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Primary closure method after asymmetrical excision of a pilonidal sinus treatment: A retrospective cohort study

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Ethics Committee Approval
The study was approved by Bursa City Hospital Ethics Committee with the following decision number: 2022-13/1.
All procedures in this study involving human participants were performed in accordance with the 1964 Helsinki Declaration and its later amendments.

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No conflict of interest was declared by the authors.

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Abstract

Background/Aim: There is no gold standard method in pilonidal sinus surgery, because each technique has a recurrence rate. This study aims to evaluate the outcomes of pilonidal sinus surgeries performed by a single surgeon using excision and primary closure technique in a state hospital.

Methods: The study included 159 pilonidal sinus patients operated on by a single surgeon in the General Surgery Department between September 2014 and May 2022. The patients were investigated retrospectively, and age, gender, surgical technique, type of anesthesia administered, time needed to return to normal life, history of previous abscess drainage, long-term complaints in the incision area, number of intergluteal sinuses, postoperative complications and recurrence rates were recorded. Missing information was completed with polyclinic medical records and phone calls. Patients with incomplete data were excluded from the study. An excision and primary closure method was performed on all patients included in the study.

Results: Sixty-seven (42.1%) of the patients were male and 92 (57.9%) were female. The mean age was 27.8 (8.97) years. Twenty-one (13.2%) patients were operated on under local anesthesia, whereas 138 (86.8%) received spinal anesthesia. The mean operative time was 28.87 (8.01) minutes (range: 14-47 minutes). The mean length of hospital stay was determined to be one day (range: 6-24 hours). Surgical-site infections developed in 4 (2.5%) patients and wound dehiscence developed in 14 (8.8%) patients during the postoperative period. Patients developing these conditions were followed up with dressing and antibiotic treatment. The mean postoperative follow-up period was 67 months (range: 1-105 months). Recurrence was detected in six patients during the follow-up period, representing a recurrence rate of 3.8%.

Conclusion: Primary closure after asymmetrical excision of the pilonidal sinus is an easily performed technique with minimal postoperative pain and early wound healing. Additionally, this method has early return-to-work rates and low recurrence rates. We think that this method would be more applicable in pilonidal sinus surgery due to these advantages.

Keywords: pilonidal sinus, primary closure, recurrence

Introduction

A pilonidal sinus is a chronic condition that limits daily activity, causes discomfort, and can result in long-term loss of work. It is most commonly seen in the sacrococcygeal area. It especially affects the teenage to young adult population, ages 15-25 years, and commonly occurs in Turkey. Although there are many techniques described for the treatment of a pilonidal sinus, an ideal treatment modality has yet to be found, due to the high recurrence rates. The cyst should be totally excised during treatment, and different methods are used for the closure. Currently, marsupialization, primary closure, and flap methods are the most frequently used surgical techniques [1,2]. Flap methods have some disadvantages, such as the need for experience, performing wide surgical excision in the gluteal region, complaints of pain and numbness during the postoperative period, and cosmetic problems. Longer healing periods result from techniques where the wound is left completely or partially open, and this is the most significant disadvantage [1-3]. In recent years, studies have been reported that favorably regard the primary closure method, although it has a high recurrence rate [3-5]. This study aims to evaluate the outcomes of patients who underwent surgery using the primary closure method.

Materials and methods

The files of 159 pilonidal sinus patients operated on by a single surgeon using excision and the primary closure method in the General Surgery Department of Çekirge State Hospital between September 2014 and May 2022 were retrospectively investigated. The ages, genders, surgical techniques, types of anesthesia administered, hospitalization periods, postoperative complications, time needed to return to normal life, long-term complaints in the incision area, numbers of intergluteal sinuses, histories of previous abscess drainage of patients, and development of recurrence were evaluated. Missing information was completed with polyclinic medical records and phone calls.

The gluteal region was shaved 12-18 hours before the surgery in all of the patients. A written informed consent form was received from the patients. The surgeries were performed under local and spinal anesthesia. One g IV cefazolin sodium was administered to the patients at anesthesia induction for prophylaxis. The intergluteal region was made more visible in the jackknife position with the help of thick adhesive tapes.

Excision of an elliptical wedge of skin and subcutaneous tissue down to the sacrococcygeal fascia was performed (Figure 1). The surgeon tried to prevent dead space by passing the 0/0 Vicryl sutures through the subcutaneous tissue in the deep plane. The skin was sutured using 3/0 prolene sutures (Figure 2). The patients received ciprofloxacin 750 mg/day tablet for infection prophylaxis postoperatively for five days. Patients were asked to come for a control visit on the tenth postoperative day. Those who were determined to have wound infection and wound dehiscence had weekly follow-up control visits. The patients who had a recurrence were reoperated on.

Ethics committee approval of the study was obtained from Bursa City Hospital Ethics Committee (decision number: 2022-13/1).

Figure 1: Excision of an elliptical wedge of skin

Figure 2: The appearance after surgical excision

Statistical analysis

Conformity of the qualitative data to the normal distribution was evaluated with the Shapiro-Wilk test. Descriptive statistical methods were expressed as mean and standard deviation, or median (minimum and maximum) for quantitative data, and as frequency and percentage for qualitative data. The Mann-Whitney U test was used for the variables without normal distribution. Pearson's chi-square test, the Fisher-Freeman-Halton test, and Fisher's Exact test were used to analyze categorical data. The significance level was determined to be α=0.05. The IBM SPSS 23.0 (IBM Corp. Released 2015. IBM SPSS Statistics for Windows, Version 23.0. Armonk, NY: IBM Corp.) statistical package program was used for statistical analysis of data.

Results

Sixty-seven (42.1%) of the patients were males and 92 (57.9%) were females. The mean age was 27.85 (8.97) years (range: 15-54 years). All operations were performed by the same surgeon under local anesthesia in 21 (13.2%) patients and spinal anesthesia in 138 (86.8%) patients. The mean operative period was 28.87 (8.01) minutes (range: 14-47 minutes). The mean length of hospital stay was one day (range: 6-24 hours). Surgical-site infections developed in 4 (2.5%) patients and wound dehiscence developed in 14 (8.8%) during the postoperative period. Patients developing surgical-site infection and wound

dehiscence were followed up with dressing and antibiotic treatment. The mean postoperative follow-up period was 67 months (range: 1-105 months).

When patients developing recurrence were compared regarding complications, no statistically significant difference (P=0.223) was found; however, a statistically significant difference was determined regarding the history of previous abscess drainage (P=0.035). The mean period of return-to-work time was six days (range: 1-19 days).

The mean postoperative follow-up period of patients was 67 months (range: 1-105 months). Recurrence was detected in six patients during the clinical follow-ups, representing a recurrence rate of 3.8% in the study. Four of the patients developing recurrence were males and two were females. No statistically significant difference was found between the patients with and without recurrence regarding age, gender, or body mass index (BMI).

Twenty-two (13.8%) patients had a history of previous abscess drainage prior to the surgery. The presence of an abscess in the patients with recurrence (50%) was higher compared to the patients without recurrence (12.4%). This difference was found to be statistically significant (P=0.035).

No statistically significant difference was determined between patients regarding the type of anesthesia administered, hospitalization period, follow-up period, or time needed to return to normal life.

The number of intergluteal sinus pits was found to be higher in patients with recurrence compared to those without recurrence. This difference was considered to be statistically significant (P=0.008).

Discussion

A pilonidal sinus is a chronic condition that deteriorates the quality of life due to reasons, such as recurrent discharge and abscess formation, and can lead to social and psychological problems in the long term. It is more commonly seen among the young adult and male population [6]. While many theories have been proposed related to the development of the condition, today it is thought that the chronic inflammation process starts with the penetration of free hairs into the subcutaneous tissue through the intergluteal sulcus. Clinically, although it can be asymptomatic, it can also manifest itself with various symptoms, such as pain, discharge, and abscess.

Many therapy methods including noninvasive and surgical ones have been offered as treatment for the condition. The most commonly used conservative method is the local application of phenol into the cyst through the sinus orifices [7]. A wide resection to include all sinus orifices is recommended in the surgical treatment. Different surgical techniques, such as excision with open healing, partial closure (marsupialization), primary closure, and flap methods are applied. There is a likelihood of recurrence in all methods. Primary closure has many advantages, such as ease of application, short operative time, no need for further experience, less postoperative pain, earlier wound healing, and earlier return to daily life. The most important complications observed after primary closure are surgical-site infection and wound dehiscence. These complications delay the wound healing, increase the recurrence development, and prolong the time needed to return to daily life. Wound healing problems after the primary closure technique were reported with a rate of 11-34% [4,8]. In our study, this rate was 11.3% and was consistent with previous data in the literature.

Staphylococci and Bacteroides species were determined with a rate of 50% in bacteriological studies performed in the pilonidal sinuses [4,9]. The use of antibiotics Staphylococci and Bacteroides decreases the infection rates [4]. In our study, an oral ciprofloxacin tablet was started in all patients with a dose of 750 mg twice a day during the postoperative period. During this period, surgical-site infection, wound dehiscence, and recurrence in the long follow-up period were detected in 4 (2.5%), 14 (8.8%), and 6 patients; respectively.

Patients developing surgical-site infection and wound dehiscence were followed up with dressing and antibiotic treatment. The mean postoperative follow-up period was 67 months (range: 1-105 months), and recurrence was detected in six patients during this time. The recurrence rate was found to be 3.8% in the current study. Re-excision and primary closure were performed in patients with recurrence. Other complications were treated conservatively.

In a study comparing the primary closure and Limberg flap reconstruction treatment methods, the likelihood of development of infection was shown to be ten times less in patients treated with the Limberg flap reconstruction method than those treated with the primary closure method (10). In a study comparing four surgical methods, the infection rate in primary closure, marsupialization, excision without closure, and the Limberg flap reconstruction methods was 14%, 9%, 3%, and 8%, respectively [11]. In our series, surgical-site infection was observed with a rate of 2.5%.

The development of recurrence after pilonidal sinus surgery is one of the most important problems to date. The diagnosis of recurrence is made with the formation of a new cyst after the penetration of the hair follicle into the subcutaneous tissue or the presence of a hair follicle in the granulation tissue after surgery. Recurrence after primary closure was reported with a rate of 0-42% in the literature [1,4,5,12]. Although some studies demonstrating higher recurrence rates after primary closure have been presented, studies supporting the primary closure method have also been published, especially in recent years. While Nihat et al. [1] reported the average recurrence rate after primary closure as 3%, the recurrence rate was reported to be 7.4% in the study performed by Bulent et al. [6]. These different results detected in the recurrence rates after primary closure are still a topic of discussion. This condition can be explained by differences in the selection of patient groups, surgical techniques, and follow-up periods. In our study, the recurrence rate was found to be 3.8%.

Wound healing takes an average of 40-60 days after open healing or marsupialization following pilonidal sinus excision. The patients have more frequent dressing in this period and the defect is expected to heal with granulation tissue. The wound heals on average in ten days after primary closure, and thus return-to-work time is earlier [4,14]. In the current study, the mean period of return to daily life was determined to be six days. These results show that primary closure is more

advantageous than open healing and marsupialization techniques. Complaints, such as pain, numbness, and paresthesia on the incision line are more commonly encountered, especially in patients undergoing the flap method. In our study, no patients described complaints of paresthesia, numbness, or pain related to the wound site during the long postoperative period. When compared with the primary closure, the flap method results in wide scar tissue formations in the gluteal region, which is cosmetically undesirable. Hence, cosmetic dissatisfaction was reported as an important disadvantage in a study conducted on the Limberg flap reconstruction method [14]. No patients stated dissatisfaction with the surgery in our study.

Strengths and Limitations

The greatest strength of the study is that all cases were performed by a single surgeon with the same technique. The study has a number of possible limitations. Our data contains only cases taking place at the Çekirge State Hospital. In addition, the number of cases was limited due to the fact that it was a study performed by a single surgeon. Consequently, the need for future prospective studies with more patients is needed.

Conclusion

Currently, many different surgical techniques are used in pilonidal sinus surgery. The primary closure technique is a treatment method that can be easily performed in pilonidal sinus surgery due to the advantages of minimal postoperative pain, early wound healing, early return-to-work time, and acceptable recurrence rates.

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