition is of congenital origin, but nowadays, most authors consider pilonidal sinus disease to be an acquired condition,<sup>(2)</sup> that hair insertion is the essential cause of the disease growing inwards into the intergluteal sulcus to the peripheral tissues so that causing foreign body reaction in these regions.<sup>(3)</sup>

The disease is still important because there is no standard treatment approved by all surgeons and because it provokes many problems depending on postoperative recurrences.<sup>(4)</sup>

The surgical principle of wound lateralization, first

described by Karydakis<sup>(5)</sup> has been applied after asymmetric and oblique elliptical skin incisions to create a thick flap and advance it across the midline.<sup>(5,6)</sup> Except for avoiding the consequence of amidline scar, the natural cleft becomes more shallow, which reduces the acute direction of sacral hairs into the natal crevasse.<sup>(5)</sup>

Inspired by the Karydakis operation, Bascom's cleft closure technique for unhealed presacral wounds emphasizes the obliteration of the deep cleft, the creation of a healthy skin-covered shallow furrow, the positioning of the suture line off the midline, and tissue tension relief between the coccyx and the skin.<sup>(7)</sup>

The aim of this study is to evaluate the results after asymmetric excision and primary closure with a lateralized wound in the treatment of chronic primary and recurrent pilonidal sinus disease.

## PATIENTS AND METHODS

From February 2002 to November 2004 a prospective study was followed. During this period 40 patients with pilonidal sinus disease were referred and treated in Colo-Rectal Surgery Unit, in Mansoura University Hospital.

They were 32 males (80%) and 8 females (20%). Their age ranged from 16-36 years (mean  $26.02 \pm 5.25$ ) they were suffering from chronic pilonidal sinus disease, which was recurrent in 9 patients (22.5%).

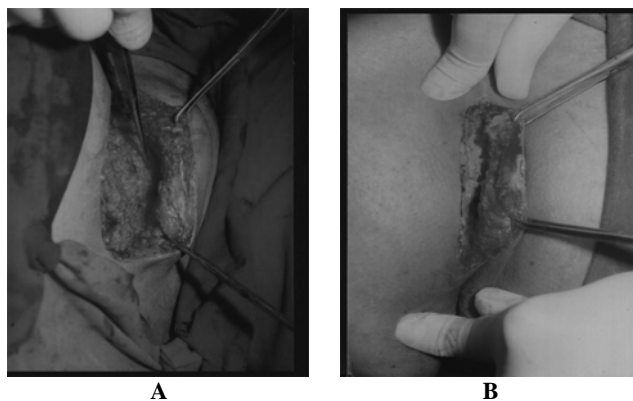
All patients were subjected to careful history taking, clinical and pre-operative routine laboratory investigations. Patients were informed about the surgical technique and all of them have agreed and signed an informed consent. Preoperative preparation was in the form of shaving the area of the sinus extended to the periphery of the thigh on both sides. Prophylactic intravenous antibiotics in the form of 1 gm third generation cephalosporin and metronidazol 500 mg were administered 2 hours before surgery and continued every 12 hours for 5 days postoperatively.

With the patients under general or spinal anesthesia and in the jack-knife position, the glutei were separated using wide adhesive tape and the affected area of the midgluteal region is exposed. Povidone iodine was injected through the openings of sinuses, so all the cavities were filled and exposed. Then asymmetric excision and primary closure as defined by Karydakis<sup>(5)</sup> was done. The procedure consists of an asymmetrical vertical biconcave (elliptical) incision; the ellipse is based on the side of any secondary opening or indurations. If the sinus is entirely central, either side may be chosen. The incision is at least 5 cm long with gentle curvature. Each end of the incision is placed 2 cm to one side of the midline (Fig. 1) The medial edge of the excision crosses the midline sufficiently to encompass the primary pit. The lateral edge of the excised ellipse must be symmetrical with the medial edge even if this means excising more skin and fat well beyond the sinus, so that the final suture line is vertical. The scalpel is inserted down to muscle and sacral fascia to remove a boat-shaped wedge of tissue including the whole sinus. Next the skin and subcutaneous fat from the medial side of the wound is then undercut and mobilized across the midline to cover the defect. The subcutaneous fat was undercut at the level of the deepest aspect of the sinus and at a plane above and parallel to the sacrococcygeal fascia and the communications between the skin and the sacrococcygeal structures should be released thus, the midline was transferred to lateral side about 1.5 - 2 cm after wound closure. (Figs. 2a,b). The dead space was tightly obliterated with interrupted 2-0 vicryl sutures in one or two layers according to the thickness of the fatty tissue with a vacuum drainage tube was inserted beneath the flap and brought out well laterally (Figs. 3a,b) The operation was completed

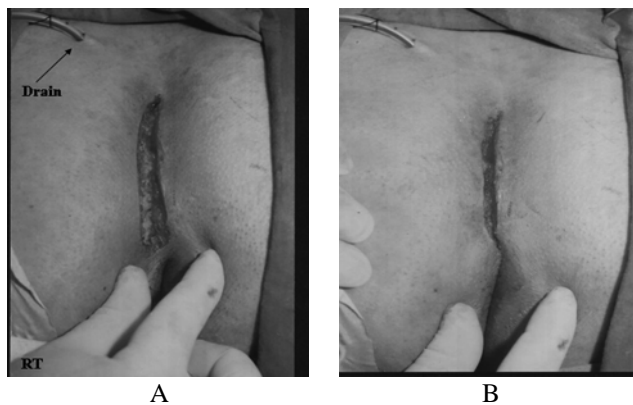
after the skin was closed with polypropylene O sutures (Fig. 4). Care should be taken to leave no suture hole, drain hole or any part of the wound in the midline.



*Fig 1. Asymmetrical vertical elliptical incision*



*Figs 2a,b. The subcutaneous fat undercut and mobilized across the midline to cover the defect.*



*Fig 3a,b. The dead space was obliterated in two layers with vacuum drainage beneath the flap,*



**Fig. 4** The mid line transferred to the lateral side after wound closure.

Patients were asked to lie in the prone position for 3 days to avoid mechanical stress to the suture line; patients were allowed to go home after 5 - 6 days after removal of the drain tubes. Sutures were removed after 10 - 12 days, and then patients were instructed to shave the area twice weekly for about one month and to be careful about their own hygiene.

Patients were followed up for about 6 - 31 months (mean:  $20.02 \pm 6.49$  months) and evaluated according to postoperative short - term complications, duration of hospital stay and long term recurrence rates.

## RESULTS

The present study included 40 patients with chronic pilonidal sinus disease. 32 of cases were male (80%) and 8 were females (20%).

Their age ranged from 16 - 36 years (mean  $26.02 \pm 5.25$  years). The average duration of symptoms from onset until time of admission was  $3.95 \pm 1.65$  years (range 1-8 years). Pain was present in 75 percent, discharge and itching was present in 55 percent and a mass or swelling in the sacrococcygeal region was in 7.5 percent of the cases.

Of the 40 patients who underwent surgical treatment, 9 (22.5%) had undergone previous operative procedures and were considered as recurrences. These data are summarized in Table 1.

**Table 1. Frequency of symptoms in our series.**

	No. of patient	%
Pain	30	75%
Discharge	22	55%
Swelling	3	7.5%
Recurrence	9	22.5%

All patients were treated in Mansoura Colorectal Surgery Unit in the period from February 2002 to November 2004 by asymmetric excision and primary closure with a lateralized wound.

The duration of operation ranged from 40 to 75 minutes with a mean ( $54.2 \pm 8.6$  minutes). Postoperative short - term complications were in the form of wound infection in one patient (2.5%), wound dehiscence in two patients (5%) limited to the superior portion of the wound and was successfully managed with normal saline wet to dry dressing application and was completely healed by granulation in a period of three weeks, and subcutaneous seroma in 3 patients (7.5%) which were treated conservatively by drainage in between sutures and regular dressing under cover of antibiotics Table 2.

**Table 2. Complications and recurrence in 40 cases.**

Complications	No. of cases	%
Wound infection	1	2.5%
Wound breakdown	2	5%
Seroma	3	7.5%
Wound numbness	2	5%
Recurrence	2	5%

Late complications were in the form of wound numbness in 2 patients (5%), and recurrence in two patients (5%), (one after 10 months in the midline and the other after 14 months as a new sinus in the new midline furrow in a hairy patient). Both were cured successfully by curettage and healed by secondary intention.

All patients except eight required no further dressings after leaving the hospital. The mean hospital stay was  $6.6 \pm 2.2$  days (range 5 - 15 days) and all patients had complete healing in a period of about 12 - 45 days (mean  $15.8 \pm 6.8$ ) Table 3.

**Table 3. Patients characteristics and results of surgical treatment.**

Patients characteristics	Results
Male / female ratio	32/8
Mean age (yr)	$26.02 \pm 5.25$
Mean history of disease (yr)	$3.95 \pm 1.65$
Mean healing time (days)	$15.8 \pm 6.8$
Mean hospital stay (days)	$6.6 \pm 2.2$

## DISCUSSION

Pilonidal sinus is a common disease of young adults. They are considered chronic inflammatory processes of the skin caused by hair, keratin plugs, and debris.<sup>(8)</sup> It is known that the incidence of pilonidal sinus varies across countries and races. This may be because of different hair characteristics in different races. The incidence is also affected by factors such as driving, personal hygiene, and obesity.<sup>(9)</sup> A major cause of pilonidal sinus is insertion of loose hair that collect in the intergluteal furrow. This tendency is aggravated in individuals with a deep cleft or a portal for hair entry in the midline.<sup>(10)</sup> Good postoperative advice is to rub the furrow daily with a rough towel after bathing to remove loose hairs, but shaving of the buttocks or use of depilatory creams will only setup irritation and is unnecessary since the cause of the sinus is mostly due to the gathered loose hairs entering by their roots, not hair growing in the buttock skin.<sup>(11,12)</sup>

Various methods are widely used as first-time operations for pilonidal disease, and recurrence rates vary from 3 to 43 percent.<sup>(13-14)</sup> The deep hirsute natal cleft is the anatomic site of minimum resistance for loose - hair insertion.<sup>(15)</sup> Surgery itself creates a midline wound that acts as an open portal of entry for hair triggering recurrence. Most operations can cure the sinus but there is a risk of recurrence, either in the short term due to failed wound healing or long term due to new sinus development.<sup>(16)</sup> Early recurrence may be due to the presence of a wound in the midline acting as a portal for hair entry, and later recurrence may occur because of a deep furrow, in which loose hair may collect.

There is no standard treatment approved by all surgeons. Some authors suggested conservative treatment methods such as phenol injection into the cyst or electro-cauterization of the cyst. These treatments seem to have acceptable recurrence and cure rates and are simple and uncomplicated techniques that can be performed in the outpatient clinic.<sup>(17-18)</sup> We have no experience with these techniques.

In surgical treatment of the disease, the primary principles are excision with primary closure, excision with open packing, marsupilization, or excision and various types of flaps (e.g. V - Y, Limberg, excision with semi open packing, Karydakis). Since the understanding of the disease has an acquired origin, methods for the wide excision of the cyst with all of tracts and sinuses followed by various types of reconstruction became more popular. These methods eradicate the etiology via flattening of intergluteal sulcus.<sup>(4-9)</sup>

Excision and primary closure performed in uncomplicated and uninfected cases is found to be followed by

postoperative wound infection and recurrence in 14% and 20% respectively.<sup>(9-19-20)</sup> Also, excision and open packing technique is associated with long - term requirement for dressing and loss of productive power and the main complication is bleeding and the recurrence that reaches 4%.<sup>(1-20)</sup>

The principle of wound lateralization, first described by Karydakis<sup>(10)</sup> creates a thick flap that is advanced across the midline so reducing the depth of the cleft, makes all parts of the wound and suture holes away from the midline.<sup>(11-14)</sup> Karydakis reported the largest study in the literature, with recurrence of less than 1 percent.<sup>(5-10)</sup>

In other studies that used the asymmetrical excision and primary closure, the recurrence rate was also less than that of other surgical procedures.<sup>(19-21)</sup>

In our series, while evaluating the use of asymmetric excision and primary closure with a lateralized wound, we found that the complication rate was low. Mean hospital stay was  $6.6 \pm 2.2$  days and complete healing was achieved over a mean period of 15.8 days. In other series treated by Karydakis flap, V - Y plasty, and Limberg rhomboid flap, the mean hospital stay was 4, 5 and 4.2 days respectively.<sup>(19,4,22)</sup>

In our study, morbidity was in the form of wound infection in one patient, and wound dehiscence in two patients who were successfully managed with repeated dressings under cover of antibiotics. Subcutaneous seroma had occurred in 3 patients who were treated conservatively by drainage in between sutures with regular dressing under antibiotic cover according to culture and sensitivity.

The recurrence rate in the present study was 5% over the follow up period from 6-31 months is nearly similar with that reported in the literature. Kitchen<sup>(19)</sup> reported a recurrence rate of 4% in patients treated with Karydakis flap, and Roth and Moorman<sup>(23)</sup> reported a recurrence rate of 8.33% in 12 cases treated with W-flap with follow up period of 36 months.

In conclusion, the asymmetric excision with a lateralized wound closure seems to be an easy and excellent option for the treatment of primary or recurrent pilonidal sinus disease with a low complication and recurrence rates, as well as its good long term results.

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