Comparison of the application of low concentration and 80% phenol solution in pilonidal sinus disease

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Summary

Objectives Many conservative methods have been applied in the treatment of pilonidal sinus disease (PSD). The most commonly used conservative treatment is 80% phenol solution. Our observations demonstrated that 80% phenol solution caused much destruction in the sacrococcygeal region.

Design In this study low concentrations of phenol were used with the aim of reducing the unwanted side-effects of high-concentration phenol without reducing the therapeutic effects.

Participants We treated 112 patients (18 women, 94 men) with PSD using phenol solution. Patients were divided into two groups: Group A was treated with a 40% solution of phenol solution, and Group B was treated with an 80% solution of phenol solution.

Setting All patients were treated on an outpatient basis. One mL of low (40%) or high (80%) concentration phenol solution was injected into the main sinus orifice. During the check it was observed and noted whether there was skin necrosis, fatty tissue necrosis or abscesses.

Main outcome measures The mean age was 27.4 years (6–44). The median length of symptoms was seven months (0.5–132). In the 2.8 years (1–6) of mean follow-up period, the disease recurred in 13 (11.6%) patients.

Results This treatment procedure was well-tolerated by all the patients except for those who had unwanted results. No patients in group A had skin necrosis, and only one had abscesses. In group B two patients had abscesses, and three had skin necrosis. Fatty tissue necrosis was seen in one patient in Group A and in five patients in Group B. Recurrence rates were four (7.4%) cases in Group A and nine (15.5%) cases in Group B.

Conclusions It is possible to treat patients in a shorter time with a considerably smaller loss of working time, since the destruction of peripilonidal adipose tissue and skin is less. Therefore, the use of low-concentration phenol solution is an option to be considered in the treatment of PSD.

Introduction

Sacrococcygeal pilonidal sinus disease (PSD) is a common problem especially in young hirsute men. Herbert Mayo is reported to have published the first case of PSD in1833,[1] and many surgical techniques have been described and performed since the 1880s as treatment for chronic PSD.[2] Surgical methods generally centre on excision of the sinus tracts followed by primary midline and off-midline closure or leaving the wound open to heal by secondary intention.[3] Some authors have suggested and applied a sclerosing agent in the treatment.[4,5] One of the most popular sclerosing agents is 80% phenol solution,[6] but although it is applied by many surgeons, it has been demonstrated that this highly caustic agent causes much destruction in the sacrococcygeal region and may extend the period of wound healing and recovery.[7,8]

The objective of this study was to establish the effectiveness of low (40%) concentrations of phenol solution in the treatment of sacrococcygeal pilonidal disease.

Materials and methods

Of the 126 patients admitted with sacrococcygeal pilonidal disease from October 2004 to November 2009, those who were treated but did not come back for check-up and those whose purulent discharge did not stop were eliminated from the study. All the remaining 112 were admitted to the protocol and completely followed up. Ninety-four of our patients were male, and 18 were female. Fifty-four patients received 40% phenol solution (Group A), and 58 patients received 80% solution (Group B). Patients were informed of the risks of the treatment and informed consents were taken.

All patients were treated on an outpatient basis. The sacrococcygeal skin was shaved before applications. The area was cleaned with povidone iodine solution and covered with gauzes. The skin, sacrococcygeal fascia and surrounding tissue of the main sinus and its lateral tracts were infiltrated with approximately 5 mL lidocaine (concentration 20 mg/mL) with epinephrine (concentration 0.0125 mg/mL). All sinus tracts were gently probed. Hair, debris and infected contents were taken out of the main sinus tract using a curved mosquito clamp, and then tracts were curetted bluntly. An intravenous plastic IV catheter was introduced into the sinus and 1 mL phenol solution was injected for a total of five minutes to Group B patients. In Group A, 0.5 cc normal saline made up to 1 mL with phenol solution was injected at the same time and for the same periods as Group B. The number, length and position of the sinus canals were not evaluated in our study. Patients who had purulent discharge were given 500 mg Cefuroxime aksetil (Hoffmann-La Roche Ltd, Basel, Switzerland) each day for five days. Patients whose discharge ceased were included in the study. No antibiotic was given after the application.

Patients were checked and dressed weekly until they recovered completely. During the checks their sinus orifices were checked and, if needed, any necrotic material and blood clots were drained out by entering the main orifice. After recovery every patient was advised to clean their intergluteal region when bathing and also to depilate the region every three months. Patients, all of whose sinus orifices were epitelized and closed, and those whose discharge had ceased, were accepted as recovered.

If the purulent discharge did not decrease or if the orifices did not close, a second application was performed six weeks later. Repeated discharge from the sinuses after complete healing was admitted as recurrence. Skin necrosis, fatty tissue necrosis, abscesses and recurrence were accepted as unwanted results. All patients were told to go to work the following day, but it was suggested that patients who had the unwanted results should rest for a short time.

Statistics analysis was evaluated by Kruskal-Wallis test. In a double comparison, a chi-square test was used; $p < 0.05$ was considered significant.

Results

The mean age of the whole group was 27.4 years (range 16–44 years). Five patients in Group A and seven in Group B had been previously operated on in other centres. The median duration of symptoms was eight months (range 0.5–132 months). In the 2.8 years (range 1–4) of mean follow-up period we did not need to hospitalize

Table 1
Comparison of the groups

	A (40%)	*B (80%)*	*Total*	*P value*
Patients (*n*)	54	58	112	0.241
Age (years)	28.4 (16–43)	27.1 (18–44)	27.4 (16–44)	0.114
Gender (man/woman)	47/7	47/11	94/18	0.087
Previous surgery	5 (9.3%)	7 (12.1%)	12 (10.7%)	0.076
Time of follow-up (years)*	2.7 (1–4)	2.9 (1–4)	2.8 (1–4)	0.843
Length of symptoms (months)*	7 (3–114)	8 (0.5–132)	8 (0.5–132)	0.337
Success rate with one application	48 (88.9%)	39 (67.2%)	87 (77.7%)	0.001
Working time lost (days)	3.1 (0–14)	8.6 (0–42)	4.2 (0–42)	0.003
Time of wound healing (days)*	30.5 (11–6)	37.0 (18–88)	29.9 (9–88)	0.046

* Mean and range

any of the patients. This treatment procedure was well-tolerated by all the patients except for those who had unwanted results. Table 1 shows a comparison of the groups. Patients whose discharge was continuing only because of abscesses and fatty tissue were provided with drainage by widening their sinus orifice with a mosquito clamp.

Unwanted results were found in 25 (22.3%) of the patients. Three of these had an abscess, three had skin necrosis, six had fatty tissue necrosis and 13 patients had recurrences. Two of the recurrent cases of Group A and three from Group B were operated on as they did not accept a second phenol solution injection therapy. The other patients who had recurrence recovered through a second course of phenol solution. Second applications were necessary in 13 (11.6%) of the patients (Table 2). It was decided that the patient had recovered after a period of at least 1 month without disease after the sinus orifice had closed.

Table 2
Comparison of the groups in terms of unwanted results

	A (54 cases) (40%)	*B (58 cases) (80%)*	*P value*
Abscess	1	2	0.033
Skin necrosis	0	3	0.000
Fatty tissue necrosis	1	5	0.001
Recurrence	4	9	0.021
Total	6	19	0.014

Group A was found to be significantly different from Group B in terms of loss of working days, the duration of recovery and the duration of symptoms ($p < 0.05$). Group A was different from B in terms of unwanted results ($p < 0.05$).

Discussion

Phenol solution therapy method was first described by Maurice and Greenwood[1] in 1964. They suggested that it might supply a cure to the quiescent phase in the treatment of PSD. This has been studied by many researchers. All of these studies used phenol at 80% concentration or the crystallized form.[9,10] This concentration of phenol solution and the crystallized form was observed to cause destruction in the pilonidal cyst cavities, and to narrow lipoid tissue, sacral fascia and skin. These patients had to stay in the hospital for several days and lost a considerable amount of working time. Most researchers advocating the use of phenol have reported a success rate of between 59% and 95.1% for the treatment, a repeat rate of 6.3% to 17.1%, and median healing times of 6.2 to 8.7 weeks. Work days lost are reported as 8.3–11.6 in the literature.[10–12] In our study, time taken for wound healing was shorter in the low concentration phenol group than in the 80% phenol group. The average number of working days lost was 3.1 for the 54 patients in the low phenol concentration group, which was low in terms of the literature, and 8.6 for the 58 patients in the 80% phenol concentration group, which was comparable with the literature.

In our study, as in previous ones, the average follow-up period was 2.8 years.

As phenol solution treatment can be carried out on an inpatient basis it compares favourably with other therapeutic approaches. Shorey[13] reported a one-day stay in hospital, but in our study no inpatient stay was necessary, and all patients left the clinic immediately after the procedure.

The most common postoperative complications after phenol treatment are development of abscesses and skin and fat tissue necrosis. Complications such as sterile abscesses and fat and skin necrosis were seen at a rate of 7–16% in an earlier study.[14] Many authors ascribed leakage of phenol into the surrounding tissues as due to either too much pressure at the time of injection, or to the opening up of a false tract by preliminary probing. When we used a low concentration of phenol solution in patients, there was no skin necrosis, and only one case of abscess and one of fatty tissue necrosis.

Results were similar to those of the open technique.[15] Therefore, some recommend that the initial management of PSD should be conservative, since only one in 20 patients is likely to require surgery. Phenolization seems to be a promising technique; however, low concentration phenol treatment is a technique only possible with a simple non-infected and uncomplicated sinus.[16,17] Therefore, if there was purulent discharge, we used 500 mg Cefuroxime aksetil each day for five days before application.

Unlike previous studies, we achieved a high success rate in the low concentration phenol solution group.[18,19] We think there may be many reasons for this good result. First, low concentration phenol solution destroyed skin, fat tissue and the sacral fascia less. Second, we checked every case every three or four days. Thus, any unwanted results during the progress of the healing process were observed. Third, in check-ups, any necrotic tissue and hematoma which was blocking the sinus was removed by curettage and phenol solution in order to prevent infection. This prevented any infection. Finally, we recommended shaving of the sacrococcygeal region every three or four months after recovery. We believe that this prevented recurrence of PSD.

The results of treatment of phenol solution by surgical methods are not better than those of phenol treatment. Mahdy[20] was reported as performing surgical treatment on 60 patients divided into two groups, whose hospital stay was 2.9 days and 4.8 days. In the same study, loss of working days was reported as 18.3 days and 25.5 days. Petersen *et al.*[21] reported a high relapse rate of about 25% in 60 patients on whom primary closure surgery was performed. Menteş *et al.*[22] reported that the wound re-opened in 1.7% and infection occurred in 6.5% of 353 patients on whom surgery was performed. In our study, 2.8 years of follow-up showed an average of 4.2 working days lost, a complete recovery rate of 77.7%, 11.7% with complications, and a relapse rate of 4.2%.

Position, length and number of sinus canals are not taken into account, and the average duration of follow-up of 2.8 years are the reasons for limiting the study. Although the results of low concentration phenol application indicate that there may be benefits and a low complication rate in the treatment of PSD with low-concentration phenol solution, prospective randomized studies are needed. Based on this study, it is difficult to recommend that this treatment for pilonidal disease should be applied routinely.

In conclusion, it is possible to treat patients using low-concentration phenol solution in a shorter time and with the loss of considerably fewer working days since there is less destruction of peripilonidal adipose tissue and skin. For these reasons, low concentration phenol solution in the treatment of pilonidal sinus disease is an option to be considered.

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