

ORIGINAL ARTICLE

TAILORING GLUTEAL FLAPS IN MANAGEMENT OF COMPLICATED AND RECURRENT SACROCOCCEGEAL PILONIDAL DISEASE

By

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Aim: Although various modalities have been described for treatment of pilonidal sinus, no consensus has emerged. In this study, we will analyze the results of cases of complicated and recurrent pilonidal sinuses managed using wide excision and primary eccentric closure with adipo-fascio-cutaneous flaps.

Methods: 38 patients (29 males and 9 females) with recurrent (15 patients) and complicated (23 patients) pilonidal sinuses were treated by asymmetric triangular (scabbard like) excision and primary eccentric closure with gluteal adipo-fascio-cutaneous advancement flaps. They were followed up in the early postoperative period and thereafter for about 9- 28 months.

Results: Wound infection occurred in 1 patient, wound dehiscence in 2 patients, seroma and repeated aspiration in 6 patients, no flap ischemia and no incidence of recurrence. Permanent hyposthesia in 3 patients. The mean hospital stay was 5.7 ± 3.4 days and complete healing was achieved in a mean period of 14.4 ± 5.4 days

Conclusion: Triangular excision and eccentric closure with gluteal adipo-fascio-cutaneous advancement flap is a good option for treatment of recurrent and complicated sacrococcegeal pilonidal disease with low morbidity, short hospital stay, no recurrence and good long-term results.

Keywords: pilonidal sinus, adipo-facial flaps, natal cleft.

INTRODUCTION

Sacrococcygeal pilonidal sinus disease is a common chronic intermittent condition afflicting mainly young adults after puberty especially in patients with increased sweat activity associated with buttock friction.⁽¹⁾ 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,⁽²⁾ 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.⁽³⁾

Factors implicated in its etiology are; large buttocks with deep natal cleft,⁽⁴⁾ adolescents or young males with positive family history,⁽⁵⁾ occupations requiring prolonged sitting, traveling or driving,⁽⁶⁾ excessive body hair,⁽⁷⁾ folliculitis⁽⁵⁾ and bad local hygiene.⁽⁸⁾

Surgical management of pilonidal sinus is characterized by a high incidence of early wound complications and late recurrence, the results are operator dependant.⁽⁹⁾ Factors implicated in recurrence include inadequate excision,⁽¹⁰⁾ presence of dead space,⁽¹¹⁾ deep midline gluteal clefts,⁽⁴⁾ poor personal hygiene,⁽¹⁰⁾ midline scar,^(12,13) early wound complications,⁽¹⁴⁾ excessive tension⁽¹¹⁾ and obesity.⁽¹⁵⁾

To achieve lasting cure, management must aim to completely excise the sinus and its ramifications,^(10,12) prevent potential wound complications that can predispose to recurrence,⁽¹⁴⁾ create an eccentric suture line,^(12,13) partially obliterate natal clefts using various flaps,⁽⁴⁾ improve local hygiene^(4,10) and prevent hair regrowth in the vicinity of suture line.⁽⁴⁾ The lowest recurrence rates have been reported for procedures involving local flap reconstruction.⁽¹⁶⁾

Complicated pilonidal sinus with lateral accessory sinus tracts and openings and recurrent cases mandate the adoption of local flaps. In this study, we will analyze the results of cases of complicated and recurrent pilonidal sinuses managed using wide triangular excision and primary eccentric closure with adipo-fascio-cutaneous flaps.

PATIENTS AND METHODS

Thirty-eight patients with recurrent and complicated (with lateral accessory openings and ramifications) sacrococcegeal pilonidal sinuses were treated in General Surgery Department (Colorectal Surgery Unit), Mansoura University Hospital, from September 2002 to March 2005.

The patients were subjected for careful history taking (including previous operative technique), clinical and pre-operative routine laboratory investigations. Sinogram was done for patients with multiple openings. Patients were informed about the surgical technique and possible complications.

Preoperative preparation was in the form of shaving the gluteal region including the area of the sinus. Preoperative prophylactic antibiotics in the form of 1 gm third generation cephalosporin was administered intravenously 2 hours before surgery and continued every 12 hours for 5 days postoperatively.

After signing an informed consent, the patients were anaesthetized (general or spinal) and turned in the jack-knife position. For better exposure, the glutei were separated using wide adhesive tape and the affected area of the mid gluteal region is exposed (Figs. 1a, 5a). Povidone iodine was injected through the openings of sinuses, so all the cavities and ramifications were filled.

Asymmetric triangular excision and primary closure was done. The procedure consists of a scabbard-like incision including all the openings and ramifications and old scars (Figs. 1b, 5b). The base of the incision is directed upward and to the side where the flap will be mobilized towards it. The other two limbs of the incision are curved (biconcave) and meet each other lateral to the midline in the side where the flap will be moved to or from it.

The medial limb of the triangle crosses the midline sufficiently to encompass all pits. Attempts should be made to make the lateral limb of the excised triangle symmetrical with the medial limb to prevent disproportion between both limbs during wound closure. The incision is deepened down to muscle and sacral fascia to remove a scabbard-like wedge of tissue including the whole sinus.

From the medial end of the base of the incision, a curvilinear incision is made on the contralateral gluteal skin to create a gluteal skin flap (Figs 2b, 6a), the incision is deepened down to gluteus maximus muscle. The larger the defect left after removal of the sinus, the longer will be the curvilinear incision to create a larger flap. Adipo-fascio-cutaneous rotational flap is created by dissecting the skin, fat and fascia from the muscle along the whole length of the incision to ensure good mobility of the flap to abolish any tension on suture line (Fig. 6b). The flap is mobilized where the medial end of the base of the original incision meet the lateral end and both limbs meet each other (Figs. 3a, 7a). The deep fascia is approximated by polygalactin 2/0 stitches after inserting an 18 F suction drain in the surgically created dead space (Figs. 3b, 7b). A triangular part of skin is removed from the lateral end of the upper limb of the curvilinear incision to prevent formation of dog-ear (Figs. 3a, 7b). Skin is then closed using polypropylene 2/0 mattress sutures (Figs. 4a, 8a) and pressure dressings applied. Suction drains were removed when 24 hours drainage became 20 cc or less. On discharge, the patients were instructed to avoid prolonged sitting and riding for 6 weeks to prevent wound disruption.

In the early postoperative period, the patients were followed up for daily drainage, incidence of flap ischemia, infection or wound dehiscence, duration of wound healing and hospital stay. After removal of sutures (average on 12th postoperative day), regular removal of hairs and improvement of local hygiene was encouraged (Figs. 4b, 8b).

The patients were followed up thereafter for about 9 - 28 (mean: 19.6 ± 4.9 months) months and evaluated for local morbidity, cosmetic outcome and recurrence.

Statistical methods: Findings were calculated as numbers, simple percentages and mean \pm standard deviation.

RESULTS

Thirty-eight patients were included in this study. Their age ranged from 19 - 43 years (with mean age of 28.3 ± 6.5 years). They were 29 males (76.3%) and 9 females (23.7%). Fifteen patients (39.5%) had previous operations for pilonidal sinus (recurrent) and 23 patients (60.5%) had complicated pilonidal diseases (with side branches and laterally sited openings of previous drainage or spontaneous rupture) Table 1.

Operative time ranged from 50 - 90 minutes with mean time of 60 ± 15 min, hospital stay postoperatively ranged from 4 to 10 days (5.7 ± 3.4). Operative wounds healed in a period ranging from 10 to 42 days (14.4 ± 5.4). Drains were

removed when the daily amount became 20 cc or less, this was achieved in a period ranging from 9 to 17 days (11.2 ± 2.5). Postoperatively, the patients regained their normal activities after 15 to 48 days (18 ± 5.2) Table 2.

Postoperatively, hematoma (1 patient), wound infection⁽¹⁾

and dehiscence⁽²⁾ were observed. Seromas formed after removal of drains with repeated aspiration in 6 patients, there was no flap ischemia. Hypoesthesia occurred in all patients which became permanent in only 3 patients. No recorded recurrence. Table 3.

Table 1. Clinical characters of studied patients (n = 38).

Mean age	28.3 ± 6.5 years
Male / female ratio	29 / 9 (3.2 : 1)
Recurrent cases (n = 15 - 39.5%)	
Excision and lay open	8 (21%)
Excision & primary midline closure	5 (13.2%)
Asymmetric excision & lateralization	2 (5.3%)
Complicated cases: (n = 23 - 60.5%)	
• Abscess drainage	13 (34.2%)
• Spontaneous rupture	10 (26.3%)

Table 2. Operative and postoperative results (n = 38).

Parameters	Mean ± SD
Operation time (min)	50 ± 15
Hospital stay (days)	5.7 ± 3.4
Healing time (days)	14.4 ± 5.4
Drainage period (days)	11.2 ± 2.5
Resuming normal life (days)	18 ± 5.2

Table 3. Postoperative early and late complications in studied patients (n = 38).

Complications	No	%
Hematoma	1	2.6
Wound infection	1	2.6
Wound dehiscence	2	5.3
Seroma & repeated aspiration	6	15.8
Flap ischemia	0	0
Permanent hyposthesia	3	7.9
Recurrence	0	0
Seroma & repeated aspiration	6	15.8
Flap ischemia	0	0
Permanent hyposthesia	3	7.9
Recurrence	0	0



Fig 1a. Complex sinus.



Fig 1b. Triangular excision (scubbered like).



Fig 2a. Complete excision.



Fig 2b. Designation of skin flap.



Fig 3a. Mobilization of flap and removal of excess skin preventing dog ear.



Fig 3b. Closure of deep fascia with polygalactin.



Fig 4a. Closure of skin.



Fig 4b. Three months after operation.



Fig 5a. Recurrent sinus.



Fig 5b. Triangular excision (scubbered like).



Fig 6a. Complete excision and Designation of skin flap.



Fig 6b. Elevation of skin flap.



Fig 7a. Mobilization of flap.



Fig 7b. Closure of deep fascia and skin.

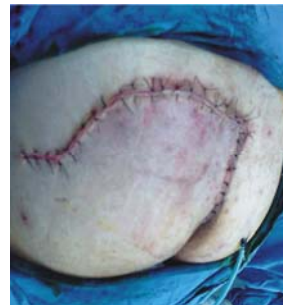


Fig 8a. Closure of skin.



Fig 8b. Six months after operation.

DISCUSSION

Sacrococcygeal pilonidal sinus is a chronic inflammatory processes of the skin of the natal cleft caused by hair, keratin plugs, and debris.⁽¹⁷⁾ The incidence varies across countries and races which may be because of different hair characteristics in different races.⁽¹⁸⁾ Treatment options vary from observation to wide excision. Unfortunately, surgical treatment often results in recurrence. The etiologic agent remains in question, as does the optimal treatment.⁽¹⁹⁾ After first-time operations for pilonidal disease, recurrence rates vary from 3 to 43%.^(20,21)

Surgical excision can cure the sinus. The key to complete excision includes: staining of all the sinuses and their tracts, complete excision of all midline sinuses and pits to the presacral fascia, including surrounding indurated and granulation tissue up to the normal soft and supple tissue, and irrigation of the cavity and tracts with hydrogen peroxide or povidone iodine solution for removal of any hair or foreign bodies.⁽¹²⁾ However, there is a risk of recurrence, either in the short term due to failed wound healing or long term due to new sinus development.⁽²²⁾

On lateralization of the wound after sinus excision, recurrence was less than 1%.⁽¹³⁾ On using Limberg flap, recurrence was 4%.⁽²³⁾ So, excision followed by various types of reconstruction became more popular as these methods eradicate the aetiology via flattening of intergluteal sulcus.⁽²⁴⁾

In our study, male / female ratio was higher than reported,⁽²⁵⁾ this is because of excessive body hair in males than females. Recurrent cases represented 39.5% of all patients, the lowest number of recurrence was after lateralization, this means that designation of flaps lowered recurrence rate.

Simple drainage is the most common treatment of pilonidal abscess, but later definitive surgery is often necessary,⁽²⁶⁾ this is true as 59.5% of our patients had previous abscess which was drained or ruptured spontaneously. The operative time was accepted in comparison to other methods,⁽²⁷⁾ duration of hospital stay was also accepted in relation to others.^(23,28) Duration of healing and consequently drainage period were also accepted. Resumption of normal daily activities and return to work was similar to other surgical methods.⁽²⁹⁾

Post-operative morbidity was in the form of hematoma formation which was treated conservatively, wound infection in one patient (treated by drainage under antibiotic cover according to culture and sensitivity). Wound dehiscence occurred in two patients who were successfully managed with repeated dressings under cover of antibiotics. Seromas collected under the flap after

removal of suction drains in 6 patients (15,8%) and treated by repeated aspiration. There was no flap ischemia. These complications are accepted as reported in literatures.^(25,27-29)

Temporary hypoesthesia was detected in all patients which was transient in most of the patients but 3 patients (7.9%) expressed permanent hypoesthesia which was not distressing for the patients.

The patients were followed up for 9 - 28 (mean: 19.6 ± 4.9 months) months. Through the follow up period, there was no recurrence. Our results are much better than reported in literatures, one of these reported recurrence rate of (7.3%).⁽²⁵⁾ With Karydakis flap, recurrence rate was 4%,⁽¹³⁾ with Limberg flap and follow-up period of 20 months recurrence was 4%,⁽²³⁾ with oblique excision and primary closure, the recurrence rate was 5.6% after 18 months.⁽²⁸⁾

Singh et al,⁽⁹⁾ advised the use of lateral advancement flap as it improved their results and it was suitable for small, medium and large wounds so as in our rotational flap where any defect whatever its size can be covered by designing the flap according to the size of the resulting defect after excision. Our results confirm the statement "Excision and rotation skin flaps offers an effective and elegant alternative to the more classic operations for pilonidal sinus as it causes less postoperative pain and shortens convalescence".⁽²⁵⁾

As shown, this flap meets all requirements and principles of excision and primary closure and simplifies decision making since it can be used regardless of the site of the sinus or the size of the wound. It is technically easy with accepted surgical time and gives good cosmetic results without any early or delayed recurrence.

In conclusion, rotational adipo-fascio-cutaneous gluteal flap is an optimal option for coverage of the defects left after excision of pilonidal sinus. This method is particularly useful for complex sinuses with extended tracts where radical excision leaves a large defect. It is also suitable for cases where simpler operations have failed. Its routine use in these cases, hence, is recommended.

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