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Original Article

Comparing the effects of bascom's cleft lift and crystallized phenol treatment on Type III-V Pilonidal Sinus Disease

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Abstract

Aim: We aimed to compare the efficacy of Bascom cleft lift (BCL) and crystallized phenol application in the treatment of sacrococcygeal pilonidal sinus (SPS).

Materials and Methods: This study included 83 SPS patients who were divided into two groups for treatment with either BCL (Group 1: n=30) or crystallized phenol (Group 2: n=53). The two groups were compared in terms of patient characteristics, perioperative results, rates of surgical site infection, hematoma and wound dehiscence, times of returning to daily activities, complete healing time and overall patient satisfaction.

Results: The median follow-up was 40.3 (38.7-44.7) months. The length of hospital stay was longer in the BCL group than in the crystallized phenol group (P<0.001). The median return to work or school was also slower in the BCL group than in the phenol group at 10 (3.2-7.7) and 3 (2-8.7) days, respectively (P=0.002). The phenol group were able to sit pain-free on the toilet earlier than the BCL group in 0.5 (1.1-9.7) and 3 (1.8-10.3) days (P=0.029), and also started lifting weights earlier 14.5 (6-50.2) days vs. 30 (18.1-41.6) days (P=0.011). Moreover, the phenol group reported greater patient satisfaction (P=0.004). On the other hand, the BCL group was more successful than the phenol group in terms of recurrence (P=0.082).

Conclusion: Our results suggest that crystallized phenol can achieve higher patient satisfaction, less hospitalization time, and an earlier return to daily activities, school or work. On the other hand, Bascom cleft lift method results in less recurrence than crystallized phenol treatment.

Keywords: Bascom cleft lift technique; crystallized phenol; sacrococcygeal pilonidal sinus

INTRODUCTION

Sacrococcygeal pilonidal sinus (SPS) is a benign disease which frequently affects young men (1,2). Although its etiopathogenesis is unclear; obesity, inadequate hygiene, repeated trauma to the natal cleft, loose hair and pilonidal abscess are all risk factors for SPS (2-4). The incidence of SPS is approximately 26/100000 (5,6).

In clinical practice, SPS is regularly diagnosed and treated as it causes reduction in the quality of life, serious labor loss and increased hospital costs. There are two main treatment methods: minimally invasive approaches (fibrin glue, phenol, laser application) and invasive methods (excision and simple closure, rotation flap, Limberg flap and Bascom cleft lift) (7-9). Despite so many well-defined methods of treatment for SPS, there is still no consensus on which treatment method is most appropriate (10).

The absence of an internationally adopted classification system of SPS may also contribute to recurrence rates. Recently, minimally invasive methods have been preferred as they allow for outpatient treatment, shorter hospitalization time, less physical pain, and an early return to work and normal life. For this reason, crystallized phenol treatment is frequently preferred in cases of non-complex pilonidal sinus (10-12). Although the recurrence rates of flap techniques are slightly lower, these methods also bring some disadvantages such as the need for more pain relief, long incision scars, and a longer hospital stay with subsequent later return to normal life (12). In this study, we aimed to demonstrate the effectiveness of the

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Bascom cleft lift and Crystallized Phenol treatments in patients with Type III-V pilonidal sinus disease.

MATERIALS and METHODS

This study was conducted at our clinic in the General Surgery department from March 2015 to June 2016. Eighty-three patients who were treated for pilonidal sinus disease were eligible for the study.

For the purposes of this study, the modified Tezel classification was used (12): Type I - patients with asymptomatic disease; Type II - patients with an abscess; Type IIIa - patients with 1-3 midline pits; Type IIIb - patients with more than 3 midline pits; Type IIIc – type IIIa patients with abscess drainage history; Type IIId – type IIIb patients with abscess drainage history; Type IV- patients with pits whose lateral orifice extends beyond the navicular region, Type V - patients with disease recurrence, and Type VI - patients with resistant, long-term illness.

Crystallized phenol or Bascom cleft lift treatments were performed in Type III and V SPS patients. A retrospective review of data recorded on their follow-up forms was carried out. The 83 patients with Type III to V SPS were divided into two treatment groups: Bascom cleft lift group (Group 1: n=30) and the crystallized phenol group (Group 2: n=53). All patients were retrospectively evaluated in terms of age, gender, body mass index, co-morbidities, types of pilonidal sinus, recovery time, duration of return to work, follow-up time, complications, and overall satisfaction; recurrence rates were also recorded. The study protocol was approved by the center's ethical committee.

Inclusion criteria were as follows

- with type III to V pilonidal sinus
- aged between 18 and 60
- willing to give informed written consent

Exclusion criteria were as follows

- with abnormal hemodynamic parameters, immunosuppression or pregnancy
- aged <18 or > 60
- unwilling to give informed consent

Bascom cleft lift technique

All operations were performed under spinal anesthesia with the patient in prone position. Before the procedure, the surgical site was shaved, cleaned with povidone-iodine solution and the incision site marked. The patients were then administered cefazolin.

An elliptical incision was made from cranial to caudal ends, 2 cm lateral to the midline, and incorporating all sinus cavities. A skin-flap was formed on the right side of the midline to the margin of the natal cleft and a suction drain placed under the skin. The skin and subcutaneous tissue were closed with 2/0 non-absorbable and 2/0 absorbable sutures, respectively (Figure 1).

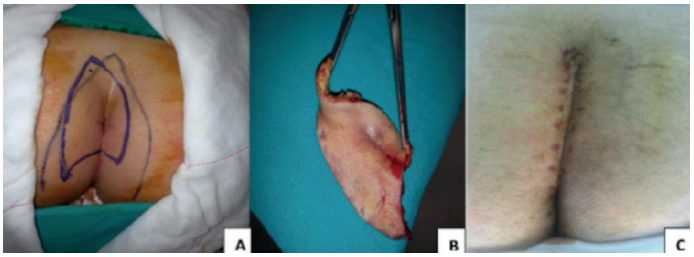

Figure 1. Bascom cleft lift technique (Determination of natal cleft and incision boundaries (A), Bascom cleft lift specimen (B), Skin incision in postoperative 10th day (C))

The patients were discharged with their drains on the first day post-surgery. The drain was generally removed 3 days later, when the daily drainage dropped below 20cc. The patients were advised not to sit on their gluteal regions for the first 3 days. After the discharged from hospital, the patients were given cefazolin / ciprofloxacin, metronidazole and diclofenac sodium tablets. Skin sutures were removed during the check-ups performed on the 15th day. Patients were called in by phone for follow up at the 1st month, 6th month, 1st year, 2nd year, 3rd year and 4th year dates, when recurrence and morbidity rates were revised.

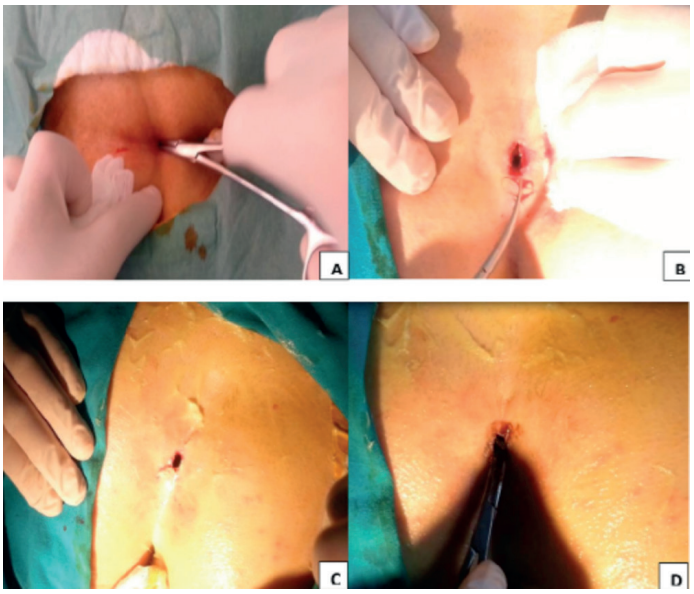

Figure 2. Crystalized phenol method. (Expanding of the sinus mouth with clamp (A), Removing of hair and side the cyst (B), protecting the skin with nitrofurazone pomade (C), placing the crystallized phenol into the sinus (D))

Crystallized Phenol Treatment

These treatments were performed under local anesthesia with the patient in prone position in the local outpatient intervention room. Before the procedure, cefazolin was administered to all patients; the surgical site was shaved and cleaned with povidone-iodine solution. After the sinus openings were widened with a clamp (1-2 cm), the hairs and tissue inside were carefully removed. To prevent phenol-related burns, 0.2% nitrofurazone pomade was applied. Crystallized phenol, obtained from a professional medical company, was placed in the sinus cavities.

After one-minute, dead tissues in the cavity were debrided and the area was covered in gauze dressings (Figure 2). After the procedure, patients were given cefazolin / ciprofloxacin, metronidazole and diclofenac sodium tablets before being discharged. All patients were advised to take a shower every day, starting one day after the procedure. Patients were followed up every week during the first month. After the 4th week, patients whose pilonidal sinus openings were epithelized with normal skin and who were asymptomatic were considered to be healed. After the one-month treatment protocol, patients whose sinuses had not closed were called in for follow up. These patients were advised to take a daily shower and to keep the area clean with hair removal cream.

Statistical analysis

Statistical analysis was evaluated using SPSS version 21.0 (IBM Corp., Armonk, NY, USA). Descriptive statistical methods were used to evaluate the study. The Fisher's exact test and The Pearson $\chi 2$ test were tested to compare qualitative date. The normality of data distributions was determined by the Kolmogorov-Smirnov test. The quantitative variables were measured with independent samples t-test or Mann Whitney U test. Based on the results, a p value of less than 0.05 was considered to indicate a statistically significant difference. Statistical significance was denoted by an asterisk.

RESULTS

The study comprised 83 patients with pilonidal disease, of which 30 were treated with Bascom cleft lift procedure (Group 1) and 53 with crystallized phenol (Group 2). There were no significant differences between the two groups in terms of age, gender, body mass index, job or co-morbidity. Most of the patients in the two groups were Type III (73 patients; 87.9%) and there was no significant differences be¬tween the two groups for patients classified lower than Type IV (p>0.05). However, the length of hospital stay was longer for the Bascom cleft lift group (p<0.001) (Table 1).

Table 1. Clinical and operative characteristics between groups

	Total (n=83)	Bascom's cleft lift group (n=30)	Crystallized phenol group (n=53)	P value
Age	26 (20-33)	22 (18.4-34)	25.5(23.9-30)	0.996¶
Gender				0.705 ‡
Female	8 (9.6)	2 (6.7)	6 (11.3)	
Male	75 (90.4)	28 (93.3)	47 (88.7)	
BMI	27±3.03	27.3±3.05	27.4±3.5	0.979†
Job				
Student	23 (27.7)	10 (33.3)	13 (3.4)	0.389χ2
Employee	22 (6.5)	5 (16.7)	17 (32.1)	0.127χ2
Artisan	4 (4.8)	3 (10)	1 (1.9)	0.132‡
Officer	4 (4.8)	0	4 (7.5)	0.291‡
Others	14 (16.9)	4 (13.3)	10 (18.9)	0.518χ2
Co-morbidity				
Asthma	2 (2.4)	2 (6.7)	0	0.128‡
Hyperlipidemia	2 (2.4)	0	2 (3.8)	>0.99‡
Rheumatic or allergic disease	4 (4.8)	1 (3.3)	3 (5.7)	>0.99‡
Hypertension	1 (1.2)	1 (3.3)	0	0.361‡
Others	7 (8.4)	5 (16.7)	2 (3.8)	0.09‡
Classification				
3a	28 (33.7)	3 (10)	25 (47.2)	**0.001**χ2
3b	35 (42.2)	16 (55.3)	19 (35.8)	0.121χ2
3c	3 (3.6)	0	3 (5.7)	0.55‡
3d	9 (10.8)	7 (23.3)	2 (3.8)	**0.01**‡
4a	3 (3.6)	3 (10)	0	**0.04**‡
5	5 (6)	1 (3.3)	4 (7.5)	0.649‡
Class <4	75 (90.4)	26 (86.7)	49 (92.5)	0.451‡
Length of hospital stay	0 (0-0)	1.5 (0.7-2.2)	0	**<0.001**¶
Follow up	40.3 (38.7-44.7)	40.6 (37.7-44.6)	40.2 (39-41.6)	0.159¶

† Student's t test, χ2 pearson chi-square, ‡ Fischer exact test, ¶ Mann Whitney U test

The median postoperative pain levels, follow up periods, duration of medication use, time to walk without pain, and time to start sport were similar in both the groups (p>0.05) (Table 1 and 2).

Most patients in the crystallized phenol group were able to sit normally on the fourth post-operative day, and the median time to sit normally was earlier in group 2 than in group 1 at 4 (3.7-10.4) days versus 14.5 (8.6-20.3) days respectively; P=0.002. The median return time to work or school was 10 (3.2-7) days in group 2 and 3 (2-8.7) days in group 1 (P=0.002) (Table 2). The crystallized phenol group were able to sit on the toilet earlier than the Bascom cleft lift group at 0.5 (1.1-9.7) days vs. 3 (1.8-10.3) days (P=0.029), and they also started lifting weights earlier at 14.5 (6-50.2) days vs. 30 (18.1-41.6) days (P=0.011) (Table 2).

There were several complications. Surgical site infections occurred in a total of 6 patients (0.7%): 2 patients in the Bascom cleft lift group and 4 patients in the crystallized phenol group, (P > 0.99). In these cases, the sutures were removed and the infected areas were drained. Daily wound care and antibiotics led to complete wound healing. Wound dehiscence occurred two weeks after end of treatment in two patients (3.8%) in the crystallized phenol group. After daily wound care, the incisions closed after one week. One patient (1.9%) in the crystallized phenol group developed a hematoma which was treated with curettage in outpatients. Successful hemostasis was achieved after compression. The median complete healing time for the Bascom cleft lift group and crystallized phenol group was 30 (30-57.5) days (Table 2).

During the follow-up period, there was no incidence of recurrence in any of the Bascom cleft lift group. Conversely, recurrence did occur in 6 patients from the crystallized phenol group, although the difference was not statistically significant (P= 0.082). The recurrences were seen in 4 patients of Type IIIa, one of Type IIId and one of Type V. In each case, the Limberg flap operation was performed. However, when the two groups were compared in respect to patient satisfaction, the crystallized phenol group patients were more satisfied in terms of aesthetics (P=0.004) (Table 2).

Table 2. Perioperative outcomes, satisfaction and complications

	Total (n=83)	Bascom's cleft lift group (n=30)	Crystallized phenol group (n=53)	P value
Time to without working or school	3 (0-10)	10 (5.9-28)	3 (2-8.7)	**0.002¶**
Duration of drug use	10 (8.5-14.8)	7 (2.8-17.8)	10 (9.1-10.5)	0.540¶
Time to normal sit	7 (0-15)	14.5 (8.6- 20.3)	4 (3.7-10.4)	**0.002¶**
Time to sit on the toilet	2 (0-7)	3 (1.8-10.3)	0.5 (0-9.7)	**0.029¶**
Postoperative pain	6 (7.2)	0	6 (11.3)	0.323‡
Time to walk without pain	7 (0-15)	15 (8.7-20.7)	7 (5.3-16.3)	0.053¶
Time to start sport	17.5 (0-30)	16 (2.3-47.8)	20.5 (14.5-28.4)	0.653¶
Weight lifting	15 (10-30)	30 (18.1-41.6)	14.5 (6-50.2)	**0.011¶**
Complete healing time	30 (30-57.5)	37.5 (28.5-60.5)	30 (30.3-54.8)	0.120¶
Satisfaction				**0.004¶**
Poor	1 (1.2)	1 (3.3)	0	0.2‡
Average	1 (1.2)	1 (3.3)	0	0.2‡
Good	43 (51.8)	7 (23.3)	36 (67.9)	0.036‡
Complication				
Surgical site infection	6 (7.2)	2 (6.7)	4 (7.5)	>0.99‡
Wound dehiscence	2 (2.4)	0	2 (3.8)	0.533‡
Hematoma	1 (1.2)	0	1 (1.9)	>0.99‡
Recurrence	6 (7.2)	0	6 (11.3)	0.082‡

† Student's t test, ‡ Fischer exact test, ¶ Mann Whitney U test

DISCUSSION

Recently, the classification type of pilonidal sinus has begun to play a role in the choice of treatment method and in selected cases minimally invasive methods have become a popular treatment option (13). However, a better assessment of this aspect of SPS treatment can only be achieved by studies with larger case series and longer follow-up times. Our aim in the present study was to compare the success of Bascom cleft lift and crystallized phenol treatment methods in type III-V SPS patients.

Undoubtedly, in experienced hands and in selected cases, excluding emergency or complex situations, the crystallized phenol technique can be one of the most effective methods for the treatment of SPS.

The success rate of this treatment is satisfactory, and the recurrence rate is acceptable. The average success rate of clinical trials applying crystallized phenol was found to be 67% (56%-78%) (14). One advantage is that in the case of unsuccessful phenol treatment, it can be repeated, and the success rate can then reach 83% (67%-95%) (14). Kaymakcioglu et al showed that the number of sinus openings and cavity volume were significant in predicting recurrence (15).

The most common complications after phenol treatment are abscesses and cellulitis (15,16). In a review of phenol treatment in 831 patients with SPS by Kayaalp et al (16), morbidity was 8.9±4.7%, median return to work was 2.3±3.8 days, recovery time was 20 ±14 days, success rate was 87±10%, and follow-up time was 2±1.1 years (16). In the present study, no abscesses or cellulitis was seen in the phenol group. However, superficial surgical site infections were observed in 6 patients out of both study groups: 2 patients in the Bascom cleft lift and 4 patients in the crystallized phenol group. In our study, the lengths of time until patients' ability to sit normally (4 (3.7-10.4) days), return to work (3 (2-8.7) days), lift weights (14.5 (6-50.2) days) and wound healing (30 (30.3-54.8) days) were similar to the literature.

Pilonidal sinus patients with extensive primary disease, deep natal cleft, recurrent disease, or non-healing midline wounds may require a flap procedure. In this case, the aim is to remove the diseased tissue and lateralize the natal cleft with a tension-free repair on the suture line (17). After leaving open for secondary healing, midline closure methods are the most frequently used secondary treatment in the world. However, this method is becoming less popular due to high wound separation and recurrence rates (18). Although the Bascom cleft lift technique was originally employed for recurrent and refractory pilonidal sinus treatment (19), its use has now expanded as the primary treatment method in patients with profuse hair, progressively deep natal clefts and in relapse-resistant cases (19,20).

In a prospective-randomized clinical study comparing Bascom cleft lift and Limberg flap methods by Guner et al, the Bascom cleft lift was shown to involve shorter operation duration, less excised tissue weight, better physical pain score, and similar morbidity rates (21). In our clinical practice, our first choice of flap method was the Bascom cleft lift method. The most important reason for us to prefer this procedure is that less tissue is removed than in other flap methods and no sutures are placed in the post-sacral fascia. In this way, the newly formed sulcus becomes flatter as there is less space at the bottom when the flap is shifted, which we believe to be a recurrence factor. In addition, since no sutures are placed on the fascia, there is more comfort during movements (21). Furthermore, there were no cases of recurrence during the median follow-up period of 40.6 (38.7-40.7) months in our Bascom cleft lift group.

In our study, there were five recurrent cases of SPS, all Type V, and in these cases our treatment method was selected by the original surgical procedure. All five patients had a history of excision and primary closure, so crystallized phenol treatment was performed in the four patients who had only one sinus opening. The fifth patient had more than three sinus openings that were laterally located so the Bascom cleft lift method was selected for this patient. In our study, the overall recurrence rate was 7.2% (6 patients), all of whom were from the crystallized phenol group. The Limberg flap procedure was performed on these recurrent patients.

LIMITATIONS

There are some limitations in our study. Firstly, this was a retrospective study and secondly, the sample size was small. Although all cases are performed by a single surgeon, there is a need for large randomized controlled clinical trials.

CONCLUSION

Our results suggest that the Bascom cleft lift method is superior to the use of crystallized phenol in terms of recurrence. On the other hand, the crystallized phenol treatment results in higher patient satisfaction and a shorter hospital stay, as well as a decrease in normal or toilet sitting time, with an earlier return to daily activities and school or work.

Competing interests: The authors declare that they have no competing interest.

Financial Disclosure: There are no financial supports.

Ethical approval: Approval was obtained from Sakarya University Training and Research Hospital ethics committee.

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