



RHOMBOID FLAP FOR PILONIDAL SINUS

General Surgery

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ABSTRACT

Pilonidal sinus is a chronic disease of the sacrococcygeal region. Treatment varies according to the clinical presentation of the disease. Although many surgical methods have been suggested, an ideal method is still lacking because of high recurrence rates. Recurrent disease causes significant morbidity, particularly missing time from work. The aim of this study was to assess the rhomboid flap's role in promoting primary healing in recurrent pilonidal disease and to evaluate morbidity and recurrence.

MATERIALS AND METHOD: This prospective study included 23 patients who were treated with the use of a rhomboid flap closure for recurrent pilonidal sinus at GMERS Hospital Sola, from June 2017 to May 2018.

RESULTS: There were 16 males and 7 females. The mean hospital stay was 8 days (range = 6-11 days).

CONCLUSIONS: Rhomboid flap for pilonidal sinus is suitable for cases where simpler operations have failed. It allows early return to full activity, does not necessitate prolonged postoperative care, and has very low recurrence and complications rates which may outweigh the disadvantages related to an unfavourable cosmetic appearance.

KEYWORDS

INTRODUCTION:

Pilonidal sinus is a chronic disease that mostly affects young adults.¹ This pathology was first described in 1833, and its denomination arises from the Latin terms "pilus" and "nidus" meaning "a nest of hair." Its incidence varies from 10 to 26 per 100,000 population.^{2,3} Pilonidal disease can be considered an acquired disease, even though the etiopathology is still not well defined. Pilonidal disease represents several forms of a single abnormality. Pilonidal disease may consist of nothing more than asymptomatic midline skin pits overlying the sacrococcygeal area. At the other extreme, the disease may be a large complex abscess associated with sepsis. In between these extremes are sinuses which occasionally cause discomfort and erythema, or sinuses which periodically drain and then return to an asymptomatic state. Some etiologic factors, such as hirsutism, deep natal cleft, obesity, local trauma, familial predisposition, smoking, and sedentary lifestyle have been suggested.^{4,5} In our part of country it is common in jeep drivers so also called as "Jeeps Disease". These epidermal rests can mature, grow and lead to symptoms. In the acquired scenario, after the onset of puberty, sex hormones act on the pilosebaceous glands causing the hair follicles to become distended with keratin. As a result, a folliculitis is created which produces edema and follicle occlusion. The infected follicle ruptures and extends into the subcutaneous tissue. This results in a sinus tract that leads to a deep subcutaneous cavity. By friction or movement of the buttocks with standing or sitting, the distal ends of loose hair from around the perineum may enter these sinuses. The sinuses can then become infected by skin organisms and begin to suppurate, leading to an abscess. Staphylococci and streptococci are the most common organisms found in the culture of infected abscesses. The incidence of pilonidal disease is approximately 0.7% in the general population. The condition most commonly affects post-pubertal young adults, with males affected two to four times more frequently than females. The onset of the disease occurs earlier in women, which may be due to an earlier onset of puberty. Other factors affecting the incidence are: increased sweating associated with sitting and buttock friction, poor personal hygiene, obesity, and local trauma. Interestingly, barbers and animal groomers have a higher incidence of the disease than other occupations.

Surgery is the main treatment, and up to 40% of patients develop recurrence. The management of patients with recurrent disease has led to the development of different surgical approaches. There is no agreement on any optimal surgical technique that would minimize the recurrence rate, and controversies are still common.^{6,7} The surgical treatments of primary pilonidal sinus include a wide spectrum of techniques that vary from sinus excision with secondary healing of the surgical wound or marsupialization, to the use of flap reconstruction.⁷ Primary closure is preferred in patients with pathology limited to the

midline and for whom residual defect after excision is narrow: Karydakos or Bascom procedure can be used. When the residual defect is anticipated to be wide, excision with secondary healing of the wound or flap reconstructions are preferred.³ The management of the patient with recurrent disease may require a more complex surgical approach as the excision may be wider or the initial surgery may have led to the loss of the intergluteal tissue.^{8,9}

MATERIALS AND METHOD:

23 patients operated on between June 2017 to May 2018 were enrolled in this study. 21 of these patients had a history of previous operations elsewhere. The demographic information analysed included patient age, sex, familial history of the disease, operation performed for the recurrent disease, and duration of follow-up. The patients selected for the study were contacted by telephone and then called back for clinical evaluation. Patients were asked about pilonidal sinus-related factors including postoperative wound care, duration between operation and recurrence, number of previous operations, type of previous operations, and operation type performed for the last episode of the disease. All the operations were performed in the same centre, by 2 experienced surgeons.

All patients were operated on under spinal anaesthesia, in prone position after taking written and informed consent. First incision is marked with the help of ruler and marker (sterile). Incision is kept and diseased portion is removed and flap is taken to cover raw area and sutured with negative suction in place with non-absorbable suture (polyamide black or polypropylene).

RESULTS:

Out of 23 patients 16 (69.56%) were male, and 7 (30.43%) were female. The mean age was 32.5 years. 19 (82.6%) patients had a familial history of pilonidal disease. In 21 patients, etiology-related risk factors (hirsute body habitus, deep natal cleft, obesity, local trauma, familial history, sedentary lifestyle, smoking) were present. Nine (39.13%) patients had previously been operated on several times before being admitted to our institution. All the patient underwent excision and Rhomboid flap surgery. Post-operatively patients were given antibiotics and analgesics. Dressing was done on day 3 and 5. Drain was removed on day 3. Sutures were removed on days 7-12 (depending on healing). Patients were discharged after suture removal and followed up for 6 months.

DISCUSSION:

Although pilonidal sinus cannot be considered a debilitating disease, patients are confronted with discomfort and low quality of life owing to complications such as abscess formation or sinus-related drainage

or pain.^{10,11} The recurrence is most often due to the omission of any 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 intergluteal cleft, sweating, friction, or poor hygiene are predisposing factors for recurrence.¹² 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

A variety of surgical techniques have been described in the literature for treatment of the primary pilonidal sinus. The treatment methods can basically be divided into 2 groups, including open and close methods: in the open method, the residual cavity is left open after sinus excision. Lay open is one of the open methods that has also been described and consists of opening the skin covering the sinus and curettage of the residual cavity. This provides a narrower cavity and minimizes tissue loss.¹⁴ Close methods consist of closure of the wound after sinus excision. In this group, the surgical techniques differ according to the type of the wound closure. The cavity can be managed by a midline closure, an off-midline closure, or a flap reconstruction.

The open surgical technique is simple to perform. Its recurrence rate is low, but it requires a longer time for wound healing and postoperative wound care. Daily painful wound care and the slow process of secondary healing are the main disadvantages of open techniques; namely, lay open.

Lee *et al*¹⁵ recommended primary closure be used in the treatment of the primary disease, but that recurrences should be treated by flap reconstruction. Lieto *et al*¹⁶ used sinus excision with flap reconstruction technique in a study on 55 patients with recurrent disease, and only one patient (1.8%) developed recurrence. This patient was then successfully treated with the open technique. Better cosmetic results were reported in patients with the primary or secondary disease treated by rhomboid excision with Limberg-Dufourmental flap reconstruction. Authors report that obesity is an important predisposing factor of recurrence. One crucial point stressed for preventing postoperative recurrence is flattening of the natal cleft and moving the suture line laterally from the midline. Setting out from this idea, Karydakos and Bascom techniques were developed.^{16,17} Majeski *et al*¹⁸ treated 127 patients with Bascom technique and reported recurrent disease in 3 patients at 1-year follow-up or sooner. Furthermore, they treated those 3 patients again with Bascom technique successfully and had an excellent cure rate with sutures away from midline. Using the same principle, modified Limberg flapping enables tension-free closure, leaving the inferior edge of the incision lateral to the midline. In the prospective study of Mahdy *et al*, excision and flap reconstruction and excision and primary-closure techniques were compared. According to the authors, flap reconstruction was found superior to the primary closure by means of patient comfort and wound healing. Among the flapping techniques, Limberg flapping was found to produce the best results.¹³ Onder *et al*¹⁹ used the Limberg flap and primary-closure method in 144 patients in their prospective study. Postoperative complication rates were higher in the flap-closure group than in the primary-closure method, but recurrence rates were lower. In this present study, sinus excision with flap reconstruction was performed in 11 patients, while the open technique after excision was performed in 30 patients. The recurrence rate for flap reconstruction was 9% (1 patient) and 10% (3 patients) for the open technique. Personal hygiene, periodic epilation, and daily wound care are the keystones for preventing recurrence especially for the patients in the secondary healing group. Thus, proper patient education both in the preoperative and immediate postoperative period is crucial. Close follow-up of the wound is advised and should be carried out in the same center to facilitate wound evaluation and, ultimately, lower the recurrence rates.

Some etiologic factors, such as hirsute body habitus, obesity, local trauma, familial predisposition, smoking, and sedentary lifestyle, have been suggested as predisposing in the development of the primary disease.^{4,24} Predisposing factors are of great importance in the formation of pilonidal sinus disease, which is known to be an acquired disease. These factors also play an important role for recurrent disease. Deep natal cleft, sweating, presence of free hair, and poor hygiene, with the help of the vacuum created by the hip movements, contribute to the formation of new hair cores in the scar tissue. Etiology-related

risk factors (hirsute body habitus, obesity, local trauma, familial history, sedentary lifestyle, and smoking) were found in 22 patients for this present study.

Further comparative studies are needed with larger series of patients.

CONCLUSIONS:

Rhomboid flap for pilonidal sinus is suitable for cases where simpler operations have failed. It allows early return to full activity, does not necessitate prolonged postoperative care, and has very low recurrence and complications rates which may outweigh the disadvantages related to an unfavourable cosmetic appearance.

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