Excision With Layered Primary Closure In The Surgical Treatment of Sacrococcygeal Pilonidal Cyst Disease

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Abstract

Background: There are various surgical treatments in the surgeon’s armamentarium for treating pilonidal sinus disease. We present the results of an easy to perform surgical technique which fulfills all the goals of the operative treatment of the disease.

Methods: This is a prospective, single surgeon, single institution, case series which includes a group of 76 patients. All patients were suffering from sacrococcygeal pilonidal cyst disease. They underwent en bloc excision of the lesion and the wound was closed meticulously in multiple layers so no residual cavity was left behind.

Results: Full primary healing was achieved in 75 patients. The mean hospital stay was 2.68 days with minor pain and inconvenience. Follow up was 48 months and one recurrence occurred in one patient who failed to follow the postoperative instructions.

Conclusions: Meticulous, layered, suture closure is a promising, easy to perform technique which achieves the goals of treatment of pilonidal disease.

KEYWORDS: Pilonidal Disease, Sacrococcygeal, Sinus, Surgical Excision
Introduction

Sacrococcygeal or intergluteal pilonidal sinus disease is a common condition affecting young adults. The incidence rate of the disease is 26 cases per 100,000 people (1). Males are affected 2.2-4 times more often than females (2). The first case in the medical literature was presented by Mayo in 1833 (3). Warren proposed the incarcerated hair growth as the causative agent (4). Currently, it is established that the factors contributing to the development of pilonidal sinus are poor hygiene of the area, local trauma, hirsuteness, and presence of deep natal cleft (5).

Many operative and conservative treatment options have been suggested. The ideal treatment criteria should include low recurrence rate, short hospital stay, low cost, minimum time off work and minimum patient inconvenience. Also, treatment should also address the predisposing factors for pilonidal disease, such as correction of the depth of the natal cleft and removal of the hair follicles of the region. The main cause of failure and recurrence is the persistence of a deep natal cleft which predisposes to hair follicle entry which begins the vicious cycle of abscess formation (6).

The experience of surgical excision of the pilonidal sinus lesion and layered closure of the wound in order to achieve primary healing is presented.

Patients and methods

The aim was to conduct a prospective single surgeon, single center study of pilonidal cyst excision and primary layered closure. A total of 84 patients with diagnosis of pilonidal sinus disease were treated between December 2005 and December 2010 at the Athens Medical. Patients with acute pilonidal abscess were excluded. Eight patients were excluded from the study, due to multiple recurrences. Therefore seventy six patients met the inclusion criteria. All patients were above 18 years old. Data collected from the patients included age, sex, direction of the pilonidal sinus, operative time from the incision to the last suture placed, in hospital length of stay in days, postoperative pain,(in the numeric pain scale 0 was the number for no pain and 10 for the worst imaginable pain), type of medication administered, early and late complications, complete wound healing time, recurrences, and hospital cost according to the diagnosis related group (DRG) of the Hellenic ministry of health. The median follow up period was forty eight (48) months. An informed consent was taken and each patient was counseled about the benefits and the demerits of the procedure.
Technique

All patients were operated under general anesthesia. At the time of introduction of anesthesia antibiotic prophylaxis of cefoxitin 750 mg and metronidazole 500 mg was administered intravenously. After intubation the patient was placed in the prone jack-knife position (Figure 1). The skin in the operative field was shaved and prepared. The extent of the pilonidal sinuses was investigated by probing. An elliptical skin excision including all the orifices of the pilonidal sinuses was performed. The skin with the subcutaneous fat was excised en bloc up to the lower sacrococcygeal fascia (Figure 2). Meticulous hemostasis was achieved with diathermy cauterization and the wound was soaked multiple times with eau oxygenee (hydrogen peroxide) and povidone iodine 10%. The wound was closed by meticulous suturing in multiple layers using absorbable polyglactin sutures 2/0. The deepest layer included the sacrococcygeal fascia and part of the deeper layer of the subcutaneous fat tissue. The remaining part of the subcutaneous fat tissue was approximated in two to three layers. The skin was approximated with 3/0 nylon vertical mattress suture to ensure eversion of the wound and minimal wound tension. No residual cavity was left behind (Figure 3).

The patients postoperatively returned to the inpatient ward and received intravenous antibiotics of metronidazole 500 mg 3 times daily and cefuroxime 750 mg 3 times daily. They were advised to stay in the prone or left/right side position. They remained in the hospital for two to three days with restricted movements and daily wound dressing changes. One-half of the skin sutures were removed after 1 week and the remaining sutures were removed on the 15th postoperative day. After discharge from the hospital, the patients were instructed to maintain the movement restrictions, to keep good hygiene of the area, and to eradicate hair follicles around the wound. All patients preferred to use hair removing gel to keep the area hair free.

Results

A total of 76 patients were included in the study. The average age was 27 years (18-50 years). There were 59 (77.6%) male patients. In 70 patients, the sinus tracts were directing cephalad and in the remaining 6, caudally. The number and the extent of the sinus tracts did not influence the ability to perform the closed excision of the pilonidal disease. The mean operative time was 44 minutes (range 35-50 minutes). All patients postoperatively presented minor pain which was controlled by non-opioid medication. Fifty five patients (72%) reported pain scale score 2, 14 patients (18.5%) pain scale score 3, and 7 patients (9.5%) pain scale score 4. Patients with pain scale score 2 and 3 received paracetamol (acetaminophen) 500 mg iv while in patients with pain scale 4 lornoxicam 8 mg iv was added. After their discharge from the hospital
all patients used sparsely 500 mg paracetamol p.o. for three to four days never exceeding two tablets daily. The mean hospital stay period was 2.68 days (2-3 days). Fifty-two (86%) patients stayed for two days and twenty four (14%) patients stayed for three days. The last group included patients with larger skin defect after excision of the lesion and required longer hospitalization for antibiotic treatment and wound observation. Two patients (2.6%) presented minor wound dehiscence due to infection and were successfully treated conservatively. During the follow up period, one patient reported recurrence due to failure to follow the post-operative instructions, giving a total recurrence ratio of 1/76(1.3%). The hospital cost according to Hellenic DRG was 736 Euros for each patient.

Discussion

Pilonidal sinus is a blind epithelial tract with opening or orifices at the skin of the natal cleft which contains hair (7). It was first reported in 1833 by Mayo (3). The etiology and the pathogenesis of the disease is still a matter of debate. Initially it was considered having a congenital origin (8). The disease gained wide recognition during the Second World War, where in three years period, 78,924 soldiers were treated in army hospitals. It was called the “Jeep’s disease”. Due to the large number of cases during this period, many articles appeared in the medical literature proposing various surgical techniques and hypothesis about the pathogenesis of the disease (9).

The present view is that the pilonidal sinus is caused as a result of folliculitis in the natal cleft which produces edema and follicle occlusion. The infected follicle forms a pilonidal abscess which results in a sinus tract that leads to a deep subcutaneous cavity having the direction of the growth of the hair follicle. When the abscess ruptures, it drains to the skin surface and the sinus tract becomes an epithelized tube. Friction and movement of the buttocks whenever the patient stands or sits causes loose hairs to drill and be sucked into the sinus tract stimulating a foreign body reaction and infection (10).

Factors predisposing to pilonidal disease are hirsuteness, poor hygiene and humidity of the region, and a deep and narrow intergluteal cleft causing buttock friction and local trauma. The treatment of the disease should aim to remove all these factors. The patient should cooperate and keep an area of 20cmx20cm free of excessive hairiness either by laser treatment or by hair removing gel repeating the application every 10-14 days, as well as improve the hygiene of the area and keep it dry. Ideal surgery should remove all the sinus tract with reliable wound healing, short period of hospitalization, minimum pain and need for wound care for the patient, with low morbidity and low recurrence risk (10).
The technique of excision of the sinus tract and closure of the wound in meticulous way so that no cavity is left behind and the skin approximated in the middle line has the advantage of eradicating the lesion and flattening the natal cleft. It differs from the classic method where whole thickness sutures are used in the sense that in our technique the wound edges are approximated in layers of sutures until a perfect no cavity closure is achieved. The skin edges are approximated in a way to prevent skin inversion. The classical closing method has the disadvantage of micro-organism migration through the whole thickness stitches into the deep area of the wound causing infection and high risk of recurrence. Our technique is simple to perform with no need for extended flap transposition as the Limberg flap (11) or the Karydakis technique (12) and has excellent aesthetic results. Healing with secondary intention has the advantage of short hospital stay probably in an outpatient basis but requires prolonged period of healing (60-180 days) and necessity for supervised wound care with delayed return to work (13-14). The intra hospital stay, the post-operative pain and discomfort as well as the complication rate (2.6%) is comparable with the results of other complex surgical methods in the medical literature. It is cost effective since the DRG cost is 736 Euros while more complex techniques or techniques which require sophisticated equipment such as laser or radiofrequency ablation (RF) the DRG cost is 1436 Euros. The recurrence rate is 1.3% which is quite acceptable since the range of recurrence in the literature varies between 1%-5%. (13,14,15,16)

In the post-operative period, exercising and sitting down on the wound should be minimized for 15 days. The patient returns to his/her everyday activity slowly according to the nature of working activity and uses inflatable O-ring for twenty days so that the fresh wound stays on air and pressure is not applied to the area. After this period all patients returned to their normal working activities. The return to work period is quite compatible with the results of complex procedures in the medical literature which range from 15 to 60 days and better than the simple open technique (60-180 days). The hair removal is a vital factor and should be continued for at least six months.

Conclusions

The technique of meticulous layered wound closure for healing at first intention after the excision of pilonidal sinus disease is safe, easy to perform technique which achieves the goals of flattening the natal cleft and eradicate the disease giving similar results to those seen in more complicated surgical techniques.

References

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Figure 1. Pilonidal sinus disease
**Figure 2.** The lesion is excised up to the sacroccygeal fascia.
Figure 3. Final result; the lesion is excised and the natal cleft is flattened