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ORIGINAL ARTICLE

Crystallized phenol application and modified Limberg flap procedure in treatment of pilonidal sinus disease: A comparative retrospective study

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Summary *Background/Objective:* Pilonidal sinus treatment includes various surgical and minimally invasive procedures, but there is still no standard treatment. Flap reconstructions and minimally invasive treatment options such as crystallized phenol application have recently been in the center of interest. The aim of this study is to compare crystallized phenol application as a minimally invasive treatment with modified Limberg flap reconstruction from many aspects.

Methods: Thirty-seven patients diagnosed with pilonidal sinus and treated with modified Limberg flap reconstruction, and 44 patients treated with crystallized phenol application were evaluated retrospectively in terms of age, sex, length of stay in hospital postoperatively, wound complications, and the cause and rate of recurrence.

Results: Length of hospital stay was decreased and no postoperative incision problems were found in the group treated with crystallized phenol application ($p < 0.001$ and $p = 0.011$, respectively). The difference between the groups in terms of recurrence rate was not statistically significant ($p = 0.173$). Although the recurrence rate was found to be higher in the patient group treated once with crystallized phenol application, the success rate following multiple applications of crystallized phenol was found to be 94.5%. Higher body mass index (> 24.9 kg/m^2) and surgical site infection were strongly correlated with recurrence rate ($p < 0.001$).

Conflicts of interest: The authors declare that there are no conflicts of interest and no competing financial interest.

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Discussion: Crystallized phenol application is a good alternative to the modified Limberg flap procedure and other surgical procedures, because it has several advantages such as being a minimally invasive procedure performed under local anesthesia with higher success rate after multiple applications, decreased length of stay in hospital, and minimal scar tissue formation.

1. Introduction

Pilonidal sinus is a common disease of the sacrococcygeal region that is usually seen among young men. Numerous theories have been presented to explain its etiology, but the widely accepted view is that the disease is acquired.[1] Although some of the patients experience severe acute pain, the disease manifests itself with chronic-continuous discharge. Because there is no standard treatment, and it has a high recurrence rate, studies on pilonidal sinus have a potential value.[2] Treatment options of pilonidal sinus vary from minimally invasive surgical interventions to complicated flap techniques; yet none of them were suggested as the most effective procedure so far.[3] Although some studies report that flap techniques are associated with lower recurrence rates and higher patient satisfaction in comparison with other surgical procedures, there are several studies suggesting that flap techniques are extreme surgical procedures.[4–6] Modified Limberg flap reconstruction was first described by Mentes et al[7] in 2004. In this technique, the lower edge of the incision is shifted laterally from the midline to prevent the inferomedial recurrence seen in classical Limberg flap reconstruction. The lower recurrence and complication rates in modified Limberg flap reconstruction in comparison with classical Limberg flap reconstruction[8,9] and other conversional flap reconstruction techniques[10,11] were reported in several studies.

The ideal treatment of pilonidal sinus disease should include minimum tissue excision with a lower recurrence rate. Additionally, the postoperative period should include short length of stay in the hospital, fast recovery back to normal life, minimum workforce loss, and minimal scar tissue formation. Thus, easily performed treatments such as pit excision, mechanical clearance of the sinus tract, and chemical therapies became popular.[12]

Phenol, also known as carbolic acid, has antiseptic, anesthetic, and strong sclerotic features. Phenol treatment is one of the current popular conservative options to treat pilonidal sinus. It can be used both in liquid or crystallized form.[13]

In the present study, crystallized phenol application as a minimally invasive treatment was compared with modified Limberg flap reconstruction as a current surgical treatment of pilonidal sinus from many aspects.

2. Methods

Between December 2013 and July 2015, a total of 94 patients were diagnosed with pilonidal sinus and treated at Dumlupınar University Evliya Çelebi Research and Education Hospital in Kutahya, Turkey. Their details were examined retrospectively in terms of age, sex, length of stay in hospital postoperatively, wound complications, recurrence rate, and recurrence causes.

Patients aged between 18 years and 65 years with pilonidal sinus disease who have not undergone any prior treatment were included in the study. The exclusion criteria include being under treatment for steroids, application to the clinic with a recurrence disease, being diagnosed with diabetes mellitus, being diagnosed with abscess formation following pilonidal disease, and concomitant pilonidal disease with malignant conditions.

Deep sinuses are not accepted as a contraindication for phenol treatment and can be managed as easily as superficial ones. Because phenol contact with cavity wall is enough to induce this effect, even a small amount of crystals can easily fill almost every cavity of pilonidal sinuses by melting at body temperature. Thus, patients with deep sinuses were not excluded from the study.

Forty-four of the patients were treated with modified Limberg flap reconstruction, whereas 37 patients were treated with crystallized phenol application. The patients with a higher body mass index (BMI; > 24.9 kg/m^2) were grouped as overweight according to the National Heart, Lung, and Blood Institute guidelines.[14]

A written consent was obtained from all participants. No patient identity information was disclosed, and there was no need for ethical approval as this is a retrospective study.

2.1. Surgical procedures

2.1.1. Crystallized phenol application

Crystallized phenol application was performed in 37 of the patients as described by Akan et al.[13] After the application of local anesthetic, a millimetric circumferential incision was made to excise the pits with a fine blade. With the help of a curved clamp hair, debris and granulation tissue were removed from the sinus tract and the tract is curetted. Prior to crystallized phenol application, a pomade containing nitrofurantoin was applied in order to protect the surrounding tissue, and after that crystallized phenol particles were inserted to the tract with the help of a clamp (Figure 1). After dressing, the procedure was terminated and the patient was discharged immediately. The application was performed by an experienced surgical team.

2.1.2. Modified Limberg flap reconstruction group

The operation was performed as described by Mentes et al.[7] The skin incision was first marked out with a sterile pen and ruler, then a rhomboid excision including postsacral fascia