

## Umbilical Pilonidal Sinus: Surgical Technique

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### 1. Abstract

Pilonidal sinus disease is characterized by a granulomatous reaction to a hair shaft penetrating epidermis from the cutaneous surface. Commonly seen in sacro-coccygeal region, however it can be encountered in the umbilical area. Umbilical pilonidal sinus is a rare entity. Even though there is no general consensus on the treatment of this disease, a balance between conservative and surgical treatment should be maintained. Various surgical approaches has been described ranging from debridement of the sinus, to sinus resection with umbilical reconstruction up till reaching umbilectomy. Herein, we present our surgical technique in treatment of umbilical sinus.

### 2. Introduction

Pilonidal sinus is thought to be an acquired disease, characterized by a granulomatous reaction to a hair shaft penetrating epidermis from the cutaneous surface leading to a non-healing and discharging sinus or recurrent abscess formation. Although the sacro-coccygeal area is the most common site for pilonidal sinus, it has been described in unusual sites such as: the umbilicus, inter-digital clefts in barbers, healed mid-thigh amputation stumps, the axilla, the pre-sternal area, the clitoris and mons pubis, the shaft of the penis, the ear lobe, the sole of the foot, the nipple, the postero-lateral abdominal wall, the brow and the upper eyelid [1-14]. The umbilical pit is a natural receptacle where hair can lodge, especially, in young obese hirsute adults. It is more common in male subjects [1, 4]. The resulting inflammation of the sinus may extend beyond the subcutaneous fat to the peritoneum [2, 15]. Umbilical pilonidal sinus present with various signs and symptoms, such as pain, discharge, and inflammation. Various methods for the treatment of umbilical pilonidal sinus has

been reported, ranging from conservative management [5] to radical excision of umbilicus [6]. Conservative, non-surgical, treatment of umbilical pilonidal sinus consists of removal of the hair tufts, shaving the area around the umbilicus and careful cleaning of the umbilicus. On the other hand, excision of the umbilicus and the involved subcutaneous tissue, with or without reconstruction of the umbilicus, is an acceptable surgical procedure [1, 16, 3].

Herein, we present our surgical technique for treatment of umbilical pilonidal sinus, through excision of the umbilical sinus and reconstruction of the umbilicus.

### 3. Patients and Methods

Medical records at Saint George Hospital University Medical Center was searched for all patients undergoing umbilical sinus excision and reconstruction during the period between January 2003 and December 2010. 52 patients were eligible to be included in the study.

52 cases of umbilical pilonidal sinus were treated surgically at our hospital during the period 2003–2010. The patients comprised 29 males and 23 females, of which 4 were obese (BMIs Males 35 and 36, BMIs Females 41 and 46), 13 were heavy smokers, and 2 had long standing diabetes. Their ages ranged from 14 to 62 years. All complained of local pain and umbilical discharge, 2 had recurrent umbilical sinuses with abscesses requiring incision and drainage. Factors of obesity, smoking and diabetes were included as to being well known risk factors in delaying process of recovery and wound healing. The duration of their symptoms varied from two months to several years. All patients underwent elective surgery (after failure of conservative management) under general anesthesia

and were discharged from the hospital at the same day of surgery. All patients received day 1 wound inspection to rule out ischemic necrosis of the umbilicus and then dressing q3days until removal of sutures at day 10 post op. No early postoperative complications were seen. Follow-up at 2 years post op from 9 to 13 years after surgery, showed no recurrent disease. All the patients were satisfied with the cosmetic results of the operation.

#### 4. Surgical Technique

- An elliptical (smiley) infra-umbilical incision 2 to 2.5 cm inferior to the lower edge of the umbilicus is made. **Figure 1.**
- Dissection around the umbilicus until reaching the lineaalba. **Figure 2.**



**Figure 1:** An elliptical (smiley) infra-umbilical incision 2 to 2.5 cm inferior to the lower edge of the umbilicus is made.



**Figure 2:** Dis-insertion and eversion of the umbilicus **Figure 2.**



**Figure 3:** Identification of the umbilical sinus **Figure 3.**



**Figure 4a and 4b:** Excision of the umbilical sinus complex (skin and subcutaneous tissue) **Fig 4a 4b.**



Closure of the anterior fascia defect using non-absorbable sutures (nylon 1-0) **Figure 5a and 5b:** Re-approximation of the umbilicus using interrupted absorbable suture **Figure 5a 5b.**



**Figure 6:** Re-insertion of the umbilicus using non-absorbable sutures (nylon 3-0).

Approximation of subcutaneous tissue using interrupted absorbable sutures (3-0).



**Figure 7:** Multiple sutures are then taken resulting in a more superficial neo-umbilicus **Figure 7.**

Skin closure with nylon 3-0 or skin staple

The specimen, including the umbilical complex (skin and subcutaneous tissue) transferred to department of pathology for histo-pathological examination.

## 5. Discussion and Results

Umbilical pilonidal sinus is a rare disease if compared to sacro-coccygeal pilonidal sinus with fewer than 20 cases reported before 1980 [4] and with a near to the ground incidence rate of 0.6% [17]. Being rare compared with sacro-coccygeal disease is believed to result from the fact that a lower driving force exists at the level of the umbilicus in addition to hardened umbilical cicatrix. [2]

Patho-physiologically, pilonidal sinus defined as a blind-end tract lined with granulation tissue which leads to a cystic cavity lined with epithelial tissue, is now well known as an acquired disease whose etiology and precipitating factors does not differ between umbilical pilonidal sinus or other anatomical locations. Starting with hirsutism, obesity, poor hygiene, tight clothing, and hot climate as contributory factors shared to different pilonidal sinuses, until reaching a deep navel as a renowned factor correlating to development of umbilical pilonidal sinus [18]. It is more common in young people (age < 35 years, 61% in our study) with a little males' predominance (ratio M: F 1.3:1). Patients may be asymptomatic initially and hence may seek medical consultation in the chronic phase of the disease; when complaints of pain, discharge or bleeding at the umbilicus do develop or complications of cellulitis or suppuration emerge.[1] .

There are various methods for the treatment of UPS, ranging from conservative management to radical excision of umbilicus [6].

After appropriate diagnosis of an umbilical pilonidal sinus, conservative treatment consisting of antibiotics, removal of hair tufts, cleaning the umbilical pit, repeated curettage (if necessary) and shaving the area of umbilicus relieve the symptoms and should be regarded as the first choice in the management of umbilical pilonidal sinus[19-20]. This has been brought to light by Kareem et al and Sarmast et al where favorable results were documented on large scales.

When suppuration is present, incision and drainage is required with further evaluation of surgical excision as acute inflammatory process subsides. Aggressive omphalectomy with omphaloplasty or leaving the wound open to heal by secondary intention, usually necessitates expensive hospitalization [1].

Arriving at the principal aim of our study in proposing a definitive surgical management of UPS, elective ambulatory surgery and close follow-up was carried out in the treatment of 52 cases with umbilical pilonidal sinus. A simple yet innovative surgical technique has been carried out in all our cases. The concept of Umbilical Sinus excision, consisting of excising the

deep part of the umbilicus with the adjacent subcutaneous tissue with primary closure of the wound and the remnant of the umbilicus, is well known and common to all umbilicus preserving umbilical pilonidal excision. The supremacy of our technique lies in re-inserting and fixing the umbilicus to the underlying anterior fascia using non-absorbable sutures (as depicted in the surgical technique described in the above section, figures 14-15), hence obliterating any space left that might be a precursor for early post-op seroma formation, delayed wound healing or long term disease recurrence. Followed by taking multiple sutures for the sake of reconstructing a more superficial neo-umbilicus (figure 16), that shall eliminate the risk of disease recurrence; having disrupted the hair stasis in the navel and hence the process of disease development, leading to a cosmetically satisfying outcome.

Good results were achieved: no early post-operative complications. No recurrent disease on 2 years and 9 up to 16 years of follow-up, cosmetically satisfying preserved umbilicus, which is superficial and easy to keep clean. Finally, this technique is proved to be cost effective as an ambulatory surgery compared to hospitalization of 4 days, shorter postoperative home rest [1].

## 6. Conclusion

In conclusion the surgical technique described in this study is simple, non-technically demanding, proved successful in eradicating the disease, cosmetically satisfying, and most notably prevents early complications and long term recurrent disease, taking into consideration cost effectiveness.

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