



## **Endoscopic Pilonidal Sinus Treatment (EPSIT): Is a New Minimally Invasive Treatment in Pilonidal Sinus**

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### **Authors' contributions**

*This work was carried out in collaboration among all authors. Authors NAD and AHA were involved in conception of idea and study design. Authors MAM and DHK did data collection and performed bench work. Author US performed the statistical analysis. Authors AAM and MQM managed the literature searches. All authors read and approved the final manuscript.*

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### **ABSTRACT**

**Objective:** To determine the outcome of endoscopic pilonidal sinus treatment (EPSIT): Is a new minimally invasive treatment in pilonidal sinus.

**Study Design:** This is an observational study.

**Setting:** Study carried out at General Surgery department, Liaquat University of Medical and Health Sciences Jamshoro, from March 2020 to Feb 2021.

**Materials and Methods:** Patients aged between 20-40 years, both gender having sinus in the cleft of the buttocks on clinical examination with associated symptoms like pain when sitting or standing, reddened, sore skin around the area, pus or blood draining from sinus, hair protruding from the lesion and formation of more than one sinus tract, or holes in the skin were included in this study. Patients with abscess and recurrent pilonidal sinus were excluded. Outcome measurements were

postoperative pain, return to normal daily activities and complication rates including infection, recurrence.

**Results:** 44 patients with Pilonidal Sinus were included in this study. 15 to 40 years with mean age  $\pm$  SD (range) was  $26.56 \pm 4.1$  years. 40(90.90%) were male where as 4(9.09%) were females. Mostly patients have single external openings in 37(84.09%) patients with midline opening location in 26(59.09%) patients. The mean operative time $\pm$ SD (range) was  $21.09 \pm 3.62$  minutes (15 to 45 min). According to the visual analog scale (VAS) score for postoperative pain assessment after 48 hours of surgery, 36 patients (81.81%) reported a VAS between 1 to 3, and 8(18.18%) reported a score between 4 to 6. Postoperative wound infection was seen in one case 2.27% while recurrence was observed in two cases 4.54%. The overall healing rate was 93.18%. The mean time to return to normal daily activities was  $6.1 \pm 11$  (range, 2–15) days.

**Conclusion:** To conclude that the EPSiT is safe, effective, simple, repeatable and very welcomed by the patients if explained correctly. We can say that EPSiT can be labeled as a day surgery, with fast post-operative recovery and early return to work.

*Keywords: Pilonidal sinus; endoscopic treatment; minimally invasive treatment.*

## 1. INTRODUCTION

Pilonidal sinus (PS) is an acquired disease characterized by the obstructing hair follicles, hitting usually men, affecting most commonly the sacrococcygeal region (natal cleft) and less commonly sternum, umbilicus and axilla. In prior times it was also called a “jeep drivers disease “ because of the local irritation of the area affected [1]. Major causes include obesity, hirsutism, sedentary life style and occupation [2]. PS may present from being an asymptomatic swelling to acutely infected area or chronic cystic swelling with on and off abscess formation. This irritating situation does affect the normal routine of life [3]. The already existing treatments for PS are multiple types of open excisions providing the options of healing at both secondary and primary intention and flap rotations but the poor healing, long duration required for complete recovery effecting the quality of life and significant rate of recurrence leads us to search for more options in the favor of the patient [4]. The purpose of treatment is to completely eliminate the cystic swelling and abolishment of the sinus tracts , leading to the better healing , long lasting results with minimal to zero recurrence and good cosmesis. Conversely, as per the literature available the gold standard reported is excision with primary closure with the mainstay of midline closure or flap-rotation procedures leaving behind the results of variable healing and recovery time/good aesthetic aspect [5]. Enriquez-Navascues et al has reported rates of recurrence from 0 to 40%, for various surgical techniques giving an impact that doing less for PS is always more [6] As we take an overview of the last decade over the advancements of colorectal procedures people have involved it to usage of radiosurgery, fibrin glue injections and highest of

all is endoscopy. [7-8] The endoscopy was basically proposed by Meinerio et al and Milone et al who developed a committed complete sinus eradication fistuloscope under direct vision through an operative channel, and the later used a hysteroscope for the same purpose respectively [9-10]. Finally the minimally invasive technique for pilonidal sinus (PS) has been introduced as endoscopic pilonidal sinus treatment (EPSiT), proving to be a good possible addition in the list of PS treatment options. However, the data already present in this regard is very little to conclude something solid. [10].

## 2. SURGICAL TECHNIQUE

EPSiT requires a fistuloscope with an electrode connected to the electrosurgical knife power unit, an endobrush, tongs, and a Volkmann spoon. The fistuloscope has an 8° angle eyepiece and 14 cm long optical channel along 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 plus 1% mannitol.

The EPSiT is comprised of two steps i.e diagnostic and operative locating the anatomy of fistulus tracts via introduction of endoscope through the external opening and then eradicating the sinus and tracts along with extraction of the contents by introducing an electrode through the operative channel respectively. Volkmann spoon is used to remove all the granulation tissue or debris and tongs are used to extract hairs .The blood, debris and hairs are then continuously washed with the washing solution to completely clean and eradicate the disease [10].

### 3. MATERIALS AND METHODS

This is a retrospective study of 44 patients who underwent the EPSiT procedure was carried out in the department of general surgery liaquat university of medical and health sciences, from March 2020 to Feb 2021. Our institutional review board approved this study. Patients aged between 20-40 years , both gender having sinus in the cleft of the buttocks on clinical examination with associated symptoms like pain when sitting or standing, reddened, sore skin around the area , pus or blood draining from sinus, hair protruding from the lesion and formation of more than one sinus tract, or holes in the skin were included in this study. Patients with abscess and recurrent pilonidal sinus were excluded. Outcome measurements were postoperative pain, return to normal daily activities and complication rates including infection, recurrence.

### 4. RESULTS

During the study period of one year, total of 44 patients with Pilonidal Sinus were included in this study. The age range 15 to 40 years with mean age  $\pm$  SD (range) was 26.56 $\pm$ 4.1 years. In this study, most of the patients i.e. 28 (63.63%) were found in the age group 20 to 30 years. Out of them 40(90.90%) were male where as 4(9.09%) were females Table 1. Mostly patients have single external openings in 37(84.09%) patients with midline opening location in 26(59.09%) patients Table 1. The mean operative time + SD (range) was 21.09 $\pm$ 3.62 minutes (15 to 45 min). Out of 44 patients, 33(75%) patients were operated between 15 to 30 minutes while 11(25%) patients were operated from 31 to 45 minutes Table 2. According to the visual analog scale (VAS) score for postoperative pain assessment after 48 hours of surgery, 36 patients (81.81%) reported a VAS between 1 to 3, and 8(18.18%) reported a score between 4 to 6.

Postoperative wound infection was seen in one case 2.27% while recurrence was observed in two cases 4.54%. The overall healing rate was 93.18%. The mean time to return to normal daily activities was 6.1 $\pm$ 11 (range, 2–15) days.

### 5. DISCUSSION

As we discuss about the absolute treatment technique for PS the bottom line to all is that it should be simple and maximally fruitful. The surgical approaches to PS are under discussion

by a lot of colorectal surgeons still trying to prove the secondary intention healing procedures or primary closure techniques to be maximally worthy but no any clear recommendation has been made .[10] In our study out of total patients 90.90% were male with peak age at 2nd decade of life which is also reported in some other prior studies as more male population be affected than females [10-11]. The maximum patients i.e 84.09% had single opening of sinus with 59.09% midline disease which hardly effected the results of the study but is similar to quite a few prior studies. Al-Khamis et al reported in one of his systemic analysis that there is lesser rate of recurrence i.e 4%to 8% in simple excision and healing at secondary intention but on the other hand long duration of hospital stay and prolonged overall recovery time is also one of the considering aspects [11]. Contrary to the secondary intention healing procedures some studies support the primary closure but the recurrence and infection rate is much higher. Now as we see this comparative meta-analysis by Enriquez-Navasculas et al between the secondary and primary closure approaches he concluded that the paramedian closure techniques have recurrence rate of 75% as compared to the secondary intension healing procedures which is 25% leading to the need of better surgical options [6,12] while in our study the total recurrence rate was reported was 4.54% after EPSiT [13]. The evolution of endoscopic procedure for PS provides a fair knowledge about all the possible tracts of fistula and hence the complete destruction of the tracts and cyst along with the contents. Endoscopy offers a scar less surgery as is performed through the external orifice [14].

A multicenter series of 250 patients by Meinero et al9 reported the success rate of EPSiT, near 95%. So this small recurrence rate of 5% makes the EPSiT a more desirable treatment of choice [9,14].

The success rate of EPSiT is >90% with complete eradication of the tract and sinus along with the contents after the exact under vision surgery leaving behind no scar and only chances of 5% recurrence ,with minimal post operative pain and small duration of hospital stay providing the early normalization of the routine life makes the EPSiT more superior to the open techniques which may provide the same success rate but with more time of hospitalization and delayed healing and recovery [14] In our study the wound healing time by EPSiT was 2 to 10

days at maximum as compared with the existing approaches , like Limberg flap, Bascom's technique , which was at least 62–95 days according to some studies . EPSiT can be counted as day care surgery providing the opportunity of returning early to work and fast recovery and negligible chances of wound infection as in our study it came out to be only 2.27% [15-16] Presence of large scar in open and flap rotation techniques are associated with post-operative pain and discomfort contrary to

the 5mm scar endoscopic procedure without stitches and discomfort [17-19]. As in our study the post operative pain on the standered VAS scoring 0% patients were scored beyond the score of 6. The most concern able aspect of the surgery by the patients is healing time and time to return to work or normal activities of life which was reported as 93.1% in 41 patients and 72.72% patients return to their work within 2 to 5 days of surgery which is almost in accordance with the prior studies [18-19].

**Table 1. Patient's characteristic (n-44)**

Variable	Patients	Percentage
<b>Age in years</b>		
• 15 – 20	3	6.81%
• 21 – 30	28	63.63%
• 31 – 40	13	29.54%
<b>Gender</b>		
• Male	40	90.90%
• Female	4	9.09%
Number of open external openings and orifice		
• 1	37	84.09%
• 2	5	11.36%
• ≥3	2	4.54%
Location of open external openings and orifice		
• Midline	26	59.09%
• Midline and lateral opening	13	29.54%
• Lateral opening	5	11.36%

**Table 2. Operative and postoperative characteristic (n-44)**

Variable	Patients	Percentage
<b>Operative time</b>		
• 15 to 30 minutes	33	75%
• 31 to 45 minutes	11	25%
<b>Postoperative Pain VAS score</b>		
• 1–3	36	81.81%
• 4–6	8	18.18%
• 7–10	00	0%
<b>Postoperative Complications</b>		
• Wound infection	1	2.27%
• Recurrence	2	4.54%
<b>Healing</b>		
• Yes	41	93.18%
• No	3	6.81%
<b>Return to normal daily activities</b>		
• 2 to 5 days	32	72.72%
• 6 to 10 days	10	22.72%
• > 10 days	2	4.54%

So In our study patients were reported to have less or no post operative pain, small hospital stay, early recovery and return to work , very less wound infection , sense of tension at operative site ,chance of wound dehiscence and minimal recurrence rate after EPSiT . Furthermore, even in case of recurrence which is hardly reported in 5% of patients EPSiT is easily repeated rather than keeping the patient in hospital for a long time for conventional procedures .

Although EPSiT came out to be far more superior in every aspect in our study but still further randomized prospective studies are needed to validate procedure being gold standered. , 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. [20].

## 6. CONCLUSION

To conclude that the EPSiT is safe, effective, simple, repeatable and very welcomed by the patients if explained correctly. We can say that EPSiT can be labeled as a day surgery, with fast post-operative recovery and early return to work. EPSiT is a good evolving technique fulfilling all the aspects of a surgical procedure needed for pilonidal sinus providing complete eradication of disease under vision, better asthetic results and negligible recurrence.

## CONSENT AND ETHICAL APPROVAL

Our institutional review board approved this study. Informed consent was obtained from all patients before the surgical procedure.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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