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RESEARCH ARTICLE

PILONIDAL SINUS MANGMENT BY SETON SILAC

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ABSTRACT

Background: Despite known complications and a high recurrence rate, the standard treatment of pilonidal disease still consists of surgical excision of the sinusoidal cyst with primary wound closure. We were the first in Middle East to introduce a new treatment technique using SETON with a radial laser probe (Sinus Laser-Assisted Closure, SILACTM, Biolitec, Germany). **Aim of the study:** To assess the efficacy of laser (diode) SETON_SILAC as a therapy to the pilonidal sinus. **Methods:** A prospective study conducted in Hemocure Surgery Department, EL-Rahma Hospital and included 100 patient were operated with the SETON_SILAC technique by two surgeons from June 2018 to December 2019. **Results:** The median follow up duration was 1 year. The initial success rate was 96% (96/100).There were no complications during or after surgery. Mean patient satisfaction was 9.0 (3.0 to 10.0).Thirteen percent of patients did not require any analgesia, 37% used only when needed, of which 32% for less than one week and 10% for one to two weeks. **Conclusion:** SETON SILAC is a quick, safe and minimally invasive technique for destruction of the pilonidal cyst and sinus. Success rate and patient satisfaction are high, making this new therapy an attractive option for the majority of the patients with pilonidal disease. Long term results have to be awaited.

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INTRODUCTION

Pilonidal Disease (PD) is an infection of the hair follicle that can cause painful cysts and sinus formation. The most common place for PD to develop is the coccygeal region, leading to significant discomfort when sitting or wearing tight clothes. The incidence of PD is approximately 26 per 100.000 persons (Sondenaa *et al*., 1995), the most affected group being young men (Doody, 2011; Enriquez-Navascues, 2014). Other risk factors include excessive body hair, obesity and a sedentary lifestyle (Zdemir, 2014). The current treatment for symptomatic PD is surgical excision of the sinus and the cyst, socalledpilonidal cystectomy. Primary closure, with or without tissue transposition, or secondary open healing, are subsequently chosen based on the size, depth and location of the wound. Despite a variety of surgical techniques available to reduce recurrence rates, PD operations frequently present with complications such as delayed wound healing, infection and persistent pain and recurrences, often requiring re-interventions (Al-Khamis, 2010). In order to decrease complications and recurrence rates after PD excision, it is desirable to use a less invasive technique that allows patients to recover more quickly and permanently.

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Our center is the first in Middle East to introduce a minimally invasive treatment SETON with a radial laser probe, causing obliteration of sinus tracts. Previous studies examining the use of this laser technique to treat anal fistulas and pilonidal sinus disease have shown promising results (Dessily *et al*., 2017; Meinero *et al*., 2016). To contribute to the evidence available on this relatively new intervention, this study aimed to assess the efficacy of SETON_SILAC as a therapy to the pilonidal sinus, taking in account the advantages and disadvantages of laser work, recurrence, hospital stay and resumption of work.

SUBJECTS AND METHODS

A prospective study conducted in Hemocure Surgery Department, EL Rahma Hospital and included 100patients were operated with the SETON_SILAC technique by two surgeons from JUNE2018to December 2019. Informed consent was obtained from all patients. All patients above the age 16, who had been clinically diagnosed with primary or recurrent PD, were eligible for laser intervention. There were no exclusion criteria among this patient group. All patients signed informed consent for the intervention and subsequent data collection. We used a prospective database and self-developed digital questionnaire including patient demographics, postoperative complications, duration of pain evaluated by the use of analgesics, patient satisfaction, persistent open sinus and recurrence after healing

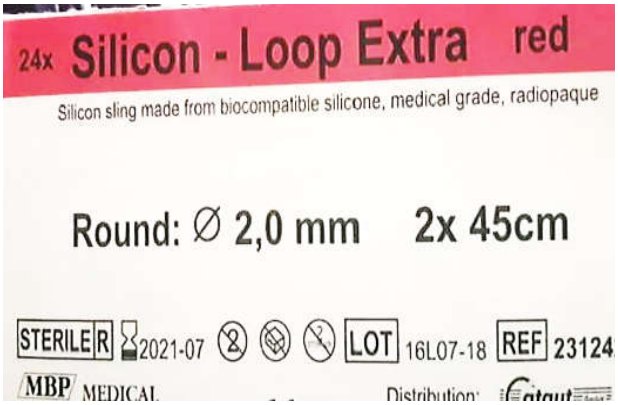

Fig. 1. Seton

Fig. 2. Sexton

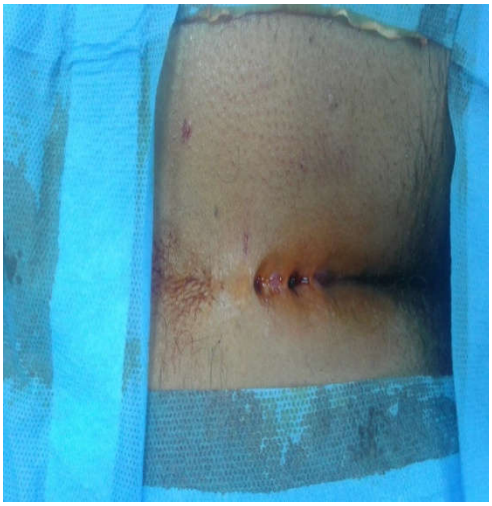

Fig. 3. Preoperative pilonidal sinus

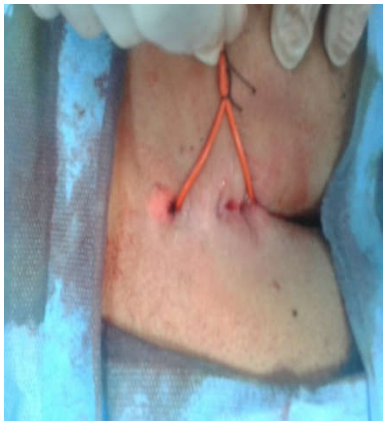

Fig. 4. Postoperativepilonidal sinus

Technique: The operation is performed under spinal or general anesthesia. Patients are placed in prone position. After shaving, cleaning and scrubbing of the skin with alcoholic chlorhexidine, double strong tape is placed on the right buttock in order to increase exposure. Local anesthesia is administered before incision with 20ml bupivacaine. The sinusoidal pits are enlarged with a biopsy corepunch (4 mm, 6 mm or 8 mm depending on pit size). Hair and debris is removed from the sinus tracts with a small surgical spoon. Saline water is used for debris washout and ropivacaine is injected under the skin around the pits and in the tracts for tissue protective cooling. Subsequently, a radial diode laser probe at 1470 nm wavelength is used. The laser energy is 13 Joule. The radial fiber delivers energy homogeneously at 360 degrees. First, a preparatory laser treatment is performed, after which the sinus tracts are cleansed with a surgical spoon again. During the following definitive procedure, the probe is withdrawn at an approximate speed of 1 cm per two to three seconds, causing the small sinus tracts to shrink and close. If the tract is not closed after a first withdrawal, a second intervention is performed.

Large sinus tracts remain open. The injury to the endothelium will cause granulation and subsequent closure. At the end of the procedure, a washout with saline is performed and put SETON between first and last pit and tie with silk (2/0) and sterile dressing are applied. Follow-up was conducted in all cases 1 and 3 weeks postoperative to evaluate pain medication, inspect and cleaning pits with saline, and detect possible complications. After the first period, patients were seen six weeks to evaluate cleaning and healing of pits then remove SETON if pits are cleaned but if not cleaned we reevaluate after 2 week. Follow up was done 3, 6 and 12 months after operation in order to evaluate wound healing and closure and to detect any persistent sinus activity or early recurrences. Digital questionnaires were obtained after two weeks (focusing on pain and use of analgesics), three months (focusing on wound healing and closing) and after one year (focusing on recurrences).

RESULTS

Table (1) showed that 96% of patients were successfully treated after the first intervention without requiring a re-laser or surgical excision. FOUR patients had persistent sinusoidal disease after SETON_SILAC intervention. Table (2) & (3) showed that the remaining sinuses in all of the persistent cases, were treated with either local excision or re-laser treatment. After the second treatments, all sinuses were closed after a mean follow-up of 180 days There were no cases of true recurrence after successful laser treatment. Table (4) showed that 15 patient had abscess formation which treated with drainage and antibiotic, no cases of wound infection, bleeding complications or severe postoperative pain were reported. According to the questionnaires, patient satisfaction was high. Median satisfaction score was 9.0 (3.0 to 10.0) on a scale 1 to10, and patients reported little postoperative pain as shown in table (5). Table (6) showed that 13%of patients did not require any analgesia, 37% only occasionally, 32%for less than 1 week, 10% for one to two weeks and after three weeks only 8% of patients still used analgesics. Paracetamol was most frequently used, followed by Non-Steroidal Anti-Inflammatory Drugs (NSAIDs).

Table 1. The result of first intervention by SETON_SILAC technique

Result of first intervention	%
Successfully Treated	96%
Persistent Sinusoidal Disease	4%

Table 2. The result of second intervention by either local excision or re-laser treatment for the remaining sinuses

Result of first intervention	%
Successfully closed (%)	100%
True recurrence (%)	0%

Table 3. Follow up time for complete closure of all sinuses

	Mean (Range)
Time (Days)	180 (240-390)

Table 4. Postoperative complications

Complications	%
Abscess	15%
wound infection	0%
Bleeding	0%
Sever postoperative pain	0%

Table 5. Patient satisfaction according to the questionnaires, on scale 1 to 10

	Median (Range)
Patient Satisfaction Score	9.0 (3.0-10.0)

Table 6. Postoperative need for analgesia

	%
No analgesia	13%
Occasionally	37%
< 1 week	32%
1 – 2 week	10%
>3 week	8%

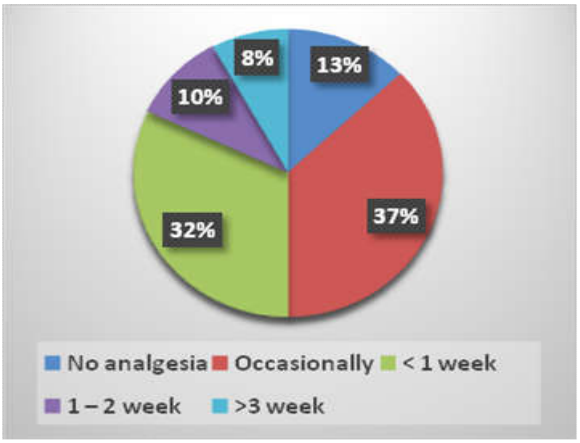

Figure 1. Postoperative need for analgesia

DISCUSSION

This study reports the first short-term outcomes of an observational cohort of 100 patients with PD treated with SETON_SILAC in Egypt. The aim of the present study was to examine the safety and efficacy of SETON__SILAC and patient satisfaction.

The success rate of SETON_SILAC was high regardless the number of prior operations, thereby indicating effectiveness in a diverse spectrum of PD history and morbidity. Also in patients that needed a relaseror re-excision, SETON_SILAC was shown to be an effective treatment. Moreover, patient satisfaction was high. So far, no disease recurrence has presented on short term follow-up. No complications were found during and/or after the treatment with the SETON_SILAC. Before the onset of minimally invasive techniques such as endoscopic pilonidal sinus (EPSiT) (Meinero *et al*., 2016; Meinero, 2014) and laser treatment, surgical excision was the standard intervention for PD. In simple cases, excision is followed by open healing or closing of the defect. Mean healing time after the open approach varies from one to three months (Jensen, 1988; Testini *et al*., 2001; Kamran, 2017; Sahasrabudhe *et al*., 2012), while direct suturing results in a quicker mean recovery time of two to four weeks (Kamran *et al*., 2017; Sahasrabudhe *et al*., 2012). Postoperative complications such as wound infection and dehiscence occur in up to 20% (Kamran *et al*., 2017; Sahasrabudhe *et al*., 2012).

Recurrence rates after surgical excision range from3% to 20% (Testini *et al*., 2001; Kamran *et al*., 2017; Sahasrabudhe *et al*., 2012; Gencosmanoglu *et al*., 2005), depending on the severity of the preoperative presentation. In complex disease (i.e. multiple sinuses, long sinuses with multiple side tracts, abscess formation) more extensive surgical excision might be required. Techniques such as the V-Y advancement flap (Sahasrabudhe *et al*., 2012), rhomboid excision and lomberg flap (Yabanoglu *et al*., 2014; Karakayali, 2009), whole natal cleft excision or Z-plasty are used (Ozdemir *et al*., 2014; Monro, 1965). Not surprisingly, morbidity is considerably higher in this group (Karakayali *et al*., 2009). Therefore, this complex patient group has the biggest potential benefit from SETON_SILAC. The population at risk mostly consists of young individuals who either attend school or are employed. To allow for a swift and permanent recovery of these patients, as well as those suffering from extensive PD, a better and less invasive technique is necessary. As a result, more research of laser therapy has recently been conducted. The most impressive results were obtained in the complicated cases, in which the main sinus was longer and had multiple side tracts. They also included relapsing disease after one or more previous incisions performed elsewhere. The success rate of these complicates cases was 100% (27/27), with no recurrences after a median follow-up of 354 days (range 240 days to 390 days). These promising results correspond to our findings in complex cases. Despite 20 patients with previously recurrent disease (1-4 time), only 4 cases required re-laser or excision after their first SETON_SILAC treatment. All4 cases were successfully treated in one extra re-intervention session.

Conclusion

This study concluded that SETON_SILAC is a quick, safe and minimally invasive intervention to successfully treat primary and recurrent PD. This short-term observational cohort study indicated superiority of the laser technique in comparison with the current standard surgical excision to reduce postoperative pain, wound complications and short-term recurrence. Long-term follow-up of recurrence rates in a larger patient cohort is not yet available; however a prospective cohort study is currently ongoing.

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