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Non-operative management of umbilical pilonidal sinus: One more step towards ideal therapy

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Abstract

There are controversies regarding the management of umbilical pilonidal sinuses. The current study aims to report on the efficacy of a non-operative, umbilical conserving procedure in the treatment of umbilical pilonidal sinus. This is a prospective, single cohort study. The cases were managed in a single private practice center. Patients were assessed and managed throughout the previous nine years (from January 2013 to June 2022). The required information was obtained from the center's medical database. The current study included 114 patients. There were 82 (71.9%) male patients. The patients' ages varied from 14 to 56 years (mean = 23.24). The umbilicus was retracted under local anesthesia. The sinuses were cleaned with povidone-iodine. Following the drying of the cavity, the mixture was put in the umbilicus, and the area was dressed. The amount of mixture was determined by the size of the cavity. Following treatment, the patients were directly discharged home with instructions to remove all hair from the chest and abdomen and keep the dressing dry for three days. After three days, the patients were advised to use a clean cotton swab to remove the injected mixture. Recurrence was reported in 5 cases (4.4%). The current technique might be used effectively in the treatment of umbilical pilonidal sinus. It is an umbilical preserving technique with a minimal recurrence rate.

KEYWORDS

conservative management, mixture injection, sacrococcygeal pilonidal sinus, surgical management, umbilicus

Key Message

- the use of a non-operative umbilical conserving approach is simple to perform and has a low morbidity and recurrence rate in the management of umbilical pilonidal sinuses

1 | INTRODUCTION

The pilonidal sinus (PNS) is a disease that arises in the natal (intergluteal) cleft as a result of acute or chronic infection of subcutaneous fatty tissue.[1] It is primarily caused by a granulomatous inflammatory process precipitated by irritation of the epidermis and dermis by the trapped hair shaft between them, which results in foreign body reactions and multifactorial infection.[2] For unknown reasons, the incidence of PNS has increased considerably during the last 50 years.[3] Although PNS is most frequently seen in the sacrococcygeal area, it has been reported less commonly in other areas such as the groin, interdigital web, umbilicus, nose, inter mammary region, supra-pubic area, clitoris, prepuce, penis, occiput, and foot.[4] Various surgical methods for PNS treatment have been reported and tested, with numerous reports assessing these methods published in the literature.[5] However, the ideal approach remains controversial. A generally approved procedure that reduces complications and recurrence rates while providing aesthetically acceptable results and a quick recovery period is lacking.[6] Due to rarity of the umbilical PNS, patient features and risk factors are not well understood. Published data on this condition have mostly been case reports and case series, with no comparison studies described in English literature; consequently, disagreement still surrounds the origin, pathophysiology, and effective therapy of umbilical PNS.[2,7]

The current study aims to report on the safety and efficacy of a non-operative umbilical conserving procedure in the treatment of umbilical PNS.

2 | MATERIALS AND METHODS

2.1 | Study design

This is a single cohort prospective study. All patients provided written consent before management. The cases were managed in a single private center. The patients were assessed and treated throughout the previous 9 years (from January 2013 to June 2022). The cases were followed up to June 2022.

2.2 | Mixture preparation

The injecting material was the same as that used by Salih et al., and it was prepared as follows: 100 g petroleum jelly (Vaseline) + 50 g henna powder (Lawsonia inermis powder) + 5 g tetracycline (Figure 3). The Spreparation was stored at temperatures ranging from 2°C to 8°C.[8]

2.3 | Data

The required information obtained from the center's medical database included the patient's age, gender, presentations, jobs, previous history of PNS, PNS in other sites, family history of PNS, and recurrence rate after the method.

2.4 | Inclusion and exclusion criteria

The study included all patients with umbilical PNS who had been treated with the mixture. Patients with abscess formation were initially treated with pus drainage and antibiotics for one week before receiving the injection.

2.5 | Intervention

The umbilicus was retracted under local anesthesia using two tissue retractors. After removing any foreign bodies and hairs, the sinuses were cleaned with povidone-iodine. Following the drying of the cavity, the mixture was administered in the umbilicus, and the area was dressed. The amount of mixture was determined by the size of the cavity. Following treatment, the patients were directly discharged home with instructions to remove all hair from the chest and abdomen and keep the dressing dry for three days. After three days, patients were advised to use a clean cotton swab to remove the injected mixture.

2.6 | Follow up

The patients were seen at two and six weeks after the treatment; thereafter, telephone follow-up was performed up to one year postoperatively, and all patients were given a phone number to call if symptoms recurred. All patients who had recurrence or failed to cure received the same treatment again until the PNS was cured. Antibiotics were not administered during or after the procedure. Cure was defined as the total disappearance of the sinus orifice as well as improvement of the symptoms.

2.7 | Data collection and analysis

The data were extracted into an excel sheet. The Statistical Package for the Social Sciences (SPSS) Version 25 was used to analyze the data. Descriptive statistics were calculated in the form of percentages and means.

TABLE 1 The demographic data and characteristics of the patients.

Variables	Total number of patients (114) (%)
Age (Range)	23.24 (14-56)
Sex	
Male	82 (71.9)
Female	32 (28.1)
Body Mass Index (BMI) (kg/m^2)	
Mean	26.5
≤18	5 (4.4)
19 to 25	55 (48.2)
>25	54 (47.4)
Smoking	
Yes	14 (12.3)
No	100 (87.7)
Occupation	
Student	37 (32.5)
Worker	32 (28.1)
House wife	10 (8.8)
Officer	2 (1.8)
Other	33 (28.9)
Hair distribution	
Usual site	55 (48.2)
Total body haired	59 (51.8)
Type of hair	
Smooth	73 (64)
Thick	41 (36)
PNS in other sites	
Present	18 (15.8)
Absent	96 (84.2)
Recurrent umbilical PNS	
Positive	6 (5.3)
Negative	108 (94.7)
Family history of PNS	
Positive	37 (32.5)
Negative	77 (67.5)
Number of previous PNS operations	
Negative	103 (90.4)
One	10 (8.8)
Two	1 (0.9)
Abscess	
Yes	20 (17.5)
No	94 (82.5)
Presentations	
Pain	82 (71.9)
Swelling	8 (7)
Discharge	52 (45.6)
Itching	67 (58.8)
Number of sinuses	
Single	100 (87.7)
Multiple	14 (12.3)

TABLE 2 The technique's efficacy, recurrence rate, and symptoms that persist temporarily after the treatment.

Variables	Male (%)	Female (%)	Total (%)	*P* value
Number of times injection repeated				
Once	80 (97.6)	32 (100)	112 (98.2)	0.373
Twice	2 (2.4)	0	2 (1.8)	
Healing				
Yes	82 (100)	32 (100)	114 (100)	1.000
No	0	0	0	
Recurrence				
Yes	1 (1.2)	4 (12.5)	5 (4.4)	0.008
No	81 (98.8)	28 (87.5)	109 (95.6)	
Pain				
Positive	2 (2.4)	5 (15.6)	7 (6.1)	0.008
Negative	80 (97.6)	27 (84.4)	107 (93.3)	
Discharge				
Positive	7 (8.5)	6 (18.7)	13 (11.4)	0.123
Negative	75 (91.5)	26 (81.3)	101 (88.6)	
Swelling				
Positive	0	1 (3.1)	1 (0.9)	0.530
Negative	82 (100)	31 (96.9)	113 (99.1)	
Itching				
Positive	2 (2.4)	4 (12.5)	6 (5.3)	0.031
Negative	80 (97.6)	28 (87.5)	108 (94.7)	

3 | RESULTS

The study included 160 patients. However, 46 cases were eliminated due to the incomplete follow-up. The remaining 114 patients were included in the analysis. There were 82 (71.9%) males and 32 (28.1%) females. The patients' ages ranged from 14 to 56 years (mean = 23.24). Nearly half of the patients (54, 47.4%) had a body mass index (BMI) of more than 25 kg/m2. Students accounted for up to one-third of all cases (37, 32.5%), with workers

TABLE 3 Factors that may affect the effectiveness of the technique.

Variables		Total number	No recurrence (%)	Recurrence (%)	*P* value
Symptoms	Pain				
	Positive	82	80 (97.6)	2 (2.4)	0.104
	Negative	32	29 (90.6)	3 (9.4)	
	Swelling				
	Positive	8	6 (75)	2 (25)	0.003
	Negative	106	103 (97.1)	3 (2.9)	
	Discharge				
	Positive	52	51 (98.1)	1 (1.9)	0.240
	Negative	62	58 (93.5)	4 (6.5)	
BMI					0.803
≤18		5	5 (100)	0	
19 to 25		55	52 (94.5)	3 (5.5)	
>25		54	52 (96.3)	2 (3.7)	
Number of sinuses					0.392
Single		100	95 (95)	5 (5)	
Multiple		14	14 (100)	0	
Abscess					0.011
Yes		20	17 (85)	3 (15)	
No		94	92 (97.9)	2 (2.1)	

in the second position (32, 28.1%). More than half of the cases (59, 51.8%) were completely body haired. The majority of the cases (73, 64%) had smooth hair. Eighteen of the patients (15.8%) had concomitant PNS in the sacrococcygeal region. About one-third of the cases had a positive family history of PNS. Eleven cases (9.6%) had at least one previous PNS operation. In 20 cases, abscess was developed. The vast majority of patients (100, 87.7%) had a single sinus. The most common presenting symptoms were pain (82, 71.9%), itching (67, 58.8%), and discharge (52, 45.6%). Table 1 shows the demographic data and patient characteristics. The mixture was administered once in almost all of the patients (112, 98.2%) and twice in two patients. Complete healing was achieved in all of the cases (100%). Recurrence occurred in five cases (4.4%). All of the recurrent cases received the mixture injection once; however, they did not return for a second trial due to living far away in rural area. Pain persisted for a few weeks following the injection in seven cases (6.1%), discharge in 13 cases (11.4%), and itching in six cases (5.3%). Table 2 gives data on the effectiveness of the injection and the recurrence rate. Some of the variables that influenced therapy efficacy are explained in Table 3.

4 | DISCUSSION

Pilonidal sinus disease may present clinically as a silent sinus, acute abscess, chronic sinus infection, or recurrence. Persistent PNS is described as having history of at least one abscess drainage or continuing with a chronic discharge without abscess. It is most usually seen in the sacrococcygeal region and much less often in the umbilical area.[9] The umbilical PNS and sacrococcygeal PNS are thought to have the same pathogenic processes. Repeated microtrauma and urachus pulling action result in the production of pits, in which hair strands trigger inflammatory and foreign body reactions, resulting in the emergence of a subcutaneous cavity.[7] Umbilical PNS is more frequently encountered in young male adults and in individuals who have a hair tuft around their umbilicus.[10] The exact prevalence of umbilical PNS is unknown; however, it has been found to be in the 0.1% to 0.6% range.[2] In the current study, about 79.1% of the patients were male.

Various risk factors were compared in a study of 31 patients with umbilical PNS to 100 volunteers. According to the findings, hirsute status, wearing tight clothing, obesity, and a family history of PNS were considerably higher in the umbilical PNS group.[11] Umbilical PNS is

more prominent among students.[11] Nearly 85% of umbilical PNS patients are between the ages of 10 and 30 years, and it's quite uncommon in other age groups. The high incidence in young males might be due to the fact that body hair development begins with puberty and peaks after the age of 20 years. The umbilicus's depth makes it a natural site for hair collection.[12] The patients in the current study had an average age of 23 years. Approximately half of them had total body hair, with 36% having thick hair. Overall, 32.5% were students, and 15.8% had a history of PNS in other locations. 32.5% of patients had a family history of PNS. It is critical to distinguish umbilical PNS from other umbilical diseases by thorough clinical examination, because there is a possibility of peritoneal dissemination of the accompanying inflammation, umbilical PNS should be treated more promptly than sacral PNS.[10] Pain and a bloody or purulent discharge from the umbilicus are common symptoms of umbilical PNS. Local discomfort and redness develop occasionally and may suggest the onset of an abscess.[11] The most common presenting symptom in the current study was pain, followed by itching and discharge.

Therapeutic interventions range from non-surgical (conservative) methods to extensive surgical intervention, outcomes are quite variable, and follow-up periods are brief or non-existent.[7,13] The following aims should be included in an appropriate umbilical PNS treatment protocol: easy intervention, minimal morbidity and recurrence rate, and rapid return to regular activities. Despite these principles, there is no agreement on the best way to treat umbilical PNS. It should be noted that no single modality of treatment can achieve all of these objectives. Almost all published studies are case reports or tiny case series, making comparison impossible.[2]

Conservative treatments include minor incisions, sinus curettage with hair removal, and shaving around the umbilicus.[7,13] Asymptomatic illness found by accident can be handled by increasing personal hygiene, which includes shaving the surrounding skin, removing any projecting hairs, and keeping the umbilicus dry. Simple draining and curetting of the abscess, hair removal, and daily packing of the area with proper antimicrobials is the ideal treatments for patients presenting with acute abscesses or severe infection.[12] Eryilmaz et al. published a case series of 26 cases who were treated conservatively. Conservative therapy was shown to be effective in 88% of the cases; however, the study did not provide details about the follow-up and recurrence rates.[7] Kareem et al. reported 134 cases who were treated over the course of 6.5 years. The follow-up data were provided for 34% of patients. Conservative therapy was effective in 76% of patients, with no recurrence. Twenty-four percent of patients required more than one treatment session.[13] According to Fazeli et al. conservative treatment failed in all (45) of their cases.[14]

Although conservative approaches are simple to do and inexpensive, the sensitive skin of the umbilicus remains a risk for future recurrence. Surgery, however, appears to be more successful in umbilical PNS. It reduces the depth of the navel, which reduces the unfavorable pressures in the umbilicus and so prevents recurrences more efficiently than the conservative therapy.[15] Various surgical approaches have been suggested, ranging from excising the umbilicus without reconstruction to sinus excision with aesthetic umbilical reconstruction to complete omphalectomy as a primary therapy or to treat recurring illness.[10] Because of the difficulty of obtaining an accurate diagnosis, some patients have undergone profound surgical treatments such as complete umbilectomy and diagnostic laparoscopy.[16] In a prospective, randomised study, individuals with umbilical PNS were given either conservative or surgical therapy. It was discovered that surgical therapy was superior to conservative surgery in terms of primary and secondary outcomes for at least two years following surgery.[15] Recently, Bogdanic et al reported a case of umbilical PNS treated with laser.[17]

Unlike sacrococcygeal PNS, where there is adequate space for resection and no care for cosmetic results even in situations of secondary healing, the umbilicus is a cosmetic structure for the entire body, not just the abdomen.[10] Umbilectomy is the most invasive operation with the lowest recurrence rate. However, because this procedure is not aesthetically attractive, it should only be used as the last option.[18] As a result, umbilicus-conserving surgery has been suggested rather than total umbilectomy, and it appears to achieve comparable recurrence rates with a superior aesthetic outcome.[10] In the current study, the patients underwent the procedure under local anesthesia, and the umbilicus was preserved. Although surgical therapy has been demonstrated to be superior and more successful than conservative treatment, the latest studies reveal a preference for conservative treatment.[15,16]

Unfortunately, there is no full investigation on the recurrence of umbilical PNS in the literature.[19] During the current study's follow-up, healing was achieved in all of the patients. Recurrences occurred only in 5 (4.4%) cases. The current technique is significant as it is conducted under local anesthetic and is a cost-effective technique compared with surgery.

In conclusion, the current technique is effective for treating umbilical pilonidal sinus. It is a non-operative umbilical preserving method that is simple to perform and has a low morbidity and recurrence rate.

CONFLICT OF INTEREST

The authors declare that they have no competing interests.

DATA AVAILABILITY STATEMENT

The datasets generated and analyzed during the current study are available from the corresponding author on rea-sonable request.

CONSENT FOR PUBLICATION

Written informed consent was obtained from the patient for publication.

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