

Pilonidal Sinus-A Novel Approach to the Management -A Single Unit Experience

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Abstract: Pilonidal cyst, sinus or abscess commonly occurs in the natal cleft often containing hair and skin debris. Proposed cause of pilonidal cysts is ingrown hair, excessive sitting is thought to predispose the condition. Attempted repairs involve high chance of wound failures and recurrence. This disease causes lots of morbidity because of prolonged wound healing time and its related failure. Ten cases were operated in a single surgical unit using an innovative approach. Limberg flap reconstruction technique was found superior to other traditional techniques.

Keywords: Pilonidal, Sinus, Limberg, Flap, Reconstruction

I. Introduction

Pilonidal cyst, sinus or abscess commonly occurs in the natal cleft often containing hair and skin debris. Pilonidal means "nest of hair", and is derived from the Latin words for hair ("pilus") and nest ("nidus"). The term was used by Herbert Mayo as early as 1830. R.M. Hodges was the first to use the phrase "pilonidal cyst" to describe the condition in 1880. Pilonidal cysts are often very painful, affect men more frequently than women, and typically occur between the ages of 16 and 40. Although usually found near the coccyx, the condition can also affect the navel, finger web spaces (Barber's disease), armpit or penis, though these locations are much rare.^[1]

Though exact pathophysiology is not clear, one proposed cause of pilonidal cysts is ingrown hair. Excessive sitting is thought to predispose the condition because it increases pressure on the coccyx region. Pressure and friction damage hair follicles which uproots the hair and broken hair pushes in to the skin. Hair causes irritation and inflammation, causing infection and abscess formation which later on bursts and results in sinus formation. The condition was widespread in the United States Army during World War II popularly known as "Jeep Bottom Disease". Prolonged rides in the bumpy vehicles were believed to have caused the condition due to irritation and pressure on the coccyx.^[2]

Risk factors for Pilonidal Sinus Disease are male gender, age group 16-40, hairy back, overweight/obesity, deep natal cleft and profession involving prolonged sitting or driving. Presenting complaints can be discharge, pain, infection or recurrent abscess formation.^[3,4]

For treatment, various noninvasive^[5] and surgical methods (simple incision and drainage, lying open, marsupialization, excision and primary closure, or rhomboid excision) have been performed. Traditional method of excision and laying the wound open to granulate with daily dressing caused great inconvenience to patient till the wound healed which took 8-10 weeks creating a poor quality of life. The other method of primary closure had higher rates of Sepsis and wound breakdown midline scar is the most susceptible to the recurrence and poor wound healing. Among flap reconstruction techniques by Z-plasty (Karydakis flap reconstruction) and Limberg flap reconstruction techniques, later has been found to have better post-operative results in terms of uptake, cosmesis or complication rates.^[6-8]

The possible Post-operative complications are seroma, infection, necrosis at tip of flap, wound gaping or recurrence. The cause of recurrence are thought to be due to an unrecognized sinus at the time of initial excision; repeated infections of the scar, causing abscess; or an inter-gluteal cleft anatomy that promotes the accumulation of perspiration, friction, and tendency for hair to grow into the scar.

Patients And Method

This series includes 10 patients (8 male and 2 female) who were treated electively in a single Surgical Unit with the use of an innovative approach of rhomboid excision and Limberg flap primary reconstruction at Tata Main Hospital, Jamshedpur between January 2014 and January 2015. The protocol of this study has been approved by the relevant ethical committee related to our institution in which it was performed. All subjects gave full informed consent to participate in this study. All patients had Pilonidal Sinus diseases refractory to non-invasive management including two recurrent cases. Patient's history pertaining to onset and presenting symptom with their duration was noted; any co-morbid illness was mentioned. Patients were examined in respect to their BMI, size of the wound and number of sinuses.

All patients were admitted to hospital the day before surgery and operated under regional or general anesthesia. Patients who had pilonidal abscess were first managed by incision and drainage they later underwent definitive surgery after 8 weeks. The natal cleft was shaved the day before surgery. The patients were placed in prone jack-knife position on the operating table with the legs slightly abducted and the buttocks strapped apart by adhesive tapes.

After painting the anus is excluded from the operative field by surgical drapes, the pathological area to be excised is mapped on the skin. The sinus is enclosed in a rhombus with long axis in midline; the sinus is excised with the rhombus up to pre-sacral fascia. The horizontal axis is extended laterally for a distance equal to one side of rhombus and inferiorly at an angle equal to small angle of rhombus. The flap is raised up to gluteal fascia, so as to raise thick fasciocutaneous flap which assures good vascularity of the flap without dead space. Meticulous haemostasis was maintained by means of electrocautery. The flaps is transposed medially and sutured in two layers without tension; a vacuum suction drain is left behind.

Drains were kept for 3rd to 5th post-operative day; Skin sutures were removed on 12th to 14th post-operative. Post-operatively 1 gram of third generation cephalosporin was given I/V twice daily for 2 days and then oral broad spectrum for another 3-5 days. Patient was advised to avoid pressure on the operated site by prolonged sitting for 15 days post-operatively, reduce weight to a BMI level less than 25 and Hair removal by either shaving or hair removal creams for at least 2 months post-operatively. Early post-operative data of operative time, day of removal of stitches, day of removal of drain was noted; also average hospital stay and time to resume normal moderate activity including employment and leisure activities was calculated.

Patients were monitored in post-operative period for seroma, infection, necrosis of flap tip or gaping. They were followed up for a period of 2 weeks and 2 years to look for recurrence.



Fig 1: Preoperative Pilonidal Sinus Complex

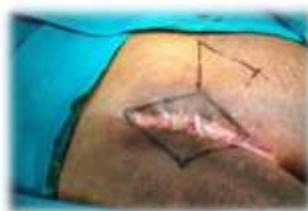


Fig 2: On table surgical site marking

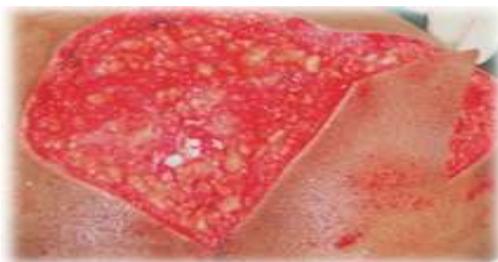


Fig 3: Excision of Pilonidal Sinus through rhomboid incision



Fig 4: Transposition of Limberg flap



Fig 5: After Vacuum drain placement and Suturing of sub-cutaneous tissue by vicryl

II. Results

Ten patients were operated by rhomboid excision and Limberg flap reconstruction during the period between January 2014 and January 2015. Among them there were 8 males (80%) and 2 females (20%). The mean age of presentation was 22 years old (range 16–34 years old). Two patients presented with recurrent sinus (20%). Six patients (60%) presented with discharge, three presented with pain, one with infection and one with pilonidal abscess (Table 1). The operative time ranged from 60 to 100 minutes. Hospital stay ranged from 72 to 120 hours. The stitches were removed after 12–14 days (Table 2). Seroma developed in two patients, which was managed by conservative measures. One of those patients developed mild infection which was treated with antibiotics. One patient developed necrosis at the tip of the flap which was managed with meticulous dressing and secondary suturing of skin. None of the patients developed recurrent lesion till now in their follow-up period postoperatively (Table 3). The time off-work ranged from 12 to 22 days. The time to walk without pain ranged from 7 to 12 days.

Table 1 : Clinical Presentation

Complaint	Number	Percentage
Discharge	6	60%
Pain	3	30%
Infection	1	10%
Abscess	1	10%

Table 2 : Post-operative data

Post-op Outcomes	Range	Mean
Operative Time	60-100 mins	84mins
Hospital Stay	72-120 hrs	90 hrs
Drain Removal	72-120 hrs	90 hrs
Stich removal	12-14 days	12.6 days
Time to resume activities	12-22 days	16 days
Time to walk without pain	7-12 days	9 days

Table 3 : Post-operative Complications

Complication	Number	Percentage
Seroma	2	20 %
Infection	1(included in seroma)	--
Necrosis & Gaping	1	10 %
Recurrence	Nil	Nil
Total	3	30%

III. Discussion

Patients with recurrent pilonidal disease or complex unhealed pilonidal wounds present a challenge to the surgeon. Tissue loss from the previous attempts at excision further complicates the surgical management and limits options. The most difficult complication after surgery with excision and lying open is persistently unhealed midline wound which causes poor quality of life. Recurrence is the main problem associated with all surgeries described which ranged between 21.4% and 100% for incision and drainage, 5.5%–33% for excision with open packing, 8% for marsupialisation, 3.3%–11% for Z-plasty (Karydakias flap technique).^[9, 10]

The goal of the ideal procedure for the treatment of this disease include reliable wound healing with a low risk of recurrence , a short period of hospitalization , minimal inconvenience to the patient, and low morbidity with few wound-management problems. Treatment should allow the patient to resume normal daily activities as quickly as possible.^[11]

In 1946, Limberg first described a technique for closing a 60° rhombus-shaped defect with a transposition flap. It meets the entire requirement for being the ideal procedure for sacrococcygeal pilonidal sinus if performed according to appropriate surgical principles. The novel technique developed to prevent recurrence and for recurrent unhealed wounds involves a flap procedure to achieve primary closure and to obliterate the deep natal cleft. This relocates hair follicles away from the midline and prevents the frictional forces associated with principal etiological factors for the development of pilonidal disease. The advantages of Limberg flap reconstruction are:

- ✓ Flattens the natal cleft with a large well-vascularised pedicle that can be sutured without tension.
- ✓ Midline dead space and scar is avoided.
- ✓ Useful in complex sinuses with multiple pits where radical excision leaves large defect.
- ✓ Easy to perform, learn and design.
- ✓ Useful in recurrent pilonidal disease.
- ✓ Reduces hospital stay and time to resume normal activities.

Study	Total Number of patients	Mean Hospital stay days	Complications rate %	Recurrence %
Katsoulis et al. ^[12]	25	4.0	16	-
Akin et al. ^[3]	411	3.2	15.75	2.91
Urhan et al. ^[13]	102	3.7	7	4.9
Mentes et al. ^[14]	238	2-3	2	1.26
Aslam et al. ^[4]	110	3.0	5	1
El-khadrawy ^[15]	40	5-11	40	10
Jethwani U et al. ^[16]	67	2-3	11.94	1.49
Current Study	10	3.75	30	Nil

Several studies have been reported till date and our results are also comparable with them in terms of hospital stay, complication and recurrence rate.

IV. Conclusion

Limberg flap is very effective for pilonidal disease with low complication rates, short hospitalization, low recurrence rates, earlier healing and shorter time off-work. The surgery can be mastered easily. The results of this study favor rhomboid excision and Limberg flap reconstruction for pilonidal disease.

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