



## Original Article

# Modified endoscopic pilonidal sinus treatment (EPSiT): Personal experience



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### ABSTRACT

Pilonidal disease is common problem in the sacrococcygeal region, especially among young adults. The optimal surgical approach is debatable. Herein, we present our experience in management of recurrent pilonidal disease using the endoscopic approach.

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### Tratamento endoscópico do cisto pilonidal modificado (EPSiT): experiência pessoal

#### RESUMO

A doença pilonidal é um problema comum na região sacrococcígea, principalmente em adultos jovens. A literatura ainda não apresenta consenso quanto à abordagem cirúrgica ideal. Aqui, os autores apresentam sua experiência no tratamento de doença pilonidal recorrente usando a abordagem endoscópica.

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## Introduction

Pilonidal disease represent a chronic inflammatory processes that can present with a wide spectrum of severity, but invariably disable those affected and result in a substantial decrease

in their quality of life. Whether it is congenital or acquired is still debatable, however, most believe that it is an acquired disease. Repetitive trauma to the skin at the natal cleft on one hand. And on the other hand, the local anatomy of this area creates a warm, and relatively moist environment leading to hair entrapment. Consequently, a granulomatous

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foreign body-type reaction is initiated leading to the formation of a sinus that can progress to numerous sinuses and potential abscess formation. Several risk factors for development of pilonidal disease have been identified including positive family history of disease, elevated body mass index (BMI > 25 kg/m<sup>2</sup>), poor hygiene, hirsutism, deep natal cleft anatomy, occupation that requires prolonged sitting, and excessive sweating.<sup>1,2</sup> Pilonidal disease has a wide spectrum of presentations starting from ones that are incidentally found to a severe process, locally destructive with significant disability. Diagnosis is usually made from history and physical exam, and doesn't require extensive testing or imaging. A wide array of surgical options are available for treating pilonidal disease, however, there is no consensus on the optimal treatment. In all cases, treatment should not be disabling more than the disease itself and it should be tailored according to patients expectations, taking into account the disease anatomy and severity. Hence, surgery for pilonidal disease should aim at patient satisfaction, early return to work, minimal postoperative pain, minimal scarring, and low recurrence rate. Herein, we present our experience in surgical treatment of pilonidal disease using the endoscopic approach, including the preoperative care, the surgical technique, and the postoperative care and outcomes.

## Materials and methods

From July 2018 to April 2019, a total of 13 patients with symptomatic recurrent pilonidal disease underwent endoscopic pilonidal disease excision at Saint George Hospital University Medical Center, Beirut, Lebanon. Informed consent was obtained from all patients for publication. In addition, clinical, operative, and follow up data were recorded.

Patients presenting with symptomatic recurrent pilonidal disease were included in the study. Patients presenting with primary diagnoses of pilonidal sinus was excluded from the study. Patients who are immunosuppressed or on chemotherapy were also excluded from the study.

All patients were admitted to the hospital at the day of surgery, and discharged 6 h after surgery. All patients were given a dose of 1.2 g of Amoxicillin / Clavulanic acid 30 min prior to surgery. The surgical technique is described below. All surgeries were done by the same surgeon, the author of this article. No changes in the preoperative care strategy, the surgical technique, the postoperative care and follow up and no change in anesthesia given throughout the study.

### Prior to surgery

With the aim to optimize the local conditions in preparation for the definitive surgery, all patients presenting with pain and erythema not requiring drainage was given a course of antibiotics (Amoxicillin / Clavulanic acid) for 7 days and reassessed for cellulitis and local conditions after completion of the antibiotic course. All patients presenting with abscess formation was drained and discharged on antibiotics (Amoxicillin / Clavulanic acid) to be scheduled at a later stage, usually 4–6 weeks after drainage, for endoscopic resection, once the local conditions of inflammation and infection settle down.

### Post surgery

In order to drain all debris, facilitate cavity obliteration and accelerate wound healing all patients were offered a negative pressure wound therapy (each kit has two dressings).

After the completion of surgery, a negative pressure wound therapy device was applied for 3 consecutive days, changed on the third day after surgery during follow up and another negative pressure wound therapy dressing was applied for another 3 days, and consequently removed on day 6 after surgery during follow up.

Post surgery, patients were seen at the time of discharge from hospital, on day 3 post operation, day 6 post operation, and weekly thereafter, up until the wound has healed completely. Long term follow up and disease recurrence were assessed in the outpatient clinic by the same surgeon who did the surgery. Complete wound healing was considered the primary endpoint. Incomplete wound healing was considered when discharge, swelling, or presence of open wound 45 days after surgery.

Recurrence was diagnosed once patients report discharge, swelling or local pain within 1 year after wound healing.

### Surgical technique

Epidural anesthesia was given to all patients 1.2 g of Amoxicillin / Clavulanic acid was given 30 min prior to surgery

The patient is placed in the prone position with their legs slightly apart. The buttocks are separated by two big plasters.

Surgeon stand on the patients left side. Careful inspection of the surgical field to identify all the pits that are present. The largest midline pit is excised by making a 0.5 cm elliptical incision slightly shifted away from the midline.

The endoscopic approach has two phases, the diagnostic phase and the operative phase.

### Diagnostic phase

The diagnostic phase aims at defining the anatomy of the sinus, secondary tracts if present, any blind ended tracts or cavities, mainly ones that are 2.5 cm and more away from the largest pit that was initially excised even in the absence of an external opening, and any underlying abscess cavity. The fistuloscope is inserted through the external opening, while glycine/mannitol 1% solution is being infused. This maneuver facilitates opening of the sinus tract and clears the vision, however, if difficulty intubating the sinus was encountered, a Kelly forceps can be used to retract the edge of the sinus, as straightening the edges will make it easier to intubate the sinus cavity. Hair, fistula tracts and abscess cavities appear clearly on the screen.

### Operative phase

The operative phase is made of two main phases, first the endoscopic phase followed by the draining phase.

#### The endoscopic phase

The aim of the endoscopic operative phase is debride the main cavity as well as any associated blind ended cavities and tracts,

**Table 1 – Patient characteristics and clinical findings.**

	Gender	First operation	Second operation	Midline Pit	Paramedian opening
1	Male	Open Technique	None	Present	Present
2	Male	Open Technique	None	Present	Present
3	Female	Open Technique	None	Present	Absent
4	Male	Open Technique	None	Present	Absent
5	Female	Closed Technique	None	Present	Present
6	Male	Open Technique	Closed Technique	Present	Absent
7	Male	Closed Technique	None	Present	Absent
8	Female	Open Technique	None	Present	Present
9	Male	Open Technique	None	Present	Absent
10	Male	Closed Technique	Open Technique	Present	Present
11	Male	Open Technique	None	Present	Absent
12	Female	Open Technique	None	Present	Absent
13	Male	Open Technique	None	Present	Absent

remove any hair present, ablate the cavities by electro cautery, and achieve hemostasis under direct vision. Endoscopic forceps is inserted through the operative channel to debride and remove all visible hair, this is fundamental for complete wound healing and cavity obliteration at a later stage. Once debridement and cleaning is achieved a monopolar electrode is used for cautery ablation of the sinus cavity on one hand. And on the other hand for hemostasis so that to avoid hematoma formation. After initial identification, debridement and ablation of all blind ended tracts. During this phase, all previously identified blind ending tracts and cavities that are 2.5 cm away from the main excised pit (site of entry of the fistuloscope) are marked in preparation for the upcoming draining phase.

#### The draining phase

The aim of the draining phase is to achieve optimal draining of the sinus cavity, as well as all other cavities being identified in the diagnostic phase that were ablated and debrided during the endoscopic phase. All cavities and tracts more than 2.5 cm away from the initially excised midline pit, marked previously during the operative diagnostic phase, are drained by a circular incision made over the blind ended cavity, so that to avoid long internal tracts being drained solely from the initial midline incision. In addition, all off midline external opening are excised. Moreover, all small midline pits are debrided. The number and site of incisions varies depending on the presence of secondary fistula tracts or abscesses; therefore, in more complex cases two or three incisions may be required.

At the end of the procedure, a negative pressure wound therapy is applied.

## Results

13 patients were included in the study. Patient characteristics and clinical findings are presented in [Table 1](#). The mean number of openings per patient is 1.4, openings were localized to midline in 60 percent of cases. In 40 percent of cases there were openings in the midline as well as a lateral opening.

All patients returned to normal daily activities unlimited by pain on the first postoperative day. All patients return to work 2 days after surgery (all the surgeries were done on a Friday,

**Table 2 – Days for complete healing.**

	Days for complete healing
1	14
2	12
3	8
4	17
5	20
6	17
7	10
8	10
9	21
10	27
11	30
12	10
13	14

hence all patients missed a maximum 1 day off work, usually a Saturday).

No patient experienced wound complications such as haematoma, seroma or necrosis of the overlying skin as a result of cauterizing the cavity.

After a minimum follow up of 12 months, complete wound healing was achieved in all 13 patients within 30 days ([Table 2](#)). The mean complete wound healing was 16 days. No recurrences was encountered. No patients were lost for follow up.

## Discussion

Pilonidal disease is a common inflammatory disease of the buttock and gluteal fold region. It results in a subcutaneous abscess and recurrent acute and chronic infection at the level of the natal cleft.<sup>3</sup> A wide array of surgical options are available for treating pilonidal disease, however, there is no consensus on the optimal treatment. Traditional techniques are associated with significant postoperative pain on one side and a significant risk of recurrence on the other side. In view that any treatment should not be disabling more than the disease itself and in view that any treatment should be tailored according to patient's expectations, taking into account the disease anatomy and severity, endoscopic pilonidal sinus treatment (EPSiT) seems an attractive option. This technique reduce

the length of hospital stay and costs and result in minimal morbidity.<sup>4,5</sup> EPSiT procedure was developed to allow direct endoscopic vision of the pilonidal sinus from the inside. During the procedure, hair can be removed, the cavity can be debrided, additional tracts and cavities can be identified and debrided, and hemostasis under direct vision can be achieved. To our knowledge, the addition of incisions over the blind cavity or blind tracts and the use of negative pressure wound therapy after EPSiT procedure has not been described in the medical literature. We believe combining the two steps, the additional incision as well as the negative pressure wound therapy will further aid in achieving a higher rate of success manifested by a very low recurrence rate. The optimal treatment for recurrent pilonidal disease remain an area of debate. Wide excision with the wound left open or directly closed remain the most common surgical procedures performed for pilonidal sinus. The disadvantage of healing by secondary intention is that it involves a lengthy healing time,<sup>6</sup> but it is associated with significantly lower recurrence rates than closed healing. Primary closure is associated with faster healing and fewer days off work.<sup>3,7–9</sup> However, this potential benefit is offset by the increased risk of wound complications, recurrence and costs, particularly if associated with a reconstructive flap.<sup>10</sup> Furthermore, Allen-Mersh<sup>11</sup> described an average recurrence rate of 13% at 1 year following the use of open methods, and 15% after excision and closure. Hence, traditional surgical techniques are becoming less and less popular and a shift towards using minimally invasive ones in treatment of pilonidal disease is on the rise, especially in view of the young age of the patients, as well as their intense social life, and busy work. Traditional techniques are often associated with serious impairments of patient quality of life and long off-the-job periods. Nordon and Senapati<sup>12</sup> described a median of 2 weeks off work after the Bascom procedure. A recent meta-analysis of RCT comparing surgical outcomes after primary closure or rhomboidal excision and Limberg limb for primary sacrococcygeal pilonidal disease management showed a mean of 9.24% of the surgical infection rate, an average of 5 days postoperative hospital stay, and an average of 20 days for complete return to work.<sup>13</sup> From here, EPSiT procedure is an attractive option in recurrent pilonidal disease. It allows the surgeon to directly inspect the sinus tract and any secondary tracts, cavities, and blind ended tracts that may be present and hence contribute for future recurrences. Despite the small sample size in our study, EPSiT procedure for recurrent pilonidal disease seems to offer adequate and effective results regarding wound healing, and excellent results regarding recurrence at 1 year follow up. Overall, patients undergoing EPSiT procedure for recurrent pilonidal disease seem to have a high rate of satisfaction. This is attributed to low postoperative pain and the rapid return to work and daily activities. Moreover, during the 1 year follow up patients state that “I will do it again, endoscopically, if it recurred”. Despite these promising results, the present study presents several limitations. Firstly, the sample size is small which may lead to underestimation of the complications associated with the use of EPSiT. Besides, a randomized study, for a better evaluation of the outcome is required.

## Conclusion

We believe that treatment of any disease should not be disabling more than the disease itself. Furthermore, treatment of pilonidal disease should be tailored according to patient's expectations, taking into account the disease anatomy and severity. Hence, surgery should aim at patient satisfaction, early return to work, minimal postoperative pain, minimal scarring, and low recurrence rate. From here, EPSiT procedure seems an attractive option to cover the above mentioned. Further studies are needed to unify the surgical technique and for better evaluation of the outcomes.

## Conflicts of interest

The authors declare no conflicts of interest.

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