

# Treatment of pilonidal disease by combination of pit excision and phenol application

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## Abstract

**Aim** To examine the results of our minimal invasive treatment for pilonidal disease.

**Methods** Total 83 patients treated by pit excision and consecutive phenol applications on an outpatient setting. All procedures were performed under local anesthesia, without any preoperative testing, colon cleansing, prophylactic antibiotics or sedation. A pit excision (mean length  $1.3 \pm 0.5$  cm) including several close midline orifices was done. Separated pit excisions were done to the remaining midline and lateral orifices. Sinus cavity was cleared of hair and debris, and the walls of the cavity were sclerosed using a cotton bud dipped in 80 % liquid phenol. Phenolization was repeated twice on day one and seven.

**Results** Mean procedure time was  $22.2 \pm 7.4$  min. Rates of patients who did not required analgesics at first, second, third and fourth days after surgery were 58, 85, 91 and 100 %, respectively. All the patients returned to work/school after 3 days. Mean wound closure time was  $28.5 \pm 14.9$  days. Total 86.7 % of the patients were asymptomatic after a mean  $25.7 \pm 8.5$  months follow-up.

**Conclusion** Simple pit excision and sclerosing the pilonidal sinus cavity consecutively was an effective and minimal invasive method for relief of pilonidal symptoms.

**Keywords** Pilonidal sinus · Pit excision · Phenol · Sclerotherapy

## Introduction

The most preferred treatment for sacrococcygeal pilonidal sinus disease includes a wide surgical excision of the sinus cavity and tracts. The wound can leave lay open or can be closed by primary suturing or flap reconstruction. These procedures usually require regional or general anesthesia, hospital stays, painful postoperative periods and resulting in more days away from work or school. Simple surgical procedures not including wide surgical excision eliminate those disadvantages. Phenol treatment is a minimal invasive procedure for pilonidal disease with reported success rates 56–83 % after even one-time application [1]. It is closer to the ideal treatment by application under local anesthesia in outpatient clinics with minimal discomfort and disability. It is simple and cost-effective; however, its success rates are usually inferior than wide surgical excision. When the phenol treatment failed, it can be repeated easily and with these re-treatments, the success rates of phenol treatment can be increased to 60–100 % [2]. Simple pit excision is another minimal invasive technique that described by Lord and Millar in 1965 but it has not been practiced extensively till the last years [3–5]. We combined both simple techniques, and we mainly aimed to improve the results of minimal invasive procedures for pilonidal disease.

## Materials and methods

Consecutive patients who presented to our clinic between January 2008 and October 2009 for the treatment of a symptomatic (purulent discharge or presence of abscess) sacrococcygeal pilonidal sinus disease were enrolled this study. We got the Institutional Review Board approval, and

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consenting patients were informed in detail regarding the study protocol. There was no preoperative testing, no colon cleansing or no antibiotic prophylaxis. All surgical procedures were performed on an outpatient basis under local anesthesia without sedation.

### Surgical technique

Procedures were performed at the prone position. The sacrococcygeal area is shaved and cleaned with antiseptic solution. Local anesthesia was achieved by slowly injecting mixture of lidocaine (20 mg/ml) and epinephrine (0.0125 mg/ml) into the planned incision sites (Fig. 1a). During injection, we cared for slow injection, thin needle, mixture the local anesthetic with bicarbonate or Ringer's lactate solution [6]. First, we did a pit excision to the midline including several close midline orifices by a size 11 scalpel blade (Fig. 1b). Pit excision was done close to the sinus orifices including disease-free skin. We did not prefer larger excisions, 1- to 2-cm-length opening to the sinus cavity for cleaning and sclerosing was enough. If necessary, separated pit excisions were done to the remaining midline and lateral orifices (Fig. 1b). Minor bleedings were controlled by electrocautery. The sinus cavity was cleared of hair and debris using a surgical forceps (Fig. 1c). Following protection of peri-incisional skin with a pomade, and the perianal area with a sponge, the walls of the cavity are sclerosed using a cotton bud dipped in 80 % liquid phenol (Fig. 1d) until the inner walls assume a whitish hue. We applied liquid phenol twice, each took 1 min and total phenolization time was 2 min. The incision was then covered by a gauze pad, and the patient was sent home by prescribing an analgesic pill (paracetamol 500 mg). We suggested analgesic use only when required. Phenol applications were repeated a day after and a week after the first session. In cases of pilonidal abscess, we applied phenol immediately after abscess drainage, 1 day and 1 week later consecutively.

All patients were asked to complete a daily questionnaire for 1 week including pain, analgesic use and time-off work. Patients were followed at every week for 2 months, at the sixth month, at the 12th month and yearly after that. During the weekly follow-up period (within the first 2 months) no additional intervention was done as per study protocol. A standard form was used for the records of the patients.

Demographic characteristics (age, gender, body mass index, density of body hair, history of abscess, history of previous pilonidal sinus surgery, number and location of orifices), information regarding with the procedure (length of incision, rate of secondary orifices, presence or absence of hair within the cavity, procedure length), early postoperative results (duration of postoperative pain, analgesic

requirement, wound healing time and postoperative complications), late postoperative outcomes (anatomical or symptomatic healing, treatment failures) were recorded.

Anatomical healing was defined as the complete closure of the sinus orifice along with resolution of patient complaints. The definition of symptomatic healing was limited to patients who did not have any complaints after completion of treatment. Patients with still unhealed discharging wound by the end of study protocol (2 months) were considered as early treatment failures. All patients were followed-up either on an outpatient basis or by telephone and those in whom symptoms recurred were considered late treatment failures. Overall treatment failure was the sum of both early and late treatment failures.

### Statistical analysis

All statistical analyses were performed with the Statistical Package for the Social Sciences (SPSS) for Windows version 17.1 (SPSS Inc., Chicago, IL, USA). Values for continuous variables were given as mean  $\pm$  standard deviation.

### Results

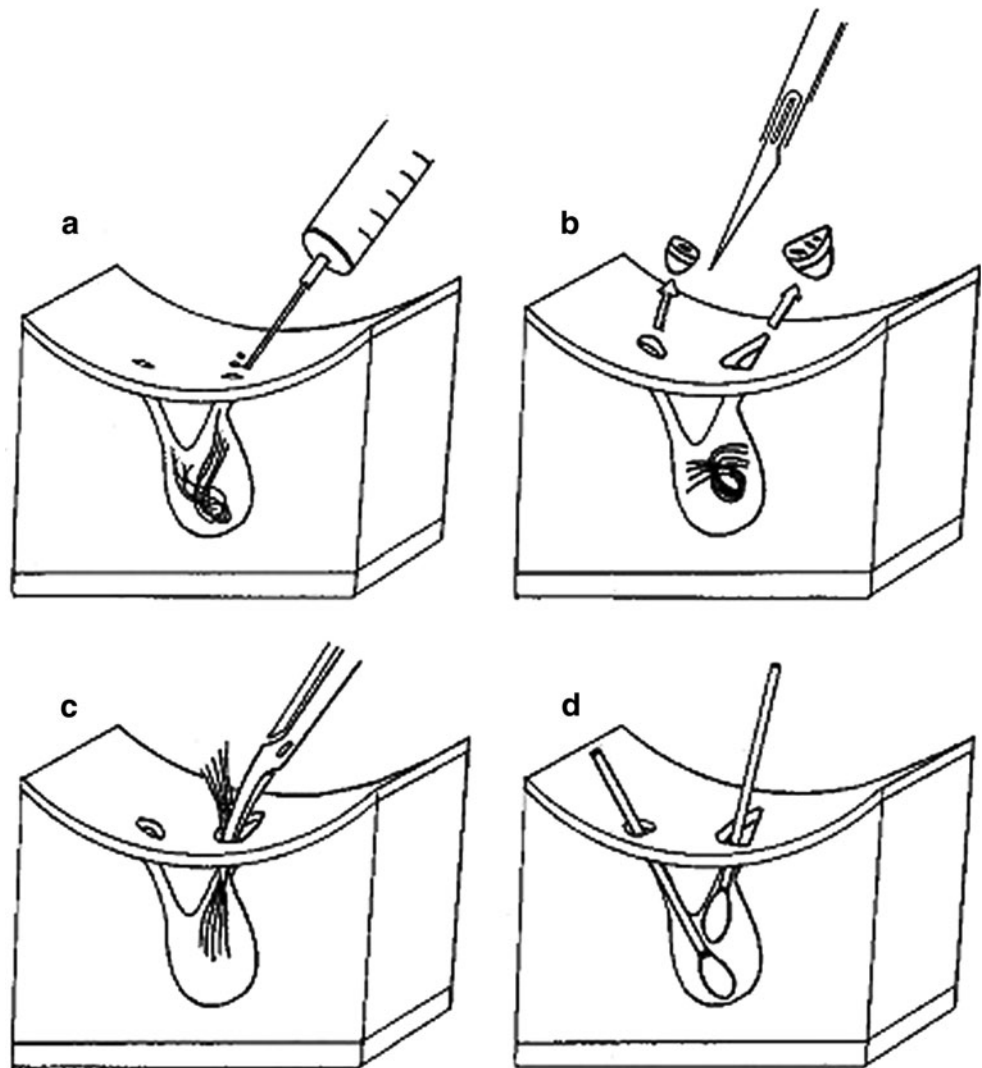
Results regarding with demography, procedure, early and late results are summarized in Table 1. In 60 (72 %) of patients, the orifice was located in the midline, whereas 21 (25.5 %) of patients had both laterally and midline located orifices. Two (2.5 %) patients had only lateral orifice without midline. Those two patients did not require midline pit excision.

Only complication was skin burn due to phenol in 8 (10 %) patients. All those burns were superficial and healed without requiring any further treatment.

A total of 53 patients returned completed questionnaires. The rates of patients with pain at the first, second, third and fourth days after surgery were 60, 40, 40 and 0 %, respectively (Fig. 2). The rates of the analgesic required patients at the first, second, third and fourth days after surgery were 42, 15, 9 and 0 %, respectively (Fig. 2). No patients suffered from pain or required analgesic after postoperative day three. All the patients returned to work or school after 3 days.

The mean wound healing time was  $28.5 \pm 14.9$  days. Persistence of a small orifice was observed in some patients ( $n = 6$ , 7.2 %) despite complete resolution of symptoms. Such patients were considered as “symptomatically” but not “anatomically” healed. Early treatment failure rates by the end of 2 months were 10.8 %. Mean follow-up period was  $25.7 \pm 8.5$  months (median 20 months, ranged 14–38 months). Long-term recurrence rate during follow-up

**Fig. 1** **a** Local anesthesia, **b** pit excision: we did a pit excision to the midline including several close midline orifices by a size 11 scalpel blade. If necessary, separated pit excisions were done to the remaining lateral or distant midline orifices  
**c** removal of hair and debris,  
**d** sclerotherapy with phenol



was 2.5 %, with respective overall treatment failure rate of 13.3 %. Treatment failures were treated with excision and flap reconstructions.

## Discussion

Pilonidal sinus disease is a common disorder particularly at young males usually presenting with discharge, pain and abscess formation. The currently accepted treatment modality includes excision of sinus [7]. However, excision of the sinus not only increases healthcare costs (regional or general anesthesia and hospitalization) but is also responsible for postoperative pain while delaying patients' return to work/school. Treatment of a pilonidal sinus should ideally be by a cheap and simple outpatient procedure with a low recurrence rate, which causes the least amount of discomfort while also allowing for early return to work/school. In this sense, modalities such as the excision and

flap reconstruction technique are far from ideal, despite their low recurrence rates.

Sclerotherapy of a pilonidal sinus either by making a small incision or through the sinus orifices was first described nearly four decades ago [2]. However, the lack of a standard protocol and poor results reported in some studies had restricted the widespread use of phenol treatment. We believe that one of the main reason behind the previously reported poor results was making all the procedures (cleaning and sclerosing) through the already existing small sinus orifices without making a new incision. Making an incision (1–1.5 cm) would decrease the chance of residual hair and debris in the sinus cavity, while also enabling more effective application of a sclerosing agent to the cavity walls, and does not increase the postoperative discomfort for the patient.

Phenol is the usually preferred sclerosing agent in this setting, since it is readily available and cheap. Alternately, silver nitrate and 80–90 % alcohol may also be used as

**Table 1** Demographics, operative procedures and the results of the patients

Parameters	Patients <i>n</i> = 83 (%)
<i>Demography</i>	
Male (%)	73 (88)
Mean age (years)	26.6 ± 6.4
Body mass index (kg/m <sup>2</sup> )	24.5 ± 2.9
History of prior surgery (%)	15 (18)
Excess body hair (%)	56 (68)
Abscess on presentation (%)	23 (28)
Number of sinus orifices	2.4 ± 1.8
Location of orifice(s)	
Midline (%)	60 (72)
Midline and lateral (%)	21 (25.5)
Lateral (%)	2 (2.5)
<i>Procedure details</i>	
Length of incision (mm)	13.1 ± 5.1
Excision of secondary orifice (%)	23 (28)
Procedure duration (minutes)	22.6 ± 5.8
Presence of intracavitary hair (%)	70 (84)
<i>Early and late results</i>	
Wound healing time (days)	28.5 ± 14.9
Morbidity	8 (10)
Abscess	0
Skin burn	8 (10)
Early treatment failure	9 (10.8)
Late treatment failure (recurrence)	2 (2.5)
Total treatment failure	11 (13.3)
Symptomatic healing (%)	72 (86.7)
Asymptomatic but persistent orifice(s)	6 (7.2)
Symptomatic and anatomical healing (%)	66 (79.5)
Follow-up period (months)	25.7 ± 8.5

sclerosing agents. Phenol like the other agents is a necrotizing material and used for creation granulation tissue in the cavity walls. Care is taken to avoid phenol from trickling down the natal cleft toward the anus. Therefore, a protective gauze is used for anus, and the rest of the area was liberally coated with ointments. Strict precautions are necessary throughout the procedure, especially in the handling of the phenol and it should not come into contact with the skin or eyes [2]. A single application of sclerotherapy has been shown to be effective in the treatment pilonidal sinuses [1]. Several studies recommended repeated applications of phenol until cessation of purulent discharge [8, 9]; however, none of those studies mentioned whether such an treatment improved patient outcome. In this study, we demonstrated the superiority of repetitive sclerotherapy combined with pit excision to the simple incision and single sclerotherapy. We summarized in

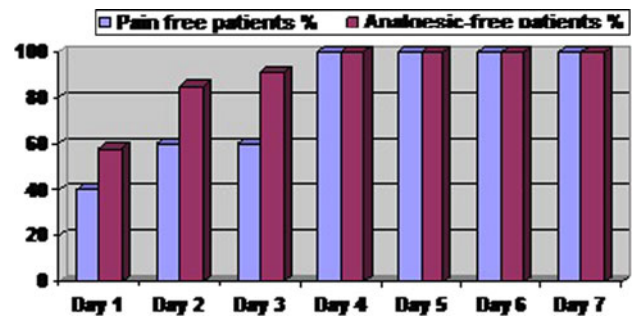
**Fig. 2** Percentage of pain-free and analgesic-free days for the first week after surgery

Table 2 the previous studies including the results of single and multiple phenol applications for pilonidal disease. Generally, success rates were higher in the multiple applications.

In this protocol, pit excision was preferred to prevent premature closure of the wound. Premature closure is known to result in delayed secondary wound healing while also increasing the risk of early complications such as abscess formation. Pit excision effectively eliminated these risks, without having a negative effect on the wound healing process. The presence of extensive blood and debris during the first session may prevent the applied sclerosing agent from acting effectively on the sinus epithelium. We believe that repetition of sclerotherapy in a “drier” environment on day 1 is important for treatment success. We preferred to repeat sclerotherapy on postoperative day 7 so as not to allow premature closure of the wound while also facilitating secondary healing. Pit excision and repeated phenolization did not have important negative effect on the postoperative pain, analgesic use and work-off time.

The goal of excisional surgery is complete removal of sinus orifices, sinus epithelium and intracavitary hair/debris, all of which can be successfully achieved by non-excisional sclerotherapy. The results of minimal invasive therapy made it a good alternative to excisional surgery. It is simple and cost-effective can be performed on an out-patient basis without requiring hospitalization and provides quick recovery. We believe that there is a need for comparison of those minimal invasive methods and traditional treatment methods for sacrococcygeal pilonidal disease.

Minimal invasive procedures for the management of pilonidal sinuses have been the standard protocols in our clinic since May 2007. First, we systematically reviewed the phenol applications in the medical literature [2]. After that, in a preliminary study, we reported 30 cases of phenol treatment after a small midline incision [1]. In that study [1], we had not excise any pit and we applied the phenol only once without any other intervention as a protocol. This simple procedure had resulted with 67 % symptomatic relief for a 26-month follow-up. We modified our

**Table 2** Comparing single and multiple applications of phenol treatment for pilonidal disease

First author, year and reference no	Patients no	Success rate (%) for single phenol application	Success rate (%) for multiple phenol applications	Mean follow-up time (months)
Maurice (1964) [10]	21	67	81	18
Stewart (1969) [11]	30	63	73	18
Stephens (1969) [12]	30	83	NA	6–36
Hegge (1987) [13]	48	56	94	36
Kelly (1989) [14]	44	61	70	NA
Stansby (1989) [15]	104	65	75	8
Vara-Thorbeck (1990) [16]	67	78	91	12–36
Schneider (1994) [17]	37	60	NA	42–90
Dogru (2004) [9]	41	NA	95	24
Kaymakcioglu (2005) [8]	143	NA	92	24
Kayaalp (2010) [1]	30	70	NA	14
Sakcak (2010) [18]	112	77	88	33
Dag (2011) [19]	76	NA	67	25
Present study	83	NA	86	25
Total	866	67 (ranged 56–78)	83 (ranged 67–95)	

protocol in January 2008 that included pit excision and three intermittent applications of phenol. Here, we reported our latest treatment protocol for pilonidal disease. The limitation of the study was follow-up of some patients by telephone call.

As a conclusion, pit excision and phenol application is a minimal invasive treatment modality for pilonidal sinus. Combination of both minimal invasive methods improved the results without any negative effect. Minimal invasive approaches should be the first line treatment for pilonidal sinus before decision of traditional large sinus excision.

**Conflict of interest** The authors declare that no conflict of interest exists.

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