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Endoscopic Pilonidal Sinus Treatment: Long-Term Results of a Prospective Series

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ABSTRACT

Background and Objectives: Pilonidal sinus is a common problem in the sacrococcygeal region, especially in obese, sedentary young men. The ideal surgical solution is still under debate, and there is a high rate of recurrence. In the present study, we analyzed the long-term results of a video-assisted minimally invasive technique for the treatment of sacrococcygeal pilonidal disease: endoscopic pilonidal sinus treatment (EPSiT).

Methods: From October 2013 through November 2015, a total of 77 consecutive patients (69 Males and 8 Females, median age: 23 y) were referred to our colorectal units. Sixty-eight patients had a primary sacrococcygeal pilonidal sinus, and 9 had recurrent pilonidal sinus; all underwent EPSiT. A fistuloscope was introduced through an external opening and the sinus cavity was completely ablated under direct vision. Postoperative complications, wound infection rate, recurrence rate, time until return to work, and patient satisfaction score were recorded during follow-up or at the last interview. Clinical data were obtained at 7, 15, and 30 days and at 6, 12, and 24 months after surgery.

Results: All patients completed the follow-up (median follow-up was 25 (range, 17–40) months. Median operative time was 18 (range, 12–30) minutes. The median hospital stay was 6.5 (range, 5–9) hours, and the median time to return to work was 5 days. Median healing time was 26 (range, 15–45) days. There were no major or minor complications. Six patients experienced recurrence. The overall satisfaction rate was 97%.

Conclusions: The ideal surgical treatment for pilonidal sinus disease should be simple and effective. In our experience, EPSiT can be performed as a day surgery, with early return to daily activities. This technique is an uneventful procedure, with good aesthetic results and a low recurrence rate.

Key Words: Endoscopic pilonidal sinus treatment, Minimally invasive surgery, Pilonidal sinus disease

INTRODUCTION

Pilonidal sinus (PS) is a common health problem of the sacrococcygeal region, it occurs mainly in young men,[1] it is associated with obesity, sedentary occupation, local irritation,[2] and hirsutism.[3] PS is considered an acquired disease because of the obstruction of hair follicles in the natal cleft.[4] Symptoms are variable, ranging from asymptomatic pits to acute abscess to chronic cyst. This disease has a considerable impact on quality of life, causing absenteeism from work and school. The several surgical options and the variable results suggest that the ideal surgical treatment is still being sought, and the number of observed recurrences leaves much room for improvement. The ideal surgical technique should eradicate the cyst and remove and clean the sinus tracts or tracts, leading to complete and durable healing with good aesthetic results. Open excision and healing by secondary intention is used in the treatment of PS, but this technique offers a poor postoperative quality of life and needs frequent clinical observation, as reported in the literature.[5] Conversely, the gold standard seems to be PS excision with primary closure, using different techniques—mainly midline closure or flap-based procedures.[4] These surgical modalities have variable results with different healing times and complications. In a recent meta-analysis, Enriquez-Navascues et al[6] reported a wide range of recurrence rates, from 0 to 40%, for different surgical approaches, concluding that in the treatment of PS, "less is more." Over the past decade, for other colorectal procedures, as well, some surgeons have suggested new minimally invasive techniques in the treatment of PS, such as radiosurgery,[7] fibrin glue injection,[8] and, more recently, endoscopy. The latter was proposed by Meinero et al,[9] who developed a dedicated fistuloscope with the possibility of

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destroying the sinus cavity and sinus tracts under direct vision through an operative channel, and by Milone et al[10] who used a hysteroscope. The minimally invasive approach has been named endoscopic pilonidal sinus treatment (EPSiT), adding a possible effective tool for this disease. However, data in the literature are scant, with short follow-ups.

In this prospective observational study, we report our experience with this technique presenting healing rate as the primary endpoint and hospitalization, morbidity, healing time, return to work, and satisfaction rate as secondary endpoints.

MATERIALS AND METHODS

Patient Selection

From October 2013 through November 2015, patients with a symptomatic chronic or recurrent PS were consecutively enrolled in the study. Patients presenting with an acute abscess received antibiotic therapy for 2 weeks before enrollment.

All patients underwent a day surgery procedure under local anesthesia and sedation while prone, with the buttocks separated by two large plasters. A single dose of antibiotic prophylaxis (cefodizime 1 g) was administered 30 minutes before surgery. Our institutional review board approved this prospective study. Informed consent was obtained from all patients before the surgical procedure. This study was not supported by any commercial company. Data are expressed as means ± SD.

Surgical Technique

EPSiT is performed with a fistuloscope manufactured by Karl Storz (Southbridge, Massachusetts, USA). In the kit (**Figure 1**), there is an electrode connected to the electrosurgical knife power unit, an endobrush, tongs, and a Volkmann spoon. The fistuloscope has an 8° angle eyepiece and is equipped with an optical channel 14 cm long with a handle, an operative channel, and an irrigation channel. The latter channel is connected to a 5000-mL bag containing a solution of glycine+1% mannitol. If the external orifice is too small, it is enlarged with a scalpel or diathermy, to allow introduction of the fistuloscope (**Figure 2**).

The EPSiT procedure begins with a diagnostic step, which is necessary to characterize the anatomy of the tracts followed by the operative step, which seeks via the fistula tract to achieve intraluminal destruction and removal of

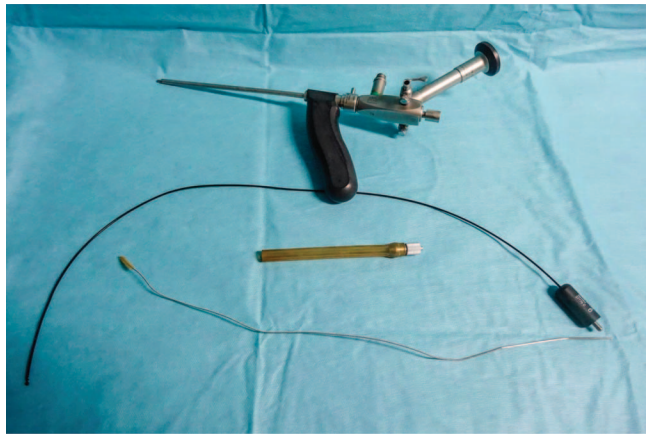

Figure 1. The dedicated operating kit.

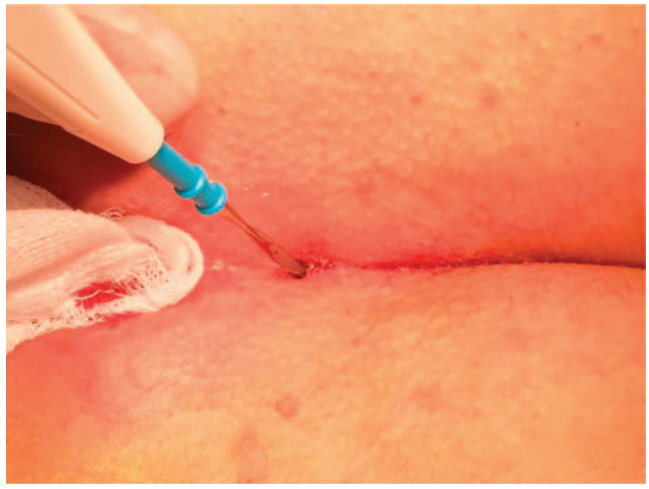

Figure 2. Enlargement of an external opening that is too small with a scalpel or diathermy.

waste material (**Figures 3–5**). During the diagnostic phase, the fistuloscope is introduced through the external opening, and the sinus cavity and fistula's tract are identified. In the operative phase, an electrode is introduced through the operative channel, and the cavity and fistula's track are ablated. All the granulation tissue is destroyed and removed by a brush inserted into the operative channel or by a Volkmann spoon. If hairs are identified during the procedure, they are removed with tongs designed for that purpose inserted through the operative channel. The continuous lavage of the washing solution allows full elimination of debris and the blood.

Postoperative Discharge and Follow-up

Patients were encouraged to mobilize immediately after surgery with the goal of discharge within 3 hours after

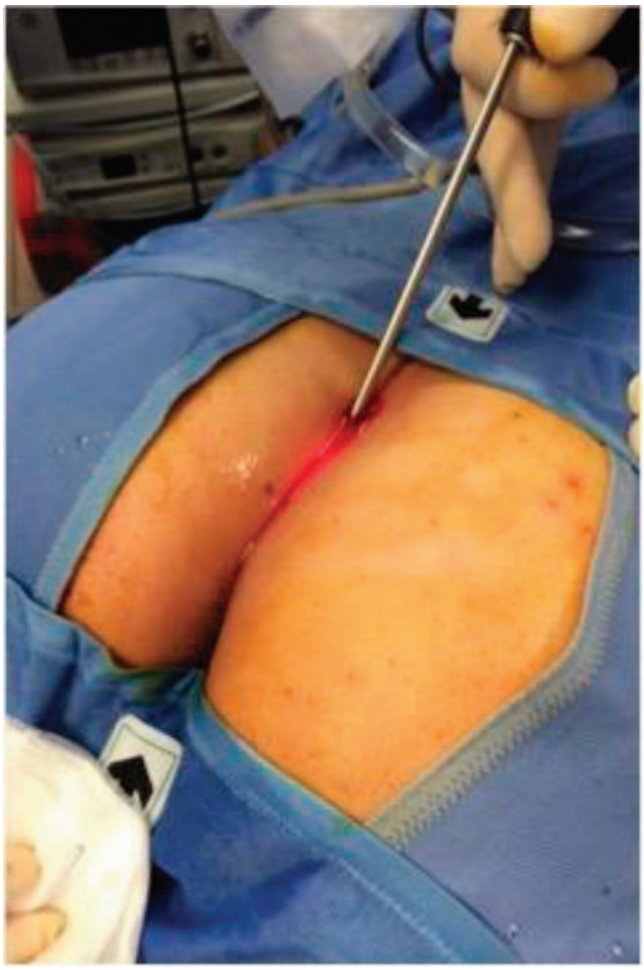

Figure 3. Introduction of the fistuloscope trough the external opening and initiation of diagnostic steps.

treatment. After discharge, patients were instructed to irrigate the cavity through the external opening with 5 mL saline solution twice a day and to keep the surrounding area clean and dry. They were also instructed to remove surrounding hairs by shaving or using depilatory cream until healing occurred around the opening (at least an area 10 cm in diameter). They were also asked to report daily the pain experienced on the visual analogue scale (VAS 0–10), as well as to take a 1 g paracetamol tablet if necessary. Severe pain was represented by a VAS score greater than 7. After surgery, patients were seen in the outpatient clinic at 1, 2, and 4 weeks and then routinely every 6 months until 24 months. During the follow-up, patients were monitored for healing, pain, complications, recurrence, and satisfaction (satisfied/not satisfied). Healing of the PS was defined as complete wound healing with closure of all external openings during the first 60 post-

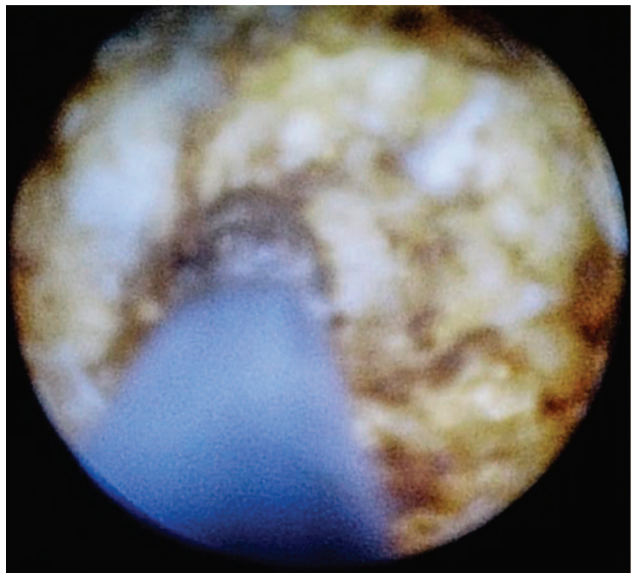

Figure 4. Intraoperative view with diathermy cleaning and curettage.

operative days. The presence of an external opening or secretion after 2 months was considered wound persistence, and recurrence was defined as return of symptoms 90 days after complete healing.

RESULTS

The patients' characteristics are shown in **Table 1**.

From October 2013 through November 2015, we enrolled 77 consecutive patients: 69 males and 8 females, median age 23 (range, 14–57) years. Median follow-up was 25 (range 17–40) months. Sixty-eight patients had a primary sacrococcygeal pilonidal sinus, 9 had recurrent pilonidal sinus. Mean operative time was 20 ± 6 (range, 13–40) minutes. The mean hospital stay was 7 ± 1 (range, 5–9) hours.

All patients were discharged as planned within 3 h after the end of the procedure. No patients required admission of an overnight stay or emergency room readmission after the discharge. Only 8% of the patients required analgesic during the first postoperative week.

According to the VAS score, at 1 week after surgery, 73 patients (94.8%) reported a VAS between 1 and 3, and 4 (5.2%) reported a score between 4 and 6.

Mean time to return to work and daily activities was 6 ± 3 (range, 2–14) days. Median healing time was 26 (range, 15–45) days.

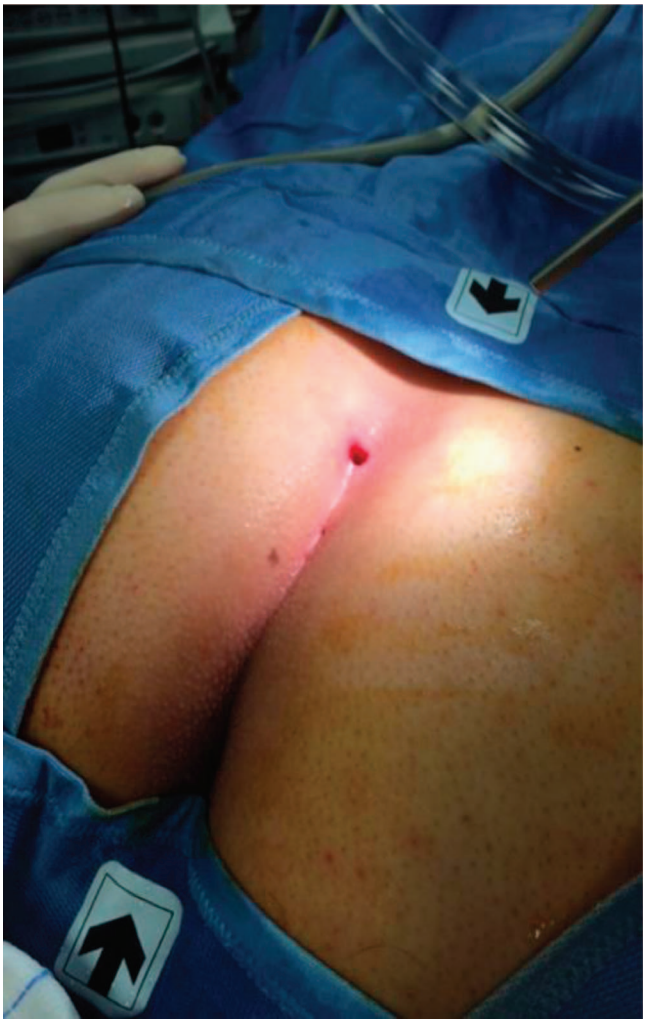

Figure 5. Appearance at the end of the procedure showing the 5- to 7-mm introduction hole that will be treated with medicated gauze.

Table 1.
Clinical Data and Results

Characteristic	Value
Patients enrolled	77
Male/female	69/8
Age (years)	23 (14–57)
Presentation, n (%)	
De novo	68 (88)
Recurrent	9 (12)
Mean operative time, min (range)	20 ± 6 (13–40)
Infection	none
VAS score (1 week after surgery) (%)	
1–3	94.8
4–6	5.2
7–10	None
Use of analgesic during postop week 1 (%)	8
Satisfied patients (%)	97
Long term successful healing (%)	92
Failure, n (%)	6 (8)
Persistence	2 (3)
Recurrence	4 (5)

No major or minor complications were reported. Four patients experienced more bloody discharge after surgery and required unplanned outpatient visits.

The overall healing rate was 92%.

We reported 6 failures (8%): 2 patients reported incomplete healing (persistence), and 4 reported recurrence. Three of these patients underwent successful EPSiT for recurrent disease.

DISCUSSION

The ideal surgical treatment for pilonidal sinus disease should be simple and effective. Pilonidal sinus (PS) is considered an insidious disease. Surgical management is still a matter of discussion, and there are no clear recommendations exist. A lot of studies have debated that the area of PS should be completely excised, and also surgeons debate about primary closure or lay-open technique. In a systematic review Al-Khamis et al[11] reported that open excision and healing by secondary intention results in fewer recurrences (recurrence rate 4–8%) but is associated to a longer hospitalization, longer healing time, and more acute postoperative pain. Some surgeons reported good results after primary closure,[12, 13] but the principal problems in these series are the high recurrence rate and the high infection rate. A recent meta-analysis by Enriquez-Navascules et al[6] compared different techniques with primary closure and conservative open management, and concluded that en bloc or radical excision with off-midline wound closure offers some benefits, but a higher risk of recurrence (75% vs 25%) comparing to open healing. Obviously, these percentage offer large room for improvement and the need of an alternative, less invasive procedure. The use of an endoscope may represent a solution allowing a simple and complete diagnosis of all fistula tracts if present, followed by the intraluminal

eradication of the cyst, its contents, and the tract itself. Moreover, there is no scar, because the external orifice is used.

In addition Meinero et al[9] reported a multicenter series of 250 patients treated with EPSiT, showing a success rate close to 95%.

According to our experience, this procedure, with a 5% recurrence rate, represents a valid alternative to the traditional surgical treatment of PS. Moreover, when repeated, the technique seemed to be effective for all recurrences in our experience, although, in those cases, the follow-up was too short to yield definitive results.

EPSiT offers the possibility of obtaining the complete obliteration of the sinus cavity and sinus tracts and hair removal under direct vision and subsequent closure of the primary sinus with a negligible incision and minimal discomfort. The success rate of >90% is similar to the best reports of the open technique according to a recent meta-analysis,[14] but without the need for longer hospitalization, pain, and prolonged interruption of daily activities. Our series shows effectiveness, even with recurrent disease, when recurrence as in our experience is higher (4 patients). Compared with the traditional techniques, including the Limberg flap,[15] Bascom's asymmetric closure,[16] and radiofrequency, proposed by Gupta,[7] the wound healing time in patients treated with EPSiT was shorter (62–95 days versus 26 days in our series). EPSiT can be performed as day surgery with early return to work with minimal pain and no postoperative infection or wound dehiscence. The open[17] and flap procedures[18,19] are associated with poor patient satisfaction because of the presence of a large scar. On the other hand, the endoscopic approach offers very good aesthetic results, since the scar is 5 mm, no suture stitches are present, and no tension is present.

Lack of pain, absence of a scar, easy self-management at home, faster recovery and return to daily activities, and a low risk of wound dehiscence or recurrence may explain the high satisfaction rate reported in our study. Furthermore, this technique can be easily repeated, and, in cases with recurrence, patients, if well informed, prefer to repeat the minimally invasive treatment rather than being immobilized for weeks after a traditional treatment.

Although this minimally invasive approach must be validated in randomized prospective trials, we believe that EPSiT could represent the ideal treatment for PS, given that is it simple, safe, effective, reproducible, and very well accepted by the patient.

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