RECURRENT SACROCOCCYGEAL PILONIDAL SINUS TREATMENT BY RHOMBOID EXCISION WITH LIMBERG FLAP VS LAY OPEN METHOD

Gamal Osman
General Surgery Department, Zagazig University, Cairo, Egypt.

ABSTRACT

Background: Pilonidal disease presents multiple difficulties to surgeons throughout the world. Its different clinical presentations need a wide range of treatments, thus the need to tailor choices of the treatment to the patient and the severity of disease. Aim: We compare the outcome of open excision method and secondary healing with rhomboid excision and Limberg flap in the treatment of recurrent sacroccocygeal pilonidal sinus disease. We mean pilonidal sinus that occurs in the cleavage between the buttocks (natal cleft). Patients and methods: A prospective, analytical, comparative study using randomized controlled trial (RCT) was conducted at Zagazig University Hospital, from June 2014 to June 2015. In total 50 recurrent pilonidal sinus patients, who either underwent open excision and secondary healing (group A: 25 patients) or rhomboid excision and Limberg flap (group B: 25 patients), were enrolled in the study. Duration of operation, postoperative discomfort, duration of hospital stay, postoperative sequelae, and time to recurrence were noted. Results: The duration of operation was longer in group B patients (p=0.004) but pain perception was markedly reduced in this group (p=0.003). The recurrence rate was also significantly lower in patients who underwent Limberg rotation flap (p=0.005). Conclusion: Limberg flap has advantage over simple excision and secondary healing in the management of SPD. Key words: pilonidal sinus, recurrence, flap, Excision, secondary healing, lay open

INTRODUCTION

Pilonidal disease is known back as far as 1833, when Mayo described a hair-containing cyst located just below the coccyx. Hodge coined the term "pilonidal" from its Latin origins in 1880, and today, pilonidal disease describes a wide of clinical presentations, ranging from asymptomatic hair-containing cysts and sinuses to large symptomatic abscesses of the sacrococcygeal region that have some tendency to recur [2-4].

Sacrococcygeal pilonidal sinus disease (SPD) is a condition that usually affects young, healthy and hairy males. It is an important health issue because it hinders work. Multiple subcutaneous sinuses or abscesses containing hair characterize the disease [7].

Current theory favors the acquired etiology. Continuous friction generated in the depths of natal clefts, tend to drive the hair shafts subcutaneously, initiating a foreign body reaction. This is superadded by secondary infection with abscesses that erupt spontaneously forming multiple discharging sinuses [16].

Pilonidal sinus is one of the famous illness encountered in general surgical practices and the management of this disease is variable, contentious and problematic. Principles of treatment require eradication of the sinus tract; complete healing and prevention of recurrence [11].

The management of this intractable and disabling condition is quite challenging due to infections, delayed wound healing and high rates of recurrence [5-7].

The optimal surgical method should be simple, associated with less hospital stay and low recurrence rates. A number of surgical options are available. The simplest are incision and drainage, laying open, open excision, excision and primary closure [2-8].

The more complex ones include Bascom's, Kardaykis and rhomboid excision with Limberg flap. Simple excision techniques are associated with high morbidity and recurrence due to presence of natal cleft [2-7].

Different studies have reported recurrence rates of 0-5%. These high recurrence rates are due to a persistence natal cleft in the midline, which provides a portal for hair entry. Once the hair are inside, the vicious circle of abscess formation and discharging sinuses begins [1-3].

The recurrence is usually due to remaining tract during the initial operation, infection of the wound, or abscess formation, that may lead to formation of a new sinus tract inside the cicatrizing wound. Accumulation of dead tissue or debris in the inter-gluteal cleft, sweating, friction, or poor hygiene are predisposing factors for recurrence [10-16].

In addition, placing the suture line on the midline with considerable tension on the line and failure to lessen the depth of the natal cleft are also important contributors for recurrence.
Last, poor wound care with lack of depilation around the wound also contributes to recurrent disease for patients with lay open [13, 15].

All of these complex techniques are aimed to prevent recurrence by reducing the presence of natal cleft by placing the suture line away from inter-gluteal sulcus, hence are associated with early wound healing and low recurrence rates [2-9].

The experience with rhomboid excision and Limberg transposition flap versus open excision and secondary healing in the treatment of primary and recurrent SPD is presented.

**PATIENTS AND METHODS**

This study was conducted simultaneously at Zagazig University Hospital, from June 2014 to June 2015. In total 50 of recurrent pilonidal disease patients, who either underwent open excision and secondary healing (group A: 25 patients) or rhomboid excision and Limberg flap (group B: 25 patients). It was a prospective, analytical, comparative study using randomized controlled trial (RCT). Blocked randomization was used for allocation of patients in 2 groups (A and B).

**Inclusion criteria:**

1. Patients with recurrent SPD, apart from the previous method.
2. Patients fit for surgery with all organs functions within acceptable ranges.
3. All patients who are mentally oriented and consented for joining this research study.

The exclusion criteria were: cases with incomplete patients' data and patients who were lost to follow-up.

An informed consent was taken and patients were counseled about the merits and demerits of both the procedures. Duration of operation, postoperative pain, duration of hospital stay, postoperative complications, and time to recurrence were noted.

**Operative Procedure**

All the patients were operated under spinal anaesthesia. Once anaesthetized, patients were placed in Jack-knife position with hips strapped apart. The operative area was shaved. Skin was prepared and draped. Methylene blue mixed with hydrogen peroxide was injected in the sinus tract. Patients in group A underwent excision of ellipse of skin incorporating all the diseased tissue.

Once haemostasis was secured, the cavity was packed with wick soaked in antiseptic solution mixed with hydrogen peroxide. Postoperatively, the dressing was changed daily after washing the wound with normal saline. Patients were discharged immediately in the postoperative day and called on alternate days for change of wound dressing, till complete epithelialization of the wound. They were then followed at 1-3 months interval for at least 18 months.

In group B patients, a skin marker was used to define the proposed flap and the area of the skin to be excised. Rhomboid excision of the tissue was done incorporating the whole sinus tract and extending deep into pre-sacral fascia. The Limberg flap was then rotated (transposed) from the gluteal fascia to the area excised. Subcutaneous tissue was not sutured. Skin was closed by skin staples. One suction drain were placed beneath the flap. Patients were discharged immediately in the postoperative day and called on alternate days for change of dressing.

Drain was removed after discharge dropped to less than 30 ml per day. Skin sutures were removed on 10th post-operative day.

Patients were advised to maintain good hygiene. The follow-up schedule included a monthly follow up for 3 months and a quarterly follow-up for at least 18 months.

**Statistical analysis:**

Data were analyzed using Excel and SPSS (Statistical Package for Social Science, Bristol University, UK) version 16 under Microsoft Windows. The description of data was in the form of mean ± SD for quantitative data and frequency and proportion for qualitative data.

The analysis of data was carried out to test the statistically significant difference between groups. The Student t-test was used to compare quantitative data (mean ± SD) between two groups. P values less than 0.05 were considered significant. OD was considered if Wexner score was more than 5. Significant improvement in OD or FI was considered as a reduction in Wexner or Pescatori score of at least 25%.

Operative time was defined as the time between the placements of incision to the last suture applied. Severity of pain was defined using verbal rating scale (VRS). Return to the normal routine was considered as the period of first day of admission to hospital until the patient resumed work.
Table (1): results

<table>
<thead>
<tr>
<th></th>
<th>Group A</th>
<th>Group B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of patients</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>Age (mean ± SD) in years</td>
<td>26.84 ± 6.128</td>
<td>26.04 ± 4.016</td>
</tr>
<tr>
<td>Mean operative time in minutes (mean ± SD)</td>
<td>35 ± 6.128</td>
<td>60 ± 4.016</td>
</tr>
<tr>
<td>Mean time for complete healing in days (mean ± SD)</td>
<td>120.08 ± 31.59</td>
<td>20.13 ± 8.99</td>
</tr>
<tr>
<td>Wound infection</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>Recurrence</td>
<td>4</td>
<td>1</td>
</tr>
</tbody>
</table>
RESULTS

Group A consisted of 25 patients, 24 males and one female. Mean age was 26.84±6.128 years (range 18-40). In group B (25 patients), females were three and 22 were males with a mean age of 26.04±4.016 years (range 19-37). Although the mean operative time was longer in Group B patients (35 minutes vs 60 minutes), the severity of pain on VRS score was significantly reduced in this group (p = 0.003).

The mean time for complete healing of wound after rhomboid excision and Limberg flap was 20.13±8.99 days (range 15-60 days). This was markedly increased in patients who underwent simple excision (mean 120.08±31.59 days, and range 60-180). Morbidity developed in 2 patients in group B (wound infection, 1; flap oedema, 1) and in 7 patients of group A (wound infection, 5; seroma, 1 and wound dehiscence, 1, p =0.196). The average period of follow up was 18 months (12-24 months). During this period, 4 patients in group A reported recurrence, whereas in group B only one patient came back with recurrence.

Fig. (1): Operative techniques of both methods.
DISCUSSION

With the uncertainty as to the aetiology and the complexities often encountered in its treatment, a pilonidal sinus has been considered as a complex disease. Wide varieties of approaches are employed in dealing with this ailment ranging from a conservative treatment to an extensive surgical excision or repair [10, 15].

High chance of cure with minimum discomfort along with low complication rates of wound infection and recurrence is the main aim behind the treatment of pilonidal sinus. Surgery should also avoid prolonged hospital stay and incapacity to resume work for a longer period [3, 4].

Surgical treatment options of pilonidal disease includes open excision, excision with primary closure, just lay open, and excision and flap closure. Open excision technique requires greater wound dressing care and more hospital stay. Wound dehiscence is another complication, observed due to premature closing of skin edges in a premature wound. Bascom in 1980 reported that pilonidal abscess never begins on a convex surface and reducing the depth of concave fold is associated with high chances of permanent cure [2-7].

Hence, with all the controversies about best surgical technique for the treatment of pilonidal sinus, an ideal operation should be simple, should make less hospital stay, should not be incapacitating for a long period and should have a low recurrence rate. The Limberg flap is one of the transposition flap used after the excision of pilonidal sinus. It has proven efficacy in the management of both primary and recurrent disease. Quick healing time, less hospital stay, early convalescence, low complication and recurrence rate are the important advantages of the Limberg flap procedure [7].

A recognized problem associated with flap construction is early development of seroma and haematoma formation. This predisposes to wound infection and flap giving away. To prevent this, insertion of suction drainage has been used by many centers. However, a study published by Erdem et al, suggested no considerable difference in complication rates between two groups who underwent Limberg flap rotation with or without suction drainage [9].

Different series have reported wound infection rates of 1.5 -7%. In our study, it was 8% with Limberg flap (group B) whereas in those patients who underwent open excision (group A) it was increased to 28% .

In our series the patient perceived less pain after Limberg procedure (group B) because the skin cover was provided at the place of excision whereas it was more when the wound was left open for secondary healing (group A). We also observed that the total duration of hospital stay was shorter in patients who underwent Limberg flap technique as compared to those in group A; Urhan et al, Bozkurt & Tezel had reported a mean hospital stay of 3.71 days and 4.11 days respectively [3-5]. This is similar to what we have observed in our study. In contrast to that, patients who underwent simple excision of the sinus tract had to stay for a longer time in hospital due to presence of an open wound.

In our study, all patients with rhomboid flaps had complete sound wounds by 10 days. Patients with simple excision technique had to away from their work/routine for a longer period as the wound takes more time to heal by secondary intention. From this observation, one can infer that due to less hospital stay and early wound healing, a patient will have a shorter period of illness.

If the disease recurs, it commonly presents in first 2-3 years. In our study the recurrence rate observed was 4% with Limberg flap which is similar to Katsoulis20 et al, but more as compared to reported by Mentes et al (3.1%) & Akin et al (2.91%)[1,8].

CONCLUSION

We advise the rhomboid flap for treatment of recurrent sacrococcygeal pilonidal sinus due to its low rates of recurrence and comparatively few complications is preferable over simple excision and secondary healing in the management of recurrent sacrococcygeal pilonidal sinus. We confirms that rhomboid flap transposition is an effective procedure.
REFERENCES


