

## Management of Umbilical Pilonidal Sinus: Complete Umbilical Excision and Immediate Reconstruction

Sherif Abdel Halim MD, MRCS, Hanna Habib MD, Hossam Elsadek MD

Department of General Surgery, Ain Shams University, Cairo, Egypt

### ABSTRACT

**Background** Pilonidal sinus is a chronic inflammatory disease which is characterized by a granulomatous reaction to fragments of hair shaft penetrating epidermis from the cutaneous surface. This disease is well known in medical literature and has been described by Mayo in 1833 as a hair-containing cyst located just below the coccyx. **Aim** this study is a prospective study to evaluate a surgical technique for management of umbilical pilonidal sinus after failure of conservative management. **Patients and Methods** 25 patients with umbilical pilonidal sinus participated in this study. Conservative management for 8 weeks was applied for all patients. Surgery was done if conservative management failed. Surgical complications, patient satisfaction and recurrence rate were evaluated. **Results:** 8 patients were treated conservatively, 17 patients underwent surgical management after failure of conservative management. Minor surgical complications (seroma, hypraemia) occurred in 4 patients (23.5%). Major surgical complications (severe infection, flap necrosis) occurred in 3 patients (17.6%). 11 Patients (64.7%) showed complete satisfaction after surgical treatment. No recurrence occurred after 6 months follow up. **Conclusion** surgical management of umbilical pilonidal sinus by the described surgical technique resulted in accepted satisfaction among patients with no recurrence in 6 months of follow up.

**Key words** umbilical pilonidal sinus, umbilical excision, umbilical discharge.

### INTRODUCTION

Pilonidal sinus is a chronic inflammatory disease which is characterized by a granulomatous reaction to fragments of hair shaft penetrating epidermis from the cutaneous surface.<sup>(1)</sup> This disease is well known in medical literature and has been described by Mayo in 1833 as a hair-containing cyst located just below the coccyx.<sup>(2)</sup> However pilonidal disease of umbilicus is rare and Patey and Williams were the first to describe the umbilical pilonidal disease in 1956.<sup>(3)</sup>

Although it is a minor surgical condition, it is associated with considerable morbidity, and has a significant social impact on the affected individuals. It may be encountered less frequently in other parts of the body such as web spaces of the hands, axilla, perineum, supra-pubic region, sole of the foot, amputation stump.<sup>(4,5)</sup>

Male sex, young age, heavy hirsutism, deep navel and poor personal hygiene are the most common predisposing factors.<sup>(1)</sup> Patients with umbilical pilonidal sinus usually present with pain, and bloody or purulent discharge from the umbilicus. Local tenderness and redness appear

infrequently and may indicate abscess formation.<sup>(6,7)</sup>

In medical literature, treatment of umbilical pilonidal disease ranges from conservative non-surgical treatment to a more aggressive approach such as total excision of the umbilicus followed by delayed reconstruction.<sup>(3)</sup>

### MATERIAL AND METHOD

During a period of 3 years from January 2015 till December 2017, 25 patients were diagnosed with umbilical pilonidal sinus in the general surgery department in Demerdash Hospital and Ain Shams Specialized Hospital. All patients suffered from umbilical offensive seropurulent and/or bloody discharge. Other complaints include umbilical pain, swelling, redness and itching. There were no associated gastrointestinal, urinary or genital symptoms. The diagnosis of umbilical pilonidal sinus was confirmed by the former symptoms and by performing CT imaging for all patients.

The CT imaging was performed to ensure no intra-abdominal extension to exclude other causes of umbilical sinus as urachus anomalies and intestinal fistula. Also the CT imaging excluded

other umbilical pathologies as hernias, endometriosis and tumors. Any patient with previous abdominal surgery or umbilical pathology was excluded from the study.

Conservative management was initially followed for all patients for 8 weeks in the form of personal hygiene counseling, umbilical curettage, epilation of umbilical hair and shaving of surrounding area and short courses of antibiotics in selected cases with acute inflammation. This management continued for at least 3 months. Success is judged by complete disappearance of the discharge. Abscess drainage was needed in four patients during the conservative period.

Patients with failure of conservative management underwent total umbilical excision with immediate reconstruction with the technique described below.

### **Surgical technique**

The patients were admitted the day before operation, and all received pre-operative intravenous antibiotics (ceftriaxone 1gm) 30 minutes before the start of the operation. All operations were performed under general anesthesia.

The patient is prepared and draped in supine position. A transverse elliptical incision is made around the umbilicus with two central projection flaps from the upper and lower edges. Care should be taken during fashioning of the flaps so that ratio between length and base of the flap doesn't exceed 1:1 to avoid flap necrosis.(fig 1)

The incision is deepened to cut the dermis, and the subcutaneous tissue is dissected to reach the linea alba along the full length of the incision in a conical shape. Probing of the sinus is performed to ensure its depth.(fig.2)

Excision of the whole specimen including the umbilicus and the skin incision is done with excision of part of the linea alba if involved by the sinus. Lay open the sinus is done to ensure its complete excision.(fig.3)

Start closure of the fascia if opened by polypropylene stitches. Hang three vicryl 4.0 stitches between the edges of the two flaps and the fascia in the floor of the wound without tying them.(fig.5) In case of thick abdominal wall insert a suction drain.

Now start closure of the deep fatty layers of the abdominal wall using 3.0 vicryl stitches then tie the flap stitches to fashion the new umbilicus.

(fig.6) Skin is closed by interrupted polypropylene 4.0 stitches and wound is covered with moderate compression. All specimens were sent for histopathology.

Post-operative patient received another dose of I.V. antibiotic (1 gm ceftriaxone) associated with analgesics using diclofenac potassium. Patients were discharged on the same day if no drain or on the next day after drain is removed. The out-patient medications included 1gm amoxicillin clavulonic acid twice per day for one week and analgesics.

Wounds were exposed after three days and an outpatient visit was scheduled for each patient after 10 days. Follow up schedule included a visit 10 days, 1 month, 3 months, and 6 months later. The sutures removed 10 days postoperatively.

The main aims of the follow up visits were to diagnose any wound complication (seroma, infection, bleeding, non-healing or flap necrosis) and to assess patient satisfaction using a verbal scale (dissatisfied, acceptable, and satisfied).



**Fig. (1):** Fashioned incision with central projection flaps



**Fig. (2):** Deepening the wound till the linea alba with probing



**Fig. (3):** Defect in the linea alba after sinus excision



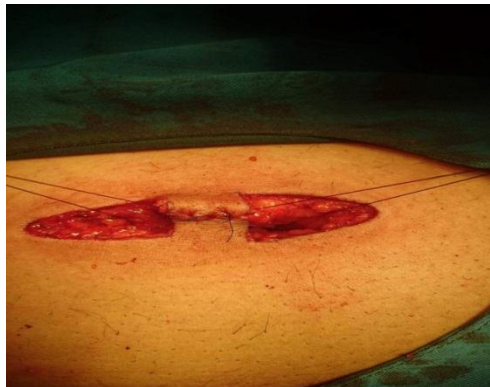
**Fig. (6):** Wound shape after closure



**Fig. (4):** Wound shape after excision



**Fig. (7):** Wound shape 6 months postoperative



**Fig. (5):** Suturing the flaps

## RESULTS

Twenty five patients were diagnosed with umbilical pilonidal sinus. 17 patients were males and 8 patients were females, age range from 23 to 47 years old, mean age 31.2. BMI ranges from 22 to 36 (mean 28.6).

The common complaint was offensive seropurulent +/- bloody discharge per umbilicus. Sixteen patients complain of umbilical pain, 15 patients suffered from itching and six patients had umbilical swelling. Signs of abscess formation were found in four patients. Conservative management succeeded to control the disease in 8 patients in the form of complete healing with no recurrence for 6 months.

**Table (1):** Symptomatology

Symptoms	No.	Percent of 25 patients
Umbilical discharge	25	100%
Umbilical pain	16	64%
Itching	15	60%
Umbilical swelling	6	24%
Abscess formation	4	16%

All the other 17 patients underwent the same operative procedure as described above. There were no intraoperative complications. Also there were no complications during the hospital stay. Histopathology report showed a small cavity lined with stratified squamous epithelium. The sinus contained a few hair shafts, epithelial debris, and keratin. The sinus wall showed chronic inflammatory infiltrate including lymphocytes and histiocytes.

Minor complications were encountered in 4 patients 10 days postoperative in the form of

wound complications (2 cases of wound seroma and 2 case of wound hyperemia). The 4 patients were treated conservatively in the outpatient clinic. 3 patients showed complete wound healing after the second week. The fourth patient suffered continuous sero-purulent discharge and needed surgical drainage under local anaesthesia after 1 month. However by the second month postoperatively this patient showed complete wound healing.

Major wound complications were seen in 3 patients 10 days postoperatively (one case of wound infection, one case of partial flap necrosis and one cases of complete flap necrosis). The patient with wound infection showed complete healing after 3 weeks with antibiotics and regular dressings. After 1 month the patient with partial flap necrosis showed improvement with chemical debridement. The third patient needed reconstruction under general anaesthesia after another 3 months

**Table (2):** Shows sex, age and complications of the patients in the current study

<b>Sex</b>	Male	13 (76.5 %)
	Female	4 (23.5 %)
<b>Mean Age</b>	31.2 (23 – 47)	
<b>Complication</b>	Wound hyperemia	2 (11.7 %)
	Wound seroma	2 (11.7 %)
	Wound infection	1 (5.85 %)
	Flap necrosis	2 (11.8 %)

After 6 months patient satisfaction was recorded. Eleven patients were satisfied (64.7%), 4 patients said that its appearance was acceptable (29.4%) and 2 patients were completely dissatisfied (11.8%). No recurrences were observed throughout the follow-up period.

**Table (3):** Patient Satisfaction

Patient satisfaction	No.	Percent
Satisfied	11	64.7%
Accepting	4	29.4%
Dissatisfied	2	11.8%

## DISCUSSION

Pilonidal sinus disease is a common problem of sacrococcygeal region. However, it is also observed in the peri-umbilical area. Male sex, young age, heavy hirsutism, deep navel and poor personal hygiene are the most common predisposing factors<sup>(8)</sup>. In our study, 76.5% of the patients were male. The male preponderance is perhaps due to excessive hair distribution and the unique distribution of hairs around the umbilicus with the distal ends pointing toward the umbilicus whereas in women the hairline is usually located well below the umbilicus<sup>(9)</sup>.

Patients with umbilical pilonidal sinus usually present with pain, and bloody or purulent discharge from the umbilicus. Local tenderness and redness appear infrequently and may indicate abscess formation. It can present with discharge, soreness or pain, swelling, and cellulitis<sup>(10)</sup>. This agrees with our study where the commonest complaint was the sero-purulent or bloody umbilical discharge (100%) followed by the umbilical pain (64%).

The treatment of pilonidal sinus disease is not uniform. Most of the cases reported in the literature were treated with surgical excision. Different surgical procedures have been advocated for its treatment. Authors who suggest the surgical excision assert that there is a risk of peritoneal extension of inflammation, however they believe that surgery markedly decrease the incidence of recurrence<sup>(11)</sup>. Proponents of conservative treatment believe that because the disease is not congenital in origin, there is no need to excise the umbilicus. Besides, they believe that the disease would terminate naturally after the age of 30.<sup>(12)</sup> This was not true in our study as the age of the patients ranged from 23 to 47 years old, mean age 31.2.

Shirangi et al succeeded to treat 60 cases of umbilical pilonidal sinus surgically without any case of recurrence. Thirty cases underwent complete sinus excision with reconstruction of umbilicus and 30 cases underwent sinus excision with umbilical preservation. Total umbilical excision was also advocated as the definitive treatment by many authors<sup>(13,14)</sup> to avoid recurrence.

Fazeli et al., used reconstructive procedure for the treatment of umbilical pilonidal sinus in their series of 45 cases<sup>(16)</sup>. They completely excised the sinus with everting the umbilicus and leaving a portion for reconstruction. The purpose of the procedure was to maintain cosmeses which gives a better psychological effect and to reduce the depth of the umbilicus which is a predisposing factor for this disease<sup>(15,16)</sup>.

On the other hand, in a study by Eryilmaz et al., conservative treatment was carried out in 25 patients on an outpatient basis with successful results in 23 patients. The treatment included hair extraction, abscess drainage, antibiotherapy, and shaving of hairs around the umbilicus to prevent recurrence. Two patients who failed the conservative treatment, underwent surgical

excision and primary repair. The umbilicus was not reconstructed in either patient because of the risk of recurrence.<sup>(8)</sup>

The adopted technique in this study exhibited the advantage of completely eradicating the umbilical pilonidal sinus with minimal incidence of recurrence (0%) and low incidence of major complications (17.65%) together with achieving high levels of patient's satisfaction cosmetically as only 11.8% of patients were dissatisfied.

There is no consensus or guidelines for the management of this disease because of its rare occurrence. However, the treatment depends on the type of presentation. In case of acute abscess incision and drainage is the treatment of choice. For asymptomatic patients treatment is usually not required except maintaining a good personal hygiene. For recurrent discharging sinus conservative management which include simple hair extraction from the sinus tract, depilation of hair around the umbilicus, maintaining good personal hygiene and avoiding tight clothing, is the first line of management<sup>(16)</sup>.

In their largest series on umbilical sinus Kareem et al., and Sarmast et al., concluded that conservative treatment should be the first and the main method in the management of umbilical pilonidal sinus. They have also found that incomplete hair extraction is the commonest cause for failure of conservative management. Proper instruction to the patients at the time of discharge can further reduce the recurrence. Surgical intervention is preserved for resistant cases in the form of sinus excision or complete umbilical excision with immediate reconstruction.<sup>(17,18)</sup>

## CONCLUSION

Management of umbilical pilonidal sinus by complete excision and immediate reconstruction using the above mentioned technique shows good cosmetic results with low incidence of complications and ensures no recurrence. More researches with bigger number of patients are needed to get more conclusive results.

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