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Review Article

Pilonidal sinus disease with especial reference to Limberg flap

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ARTICLE INFO

Article history:

Received 30 June 2015

Accepted 28 July 2015

Available online 24 August 2015

Keywords:

Pilonidal sinus

Jeep disease

Limberg flap

Epidemiology

Bacterial contamination

ABSTRACT

This article lays an emphasis on “Pilonidal Sinus disease” along with the historical background, materials, and methods used. The term 'Pilonidal' was coined by Hodge in 1880. The disease commonly affects middle-aged working population and most often arises in the hair follicles of the natal cleft of the sacrococcygeal area. This disease affects males thrice as much as females because of their hirsute nature. Pilonidal sinus is associated with obesity, sedentary occupation, and local irritation or trauma. The management of pilonidal disease is complex and a big burden on hospital and community resource because of the recurrent nature of the disease. Various surgical methods have been practiced to treat sacrococcygeal pilonidal sinus disease. Each method is associated with different postoperative complications, morbidity, and recurrence rates for each of the procedures.

The most simple approach for pilonidal disease is simple incision. It is effective for simple, superficial, small, and mostly midline tracts. Excision is a simple technique used for chronic and recurrent pilonidal sinuses. Rhomboid Limberg flap reconstruction plastic surgery procedure was done after proper preoperative assessment and preparation in all cases.

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1. Background

First historical description of pilonidal disease dates back to 1833 by Herbert Mayo as a hair containing sinus¹ but the term 'Pilonidal' was coined by Hodge in 1880.² The disease is a very common problem affecting middle-aged working population, and it most often arises in the hair follicles of the natal cleft of the sacrococcygeal area. Incidence of pilonidal sinus is about

26 cases per 100,000, affecting males thrice as much as females. Men are thought to be at higher risk because of their hirsute nature. Pilonidal sinus is also associated with obesity (37%), sedentary occupation (44%), and local irritation or trauma (34%).³ It may manifest as pilonidal cyst, sinus, or abscess, and inflammation may lead to rapid progression of the disease. During the Second World War, pilonidal disease very commonly appeared in jeep drivers, so called as “jeep disease”.⁴

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<http://dx.doi.org/10.1016/j.apme.2015.07.013>

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Pilonidal disease can appear as an acute abscess along with sinus tract formation. There have been a lot of debate on whether pilonidal disease is congenital or acquired, but now it is beyond doubt that it is an acquired condition.^{5,6} A more complex manifestation usually after episode of inflammation can be characterized by chronic or recurrent abscesses with extensive branching sinus tracts. The commonest presentation for which a patient seeks medical advice is in the form of an acute abscess characterized by the existence of a midline pit in the natal cleft typically identified 4–8 cm from the anus. A deep natal cleft serves favorable atmosphere for bacterial colonization due to anaerobic environment, sweating, hair in growth, close proximity to bacteria leading to contamination. This primary tract leads into a subcutaneous cavity, which contains granulation tissue and usually a nest of hairs that are present in two thirds of cases in men and in one third of those in women and may be seen projecting from the skin opening. Many patients have secondary lateral openings 2–5 cm above the midline pit. The skin opening and the superficial portion of the tract are lined with squamous cell epithelium, but the deep cavity and its extensions are not. Maximum number of cases of pilonidal sinus are present in postsacral area, but it may be seen in other regions such as interdigital, axillary, umbilical, peri-anal, para-anal, intra-anal, and cervical region.^{7,8}

The management of pilonidal disease is complex and a big burden on hospital and community resource because of the recurrent nature of the disease.^{9,10} Treatment and prevention are successful, if causative factors such as deep natal cleft and presence of hair are taken care or minimized to prevent sweating, maceration, bacterial contamination, and penetration of hairs.^{11,12} Proper decision making is based on the type of presentation and treatment modality that range from antibiotics, shaving, simple incision and drainage, phenol application, cryosurgery, excision with primary closure, excision with open packing, and excision with marsupialization to a wide excision with reconstructive surgical procedures.^{13–16}

There is no clinical consensus on the optimal management of the pilonidal sinus but low recurrence, low morbidity, acceptable cosmesis, insignificant tissue loss, and minimal economic loss should be the goal in management. Our experiences are mostly with reconstructive procedure of Limberg flap in 180 patients of pilonidal disease from year 2004 to 2014.

2. Materials and methods

Retrospective data analysis of 180 patients during 2004–2014 was done. Detailed demographics, epidemiology, and clinical presentations were analyzed. Only cases with surgical interventions were considered for study. Conservative management by antibiotics and drainage of pus was carried out in abscess, and these patients were later subjected to rhomboid excision Limberg flap reconstruction.

Age, sex, duration, co-morbidity, presentation, number of openings, number of surgical interventions in past, treatment, duration of hospital stay, complications, and follow-up were recorded and analyzed (Table 1).

Table 1 – Demographics of pilonidal disease (n = 180).

Total, n, %	180 (100%)
Male, n, %	126 (70%)
Female, n, %	54 (54%)
Age, years	Mean 24.2 (15–65)
BMI	Mean 22.3 (17.1–30.5)
Comorbidity (Diabetes, Immuno compromised, Renal failure), n, %	42 (23.3%)
Recurrent disease, n, %	36 (20%)
Previous infection or abscess, n, %	171 (95%)
Single tract, n, %	153 (85%)
Multiple tracts, n, %	27 (15%)
Hospital stay	Mean, 3.2 days (1–9 days)
Follow-up	Mean 38.4 months (6 months to 60 months)
Recurrence, n, %	6 (3.3%)

3. Results

In 180 patients, males were 126 (70%), and females were 54 (30%). Mean age of presentation was 24.2 years (15–65 years) with mean BMI of 22.3 kg/m² (17.1–30.5). Co-morbidity was present in 42 patients (23.3%) in the form diabetes, renal failure, and immunocompromised patient. Recurrent disease with history of past surgical intervention was noticed in 36 patients (20%). Most significant finding was history of previous infection or abscess in 171 patients (95%). Single tract was in 153 patients (85%) and multiple tract in 27 (15%). All patients underwent surgical intervention by Limberg flap reconstruction. Mean hospital stay was 3.2 days (1–9 days) and mean follow-up of 38.4 months (6–60 months). Recurrence was noticed in only 6 cases (3.3%). Outcome and follow-up in pilonidal disease treated by Limberg Flap is shown in Table 2.

Surgical excision and rhomboid Limberg flap reconstruction plastic surgery procedure (Figs. 1–4) were done after proper preoperative assessment and preparation in all cases. First and foremost measure was control of inflammation and infection in all cases with antibiotics and drainage with incision and debridement. Anatomical mapping with fistulogram preoperatively in all cases was done to plan reconstructive procedures. Fistulogram delineated the number of tract, depth of cavity and lateral extension leading to proper planning of extent of rhomboid flap excision for curative intent. Hairs over the region were shaved preoperatively in all cases. Spinal anesthesia was used in 171 cases (95%) and local anesthesia in 9 cases (5%). Position was jackknife prone in all

Table 2 – Outcome and follow up in pilonidal disease (n = 180).

Seroma	2 (1.1%)
Hematoma	6 (3.3%)
Wound dehiscence	8 (4.4%)
Flap necrosis	1 (0.5%)
Wound infection	4 (2.2%)
Residual pain and heaviness	9 (5%)
Recurrence	6 (3.3%)
Hypoesthesia	8 (4.4%)

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